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## Research article

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# The Afrotropical species of *Habritella* Girault & Dodd (Hymenoptera: Pteromalidae)

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**Abstract.** The previously endemic Australian genus *Habritella* Girault & Dodd, 1915 is reported for the first time in the Afrotropical region with four new species: *H. africana* sp. nov., *H. mandibulata* sp. nov., *H. noyesi* sp. nov., and *H. viridifrons* sp. nov. The males of *Habritella* are described for the first time. A new generic synonymy and combination are also proposed: *Ezgia* Koçak & Kemal, 2008 syn. nov. and *H. stylifera* (Bouček, 1988) comb. nov. *Habritella* is redescribed to accommodate the newly discovered and transferred species. An illustrated key to the Afrotropical species is provided.

**Keywords.** Chalcidoidea, new species, parasitoid, Pteromalinae, taxonomy.

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## Introduction

The monotypic genus *Habritella* Girault & Dodd, 1915, with *H. graciliventris* Girault & Dodd, 1915 as type species, was described from Queensland, Australia (Girault 1915) and was included by Bouček (1988) in his key to Australasian Pteromalidae Dalman, 1820. No further records of the genus have been published since. According to Bouček, *Habritella* has affinities with the monotypic genus *Cairnsia* Bouček, 1988 (type species: *C. stylifera* Bouček, 1988), both genera sharing an antennal flagellum with three anelli, a similar propodeum with a conspicuous nucha and a strongly capitate stigmal vein (Bouček 1988: 421). The name *Ezgia* Koçak & Kemal, 2008 was proposed as a replacement name for *Cairnsia* Bouček, 1988, the latter being preoccupied by *Cairnsia* Blackburn, 1895 (Coleoptera: Cerambycidae) (Koçak & Kemal 2008).

In the course of a long-term investigation of the Afrotropical genera of Pteromalidae, a potentially new genus was discovered among the material from the Democratic Republic of the Congo. More detailed observations and additional material from Togo and South Africa revealed three other Afrotropical species and indicated important similarities with both *Habritella* and *Ezgia*. These similarities and a mix of characters between the two genera led to the decision of synonymizing *Ezgia* under *Habritella*. The detailed arguments for this decision are listed further in this paper.

This is the first report of the genus *Habritella* outside Australia and the first record of males. The genus now comprises six species: *H. graciliventris* Girault & Dodd, 1915, *H. stylifera* (Bouček, 1988), comb. nov., *H. africana* sp. nov., *H. mandibulata* sp. nov., *H. noyesi* sp. nov., and *H. viridifrons* sp. nov. A diagnosis and redescription of *Habritella* are provided, as well as an illustrated key to the newly described Afrotropical species. Although extensive Afrotropical material was examined in the last ten years and no additional species have been found, it is very likely that more species will be discovered in the future, as huge areas of the continent remain unexplored by chalcidologists. This paper will hopefully help their future recognition.

## Material and methods

The examined material is deposited in the Natural History Museum in London, UK (NHMUK), and the Musée royal de l’Afrique centrale / Koninklijk Museum voor Midden-Afrika Tervuren, Belgium (RMCA). The morphological terminology follows Bouček & Rasplus (1991) and Gibson (1997). The different types of body sculpture follow Bouček & Rasplus (1991). The maximum height of stigma and the minimum distance between stigma and PMV are measured when these are compared.

## Abbreviations

11353/11263	=	antennal formula, i.e., number of antennal segments for scape, pedicel, anelli, funiculars, and clava respectively
4:3	=	mandibular formula, i.e., the number of teeth on the right and left mandible, respectively
fu1–6	=	funicular segments 1–6
gt1–8	=	gastral tergites 1–8
H	=	height
L	=	length
MV	=	marginal vein
OOL	=	ocello-ocular line
P.N.G.	=	Parc National de Garamba/Garamba National Park, the Democratic Republic of the Congo (D.R. Congo)
POL	=	posterior ocellar line
PMV	=	postmarginal vein
SV	=	stigmatal vein
W	=	width

Observations and descriptions were made using a Leica S8APO stereo microscope. Measurements were taken with a micrometric graduated ocular. The scape is measured without the radicle, in lateral view. Pedicel is measured in lateral view. Gastral tergites are measured along their median line. Images were taken using a Leica DFC500 digital camera attached to a Leica M205A automated research stereomicroscope. The images were then processed with Zerene Stacker®. Their clarity was further enhanced using Adobe® Photoshop® ver. 7.0. The holotype and allotype are described and variation among additional paratypes (if available) is detailed separately. Information on specimen labels is given ad litteram.

## Results

Class Insecta Linnaeus, 1758  
 Order Hymenoptera Linnaeus, 1758  
 Suborder Apocrita Latreille, 1810  
 Superfamily Chalcidoidea Latreille, 1817  
 Family Pteromalidae Dalman, 1820  
 Subfamily Pteromalinae Dalman, 1820

Genus *Habritella* Girault & Dodd, 1915

*Habritella* Girault & Dodd, 1915 in Girault, 1915: 191 (type species: *H. graciliventr* Girault & Dodd, 1915, by monotypy).

*Cairnsia* Bouček, 1988: 421–422 (type species: *C. stylifera* Bouček, 1988, by original designation and monotypy).

*Ezgia* Koçak & Kemal, 2008: 3–7 (replacement name for *Cairnsia* Bouček, 1988), syn. nov.

*Neocairnsia* Darılmaz & Özdikmen, 2009: 37–42 (unnecessary replacement name for *Cairnsia* Bouček, 1988).

### Diagnosis

Clypeal margin moderately to deeply emarginate, hence appearing bidentate or bilobed (Figs 1C, 3C, 4C), rarely virtually straight (Fig. 2C); toruli above middle of face, hence scape usually reaching above level of vertex (Figs 1C, 3C, 4C); female antenna 11353 (Figs 1G, 2G, 3G, 4G), male antenna 11263 (Figs 1H, 2H, 3H, 4H); clava in both sexes more or less pointed, with a spicula or small terminal process (Figs 1H, 2G, 2H, 3H) or without (Figs 1G, 3G, 4G–H); pronotal collar much narrower than mesoscutum, anterior margin rounded, angled or very finely carinate; notauli incomplete; propodeum short on sides but with large reticulate nucha and sinuate plicae, without median carina or costula (Figs 1D, 2D, 3D, 4D); stigmal vein usually strongly capitata (Figs 2F, 3F, 4F); metasoma sessile, narrow (Figs 1E, 2E, 3E, 4E).

### Redescription

**BODY.** Gracile, with at least some distinct metallic reflections (Figs 1A–B, 2A–B, 3A–B, 4A–B). Body setation at least partly whitish, conspicuous at least on the face (Figs 2C, 3C, 4C).

**HEAD.** Wider than high in frontal view, genae quite strongly converging and vertex not high (Figs 1C, 2C, 3C, 4C). Clypeus more or less well delimited (Figs 1C, 2C, 3C, 4C). Clypeal margin symmetric, usually moderately to strongly emarginate or incised in the middle hence appearing bidentate or bilobed (Figs 1C, 3C, 4C), or virtually straight (Fig. 2C). Tentorial pits absent. Scrobal depression at least slightly visible. Gena usually not hollowed at mouth corner (Figs 1C, 3C, 4C), but sometimes with large depression (Fig. 2C). Genal carina absent. Malar sulcus present as a fine line. Eyes normal to slightly enlarged. Temples distinct, strongly convergent. Occiput without carina. Antennal insertion clearly above middle of face, sometimes very high (Figs 1C, 3C). Antennal formula 11353 in female (Figs 1G, 2G, 3G, 4G) and 11263 in male (Figs 1H, 2H, 3H, 4H). Anelli transverse. Antennal scape normal. Female antennal clava with ventral area of micropilosity confined to distal segment, apex in both sexes more or less pointed, with a spicula or small terminal process (Figs 1H, 2G, 2H, 3H) or without (Figs 1G, 3G, 4G, 4H). Mandibles 4:3, normal (Fig. 4C) or slightly to distinctly enlarged (Figs 1C, 2C, 3C).

**MESOSOMA.** Convex. Pronotum short conical. Pronotal collar with anterior margin rounded, angled or very finely carinate. Mesoscutum short. Notauli incomplete, superficial. Axillae slightly advanced. Mesoscutum separated from scutellum by rather deep groove (Figs 1D, 4D). Scutellum convex. Frenal line absent. Dorsellum usually very short. Propodeum (Figs 1D, 2D, 3D, 4D) much narrower laterally

**Table 1.** Comparison among previously described species of *Ezgia* Koçak & Kemal, 2008 and *Habritella* Girault & Dodd, 1915 and the new species.

Morphological feature/ Species	Presence of claval spicula or small terminal process	Enlarged gastral tergites (females)	Medially incised or emarginate gastral tergites (females)
<i>Ezgia stylifera</i> (Bouček, 1988)	in females (males unknown)	no	no
<i>Habritella graciliventris</i> Girault & Dodd, 1915	no	gt3	gt2
<i>Habritella africana</i> sp. nov.	in males	gt4	no
<i>Habritella mandibulata</i> sp. nov.	in females and males	no	no
<i>Habritella noyesi</i> sp. nov.	in males	no	gt1, gt3
<i>Habritella viridifrons</i> sp. nov.	no	no	no

than medially. Propodeal plicae sinuate and reaching nuchal sides. Median carina and costula absent. Nucha large, with almost parallel sides. Callus sparsely setose. Propodeal hind corners not prominent. Propodeal spiracles large, elongate, close to metanotum. Prepectus not carinate, about as long as tegula. Mesopleuron partly smooth. Mesosternum without transverse carina. Metapleuron with a distinct groove in posterior part. Legs slender. Hind coxa dorsally bare, fairly long. Hind tibia with one spur. Wings hyaline. Fore wing (Figs 1F, 2F, 3F, 4F) extensively bare basally. Ventral side of fore wing with at least one row of admarginal setae under marginal vein. Marginal vein slender. Stigmal vein shorter than both marginal and postmarginal veins. Stigma usually strongly capitate (Figs 2F, 3F, 4F), sometimes only moderately so (Fig. 1F). Postmarginal vein shorter than marginal vein.

**METASOMA.** Lanceolate in females, much narrower than mesosoma and longer than head plus mesosoma (Figs 1E, 2E, 3E, 4E). Short petiole concealed under nucha. All gastral tergites normal (Figs 2E, 4E); or one or more of gt1, 2 or 3 with their posterior margin medially emarginate or incised (Fig. 3E); or gt3 or 4 distinctly enlarged (Fig. 1E). Gt2 always much shorter than either gt1 or gt3. Cercal setae equal. Ovipositor sheaths short but visible in dorsal view.

### Taxonomic comments

Bouček (1988: 235) separated females of *Ezgia* (= *Cairnsia*) from females of *Habritella* (males previously unknown for both genera) as follows:

“[...] Clava with asymmetrically placed awl-like spicula [...]; gastral tergites normal, dorsally collapsing, the third not larger than the fourth tergite ...[...] *Cairnsia* gen. n.

– Clava normal, without spicula [...]; third tergite in female convex and greatly enlarged [...] so that it covers more than a third of gastral surface, margin of second tergite deeply excised in middle but the first angulately produced ...[...] *Habritella* Girault & Dodd”.

In Table 1 the previously described species of *Ezgia* and *Habritella*, as well as the newly described species are compared regarding the characters listed above.

Table 1 shows these characters are not constant within the two genera and are grouped in various combinations within the six known species. Moreover, many other morphological features are shared by all these species and are rather uniform: the shape of clypeus (except in *H. mandibulata* sp. nov.); the level of toruli; the antennal formula and shape of funiculars; the shape of propodeum; the venation; and the general shape of metasoma. At the same time, the claval spicula present in the females of *Ezgia*

*stylifera* (Bouček 1988: 486, fig. 735) and *H. mandibulata* (Fig. 2G) is much more developed than the small terminal process found in the males of *H. africana* sp. nov., *H. mandibulata* and *H. noyesi* sp. nov. The latter structure is somewhat similar to the ‘terminal button’ which is commonly found in many pteromalids. However, in these species this structure is more developed and narrower than a typical ‘terminal button’. As it is practically impossible to separate the above mentioned six species in two distinct genera due to the overlap of characters, *Ezgia* is regarded as a synonym of *Habritella*, syn. nov., and consequently its only species is transferred to the latter genus as *Habritella stylifera* comb. nov.

### Key to the Afrotropical species of *Habritella*

1. *Both sexes*: gena hollowed near mouth corner (Fig. 2C); clypeus reticulate, well delimited laterally (Fig. 2C); clypeal margin without any median incision or emargination (Fig. 2C); mandibles very large (Fig. 2C); scape not reaching level of vertex (Fig. 2C). *Female*: claval apex with spicula (Fig. 2F); all gastral tergites normally developed, each with posterior margin entire (Fig. 2E). *Male*: clava with short spike-like terminal process (Figs 2H); metasoma brown, with a dorsal pale spot ..... *H. mandibulata* sp. nov.
- *Both sexes*: gena not hollowed near mouth corner (Figs 1C, 3C, 4C); clypeus striate, not well delimited (Figs 1C, 3C, 4C); clypeal margin with median incision or emargination (Figs 1C, 3C, 4C); mandibles smaller than in alternative (Figs 1C, 3C, 4C); scape reaching above level of vertex (Figs 1C, 3C, 4C). *Female*: claval apex without spicula (Figs 1F, 3F, 4F); part of gastral tergites usually either enlarged or with posterior margin incised or emarginated (Figs 1E, 3E). *Male*: clava sometimes without spike-like terminal process (Fig. 4H); metasoma variable ..... 2
2. *Both sexes*: clypeal margin with small lobes separated by shallow emargination (Fig. 4C); scutellum shorter than mesoscutum; toruli above centre of face but less high than in alternative (Fig. 4C); fore wing (Fig. 4F) densely setose, speculum smaller than in alternative, not reaching stigmal vein thus admarginal setae on ventral side of wing not easily visible; stigma very large, its height at least equal to minimum distance from stigma to PMV; fore and mid coxae not metallic (Fig. 4A–B). *Female*: all gastral tergites normally developed, each with its posterior margin entire (Fig. 4E); head in frontal view with contrasting colours, bright green below toruli and blackish above (Fig. 4C); metasoma mainly brown (Fig. 4E). *Male*: clava without terminal spike-like terminal process (Fig. 3H); metasoma brown, with a dorsal pale spot ..... *E. viridifrons* sp. nov.
- *Both sexes*: clypeal margin with two large lobes separated by deep incision (Figs 1C, 3C); scutellum longer than mesoscutum; toruli much higher than centre of face (Figs 1C, 3C); fore wing (Figs 1F, 3F) sparsely setose, speculum large, reaching stigmal vein thus making admarginal setae on ventral side of wing easily visible; stigma sometimes smaller; all coxae metallic (Figs 1A–B, 3A). *Female*: at least one gastral tergite with posterior margin medially emarginate or incised, or distinctly enlarged (Figs 1E, 3E); head in frontal view without contrasting colours, gradually becoming darker above toruli (Figs 1C, 3C); metasoma bluish or violet (Figs 1E, 3E). *Male*: clava with short spike-like terminal process (Figs 1H, 3H); metasoma dark, without a dorsal pale spot ..... 3
3. *Both sexes*: pronotal collar with anterior margin very finely carinate (Fig. 1A, G); hind femur dark, with some metallic reflections (Fig. 1A–B); stigma not very large, its height less than minimum distance from stigma to PMV (Fig. 1F). *Female*: gt1 and gt3 with their posterior margin not emarginate or incised (Fig. 1E); gt4 distinctly enlarged, much larger than gt3 (Fig. 1E); metasoma mostly violet (Fig. 1E); body setation mostly light brown, not conspicuous (Fig. 1A, C). *Male*: flagellar setae erect (Fig. 1H) ..... *H. africana* sp. nov.
- *Both sexes*: pronotal collar with anterior margin rounded, not carinate (Fig. 3A–B); hind femur yellowish-brown, without metallic reflections (Fig. 3A–B); stigma very large, its height about equal to minimum distance from stigma to PMV (Fig. 3F). *Female*: gt1 and gt3 with posterior margin emarginate or incised, respectively (Fig. 3E); gt4 not distinctly enlarged, not larger than gt3 (Fig. 3E); metasoma mostly blue (Fig. 3E); body setation white, conspicuous (Fig. 3A, C). *Male*: flagellar setae depressed (Fig. 3H) ..... *H. noyesi* sp. nov.

*Habritella africana* sp. nov.

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Fig. 1

**Diagnosis**

**Both sexes**

Gena not hollowed at mouth corner (Fig. 1C). Clypeus striate, not well delimited. Clypeal margin with two large lobes separated by deep incision (Fig. 1C). Mandibles not unusually large (Fig. 1C). Pronotal collar with anterior margin very finely carinate (Fig. 1A, G). Scutellum longer than mesoscutum. Toruli much higher than centre of face (Fig. 1C). Fore wing (Fig. 1F) sparsely setose, speculum large, reaching stigmal vein thus making admarginal setae on ventral side of wing easily visible. Stigma not very large, its height less than minimum distance from stigma to PMV. All coxae metallic (Fig. 1A–B). Hind femur dark, with metallic reflections (Fig. 1A–B).

**Female**

Claval apex without spicula (Fig. 1G). Metasoma (Fig. 1E) with gt1 and gt3 with their posterior margin not emarginate or incised; gt4 distinctly enlarged, much larger than gt3 (Fig. 1E). Head in frontal view without contrasting colours, gradually becoming darker above toruli (Fig. 1C). Metasoma mostly violet (Fig. 1E). Body setation mostly light brown, not conspicuous (Fig. 1A–C).

**Male**

Flagellar setae erect (Fig. 1H). Clava with very short spike-like terminal process (Fig. 1H). Metasoma dark, without a dorsal pale spot.

**Etymology**

The specific epithet refers to this being the first record of the genus in the Afrotropical region.

**Type material**

**Holotype**

TOGO • ♀; “Togo: 10 km NW Kpaliné, 17.xii.1988, J. S. Noyes”; NHMUK.

**Allotype**

TOGO • ♂; same collection data as for holotype; NHMUK.

**Additional paratype**

TOGO • 1 ♀; same collection data as for holotype; NHMUK.

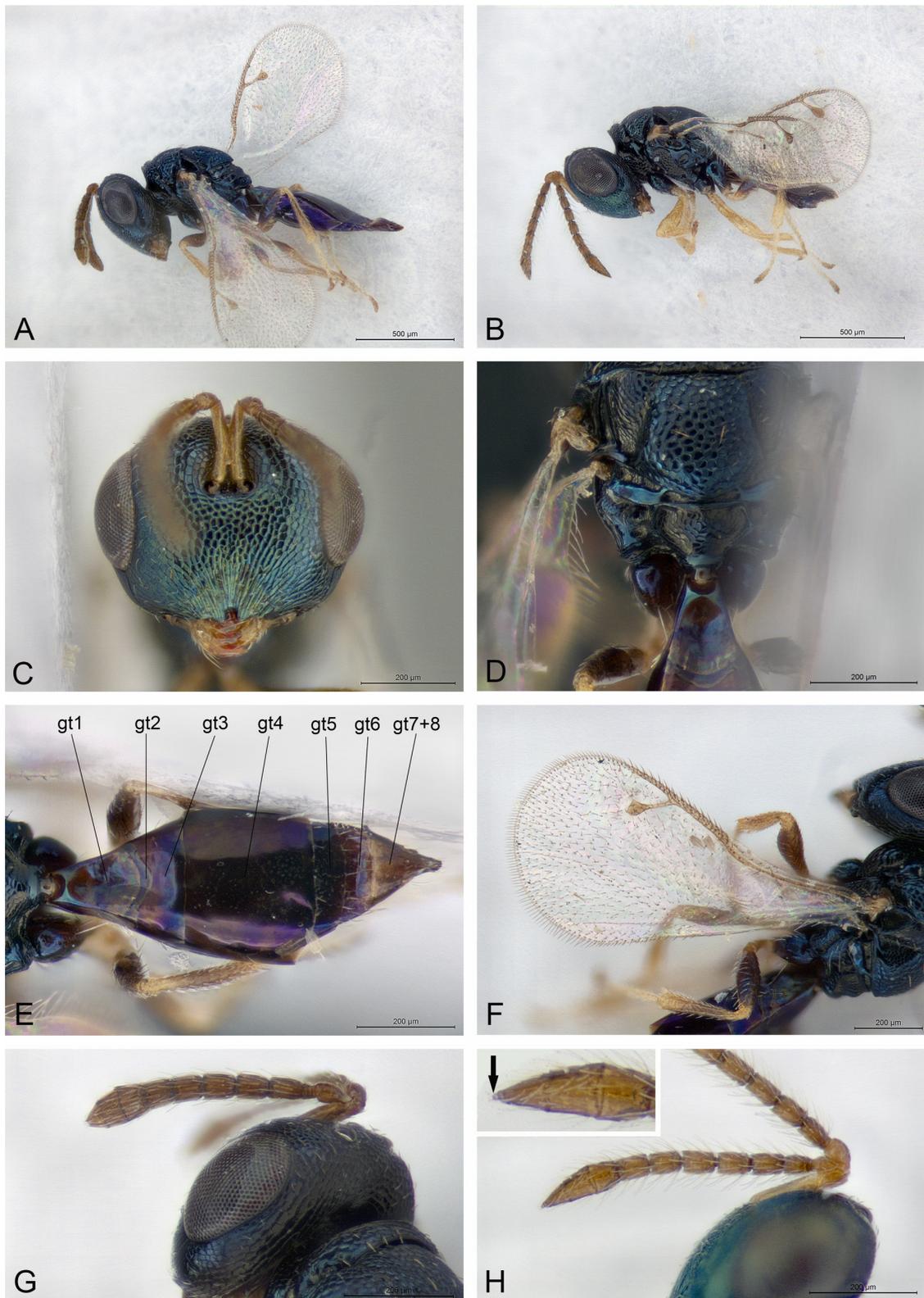
**Description**

**Female holotype**

BODY LENGTH. 1.4 mm.

COLOUR. Head (Fig. 1C) blue green becoming bluish-black above toruli, including vertex and occiput. Eyes and ocelli dark brown. Antenna (Fig. 1G) reddish-brown, pedicel and flagellum dorsally slightly darker. Mandibles reddish-brown, teeth darker. Mesosoma bluish-black (Fig. 1A, D). Coxae as mesosoma. Trochanters, tibiae and tarsi except distal segment reddish-brown. Fore and mid femora brown, hind femur dark brown, with metallic reflections (Fig. 1A). Distal tarsal segment brown. Wings hyaline (Fig. 1F). Tegulae and venation brown. Metasoma mostly violet, with some blue reflections (Fig. 1E). Body setation mostly light brown, not conspicuous (Fig. 1A, C).

HEAD. Reticulate except clypeal region. Gena not hollowed at mouth corner (Fig. 1C). Clypeus not well delimited, striate. Clypeal margin with two large lobes separated by deep incision (Fig. 1C). Mandibles



**Fig. 1.** *Habitella africana* sp. nov. **A, C–G.** Holotype, ♀ (NHMUK). **B, H.** Allotype, ♂ (NHMUK). **A.** Habitus in lateral view. **B.** Habitus in lateral view. **C.** Head in frontal view. **D.** Detail of mesosoma in dorsal view. **E.** Metasoma in dorsal view. **F.** Fore wing in dorsal view. **G.** Antenna in lateral view. **H.** Antenna in lateral view (inset: detail of clava indicating the terminal process).

not unusually large (Fig. 1C). Toruli much higher than centre of face. Scrobes fairly deep. Scape reaching above level of vertex (Fig. 1C). Anelli transverse, all five funicular segments longer than wide, with moderately long setae. Claval apex without spicula (Fig. 1G). Relative measurements: head L: 25, W: 52, H: 42; eye H: 24, L: 16; POL: 11; OOL: 11; malar space: 11; scape L: 18, W: 2.5; pedicel L: 5.5, W: 3.5; pedicel plus flagellum L: 48; fu1 L: 6, W: 4.5; fu5 L: 5.5, W: 4.5; clava L: 13, W: 6.

MESOSOMA. Pronotal collar uniformly reticulate, anterior margin very finely carinate (Fig. 1A, G). Mesoscutum reticulate. Notauli barely visible among reticulation, occupying less than half the length of mesoscutum. Scutellum as coarsely reticulate as mesoscutum, frenal area not delimited (Fig. 1D). Dorsellum very short, groove-like (Fig. 1D). Propodeal median area more superficially reticulate than scutellum, laterally delimited by sinuate plicae reaching nucha. Posterior part of nucha mainly smooth (Fig. 1D). Central part of prepectus finely reticulate. Mesopleuron (Fig. 1B) with two reticulate areas: a large elongate one in anterior part, and an oval, much smaller one, in posterior part; adjacent areas smooth. Metapleuron finely reticulate, separated from propodeal callus by deep groove. Fore wing (Fig. 1F) with basal cell, including basal vein, bare. Costal cell with an irregular line of setae in distal half. Disc sparsely setose. Speculum large, gradually narrowing and reaching stigmal vein. Admarginal setae on ventral side of wing in one regular row. Stigmal height much shorter than minimum distance from stigma to PMV (Fig. 1F). Relative measurements: mesosoma L: 51, W: 40, H: 34; mesoscutum L: 17, W: 40; scutellum L: 22, W: 21; propodeum L: 10; fore wing L: 100, W: 48; MV: 20; SV: 11; PMV: 16; stigma height: 4; distance from stigma to PMV: 6.

METASOMA (Fig. 1E). Acute at both ends, not collapsing dorsally. Gt1 greatly produced posteriorly, its hind margin entire. Gt3 with posterior margin entire. Gt4 greatly enlarged, much larger than gt3. Relative measurements: metasoma L: 74, W: 30; gt1 L: 18, W: 13; gt2 L: 2, W: 15; gt3 L: 7, W: 25; gt4 L: 24, W: 30; gt5 L: 6, W: 25; gt6 L: 5, W: 20; syntergum L: 10, W: 14.

#### **Male allotype**

Differs from the female holotype mainly in the following. Body length: 1.25 mm. Metasoma uniformly dark brown, with some blue-green metallic reflections mainly on gt1. Antenna 11263. Flagellar setae slightly longer, denser and more erect (Fig. 1H). Clava with very short spike-like terminal process (Fig. 1H). MV 1.5 × SV. Stigma larger (Fig. 1B). Metasoma much narrower anteriorly than posteriorly, distinctly shorter than head plus mesosoma, distal tergites partly retracted. None of the tergites enlarged. Metasoma L: 52, W: 25.

#### **Variation**

##### **Females**

Body length: 1.4–1.6 mm. POL 1.0–1.1 × OOL. MV 1.6–1.8 × SV. Metasoma length 2.4–2.5 × width.

##### **Distribution**

Togo.

##### **Hosts**

Unknown.

#### ***Habritella mandibulata* sp. nov.**

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Fig. 2

#### **Diagnosis**

##### **Both sexes**

Gena with large hollow at mouth corner (Fig. 2C). Clypeus reticulate, well delimited laterally. Clypeal margin without any median incision (Fig. 2C). Mandibles very large (Fig. 2C). Pronotal collar with

anterior margin rounded, not carinate (Fig. 2A). Scutellum about equal to mesoscutum. Toruli above centre of face, although not very high (Fig. 2C). Fore wing (Fig. 2F) densely setose, speculum smaller, not reaching stigmal vein thus admarginal setae on ventral side of wing not easily visible. Stigma very large, its height at least equal to minimum distance from stigma to PMV. Fore and mid coxae not metallic (Fig. 2A–B). Hind femur yellowish-brown.

#### Female

Clava with a terminal spicula (Fig. 2G). All gastral tergites normally developed, each with posterior margin entire (Fig. 2E). Head in frontal view without contrasting colours, gradually becoming darker above toruli (Fig. 2C). Metasoma mostly dark brown (Fig. 2E). Body setation dirty white, conspicuous (Fig. 2A, C).

#### Male

Flagellar setae erect (Fig. 2H). Clava with very short spike-like terminal process (Fig. 2H). Metasoma dark, with a dorsal pale spot.

#### Etymology

The specific epithet is an indication to the unusually large mandibles of this species.

#### Type material

##### Holotype

SOUTH AFRICA • ♀; “S. Africa. R. E. Turner. Brit. Mus. 1921-476”; “Mossel Bay, Cape Province. 1-14.xi.1921”; NHMUK.

##### Allotype

SOUTH AFRICA • ♂; “S. Africa. R. E. Turner. Brit. Mus. 1922-67”; “Mossel Bay, Cape Province. January 1922”; NHMUK.

##### Additional paratypes

SOUTH AFRICA • 1 ♀; same collection data as for holotype; NHMUK • 1 ♀; “S. Africa. R. E. Turner. Brit. Mus. 1922-2”; “Mossel Bay, Cape Province. 18-30.xi.1921”; “*Stiloclava* nov. gen.” [Bouček’s handwriting]; NHMUK.

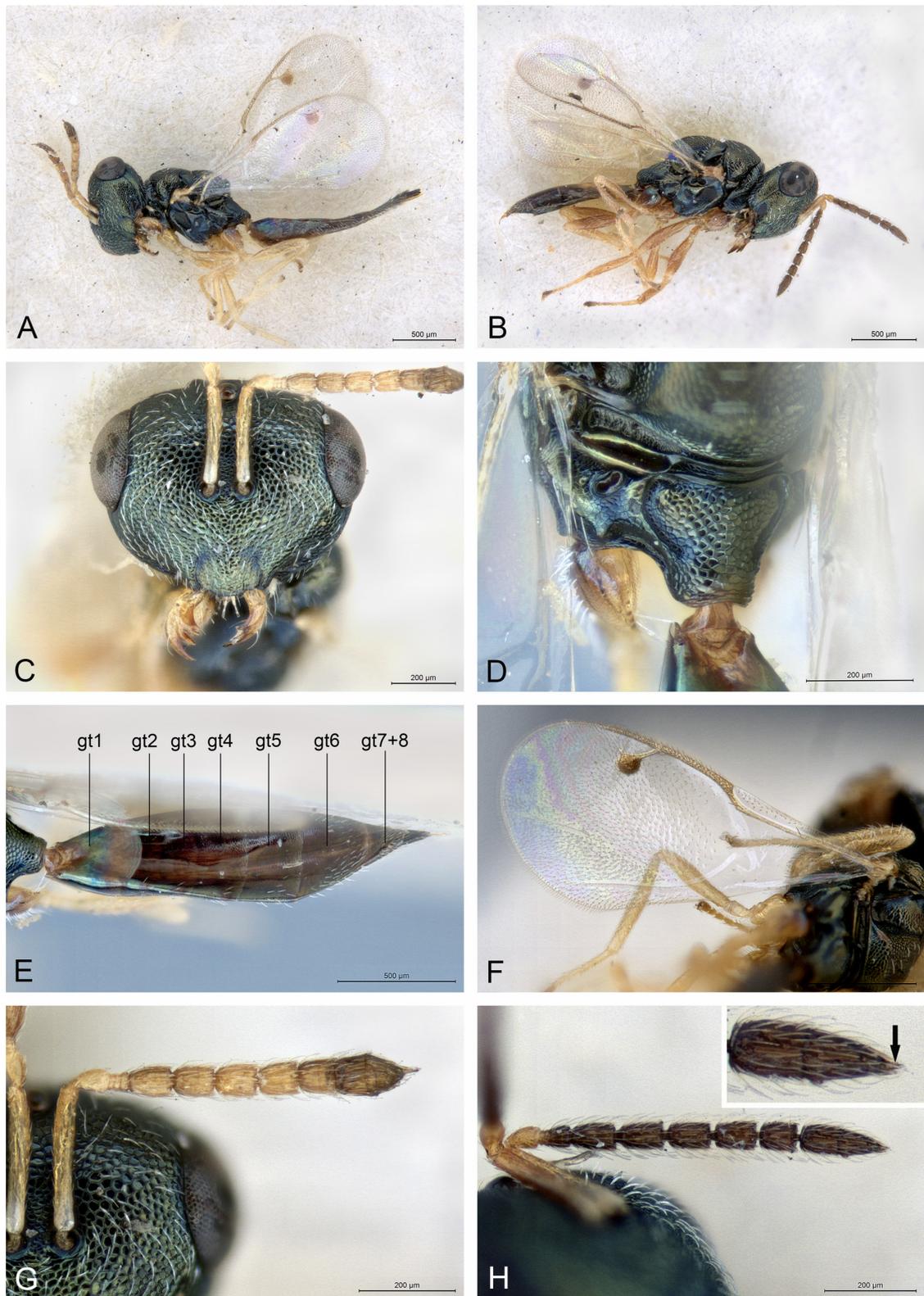
#### Description

##### Female holotype

BODY LENGTH. 2.3 mm.

COLOUR. Head (Fig. 2C) olive green getting blackish above toruli, including vertex and occiput. Eyes and ocelli dark brown. Antenna (Fig. 2G) with scape reddish-brown except whitish base, pedicel and flagellum reddish-brown except dark brown clava. Mandibles reddish-brown, teeth darker. Mesosoma dorsally dark olive green, laterally bluish-black (Fig. 2A, D). Coxae reddish-brown, hind coxa slightly darker on dorsal side. Trochanters, femora, tibiae and tarsi reddish-brown, except distal tarsal segment darker (Fig. 2A). Wings hyaline (Fig. 2F). Tegula reddish brown, venation brown. Metasoma dark brown, with some bluish reflections on gt1 (Fig. 1E). Body setation dirty white, conspicuous (Fig. 2A, C).

HEAD. Reticulate except clypeal region. Gena hollowed at mouth corner (Fig. 2C). Clypeus reticulate, not well delimited in upper part, but very well delimited laterally. Clypeal margin medially slightly produced and virtually straight (Fig. 2C). Mandibles very large, 3:3 (Fig. 2C). Toruli higher than centre of face. Scrobes fairly deep. Scape reaching level of vertex (Fig. 2C). Anelli transverse, all five funicular segments longer than wide, with moderately long setae. Claval apex with spicula (Fig. 2G). Relative



**Fig. 2.** *Habritella mandibulata* sp. nov. **A, C, G.** Holotype, ♀ (NHMUK). **B, H.** Allotype, ♂ (NHMUK). **D–F.** Paratype, ♀ (NHMUK). **A.** Habitus in lateral view. **B.** Habitus in lateral view. **C.** Head in frontal view. **D.** Detail of mesosoma in dorsal view. **E.** Metasoma in dorsal view. **F.** Fore wing in dorsal view. **G.** Antenna in lateral view. **H.** Antenna in lateral view (inset: detail of clava indicating the terminal process).

measurements: head L: 26, W: 62, H: 50; eye H: 24, L: 19; POL: 10; OOL: 13; malar space: 21; scape L: 22, W: 4; pedicel L: 5.5, W: 3.5; pedicel plus flagellum L: 55; fu1 L: 6.5, W: 5; fu5 L: 5, W: 5; clava L (without spicula): 11, W: 6.5.

**MESOSOMA.** Pronotal collar uniformly reticulate, anterior margin rounded (Fig. 2A). Mesoscutum reticulate. Notauli clearly visible, occupying about half the length of mesoscutum. Scutellum as coarsely reticulate as mesoscutum, frenal area not delimited (Fig. 2D). Dorsellum very short, groove-like (Fig. 2D). Propodeal median area about as coarsely reticulate as scutellum, laterally delimited by sinuate plicae reaching nucha. Posterior part of nucha reticulate (Fig. 2D). Central part of prepectus finely reticulate. Mesopleuron finely reticulate except for smooth triangular area under hind wing base (Fig. 2A). Mesepisternum with small depression before mid coxa. Metapleuron finely reticulate, with small depression in lower part, separated from propodeal callus by deep groove. Fore wing (Fig. 2F) with basal cell, including basal vein, bare. Costal cell with two irregular lines of setae. Disc densely setose. Speculum moderate, reaching to proximal end of marginal vein. Admarginal setae on ventral side of wing in three irregular rows under marginal vein. Stigmal height much longer than minimum distance from stigma to PMV (Fig. 2F). Relative measurements: mesosoma L: 65, W: 43, H: 42; mesoscutum L: 23, W: 43; scutellum L: 25, W: 26; propodeum L: 15; fore wing L: 127, W: 57; MV: 30; SV: 14; PMV: 19; stigma height: 8; distance from stigma to PMV: 5.5.

**METASOMA** (Fig. 2E). Lanceolate, dorsally collapsing. Gt1 slightly produced posteriorly, none of the other gastral tergites enlarged or medially incised. Relative measurements: metasoma L: 100, W: 39; gt1 L: 22, W: 30; gt2 L: 6, W: 36; gt3 L: 12, W: 39; gt4 L: 10, W: 38; gt5 L: 15, W: 34; gt6 L: 18, W: 26; syntergum L: 11, W: 11.

#### **Male allotype**

Differs from the female holotype mainly in the following. Body length: 2.1 mm. Metasoma with pale spot in basal half. Antenna 11263, fu1 distinctly smaller than fu2. Flagellar setae longer, denser and more erect (Fig. 2H). Clava with very short spike-like terminal process (Fig. 2H). Metasoma oval, distinctly shorter than head plus mesosoma, distal tergites partly retracted. Metasoma L: 70, W: 32.

#### **Variation**

##### **Females**

Body length: 2.30–2.75 mm. MV 2.10–2.25 × SV. Metasoma length 2.5–3.5 × width. The metasoma is slightly distorted in the holotype hence appearing wider than normal.

#### **Distribution**

South Africa.

#### **Hosts**

Unknown.

#### ***Habritella noyesi* sp. nov.**

[urn:lsid:zoobank.org:act:3F5CF746-5DF6-4236-8645-2BF948713EC7](https://doi.org/10.3896/BI.2023.746.1)

Fig. 3

#### **Diagnosis**

##### **Both sexes**

Gena not hollowed at mouth corner (Fig. 3C). Clypeus striate, not well delimited. Clypeal margin with two large lobes separated by deep incision (Fig. 3C). Mandibles not unusually large (Fig. 3C). Pronotal collar with anterior margin rounded, not carinate (Fig. 3A–B). Scutellum longer than mesoscutum.

Toruli much higher than centre of face (Fig. 3C). Fore wing (Fig. 3F) sparsely setose, speculum large, reaching stigmal vein thus making admarginal setae on ventral side of wing easily visible. Stigma very large, its height about equal to minimum distance from stigma to PMV. All coxae metallic (Fig. 3A). Hind femur yellowish-brown, without metallic reflections (Fig. 3A–B).

#### **Female**

Claval apex without spicula (Fig. 3G). Metasoma (Fig. 3E) with gt1 and gt3 with posterior margin emarginate or incised, respectively; gt4 distinctly enlarged, much larger than gt3. Head in frontal view without contrasting colours, gradually becoming darker above toruli (Fig. 3C). Metasoma mostly blue (Fig. 3E). Body setation white, conspicuous (Fig. 3A, C).

#### **Male**

Flagellar setae depressed. Clava with short spike-like terminal process (Fig. 3H). Metasoma dark, without a dorsal pale spot.

#### **Etymology**

This species is named after the outstanding chalcidologist John Noyes, the collector of the type specimens.

#### **Type material**

##### **Holotype**

TOGO • ♀; “Togo: 10 km NW Kpaliné, 17.xii.1988, J. S. Noyes”; NHMUK.

##### **Allotype**

TOGO • ♂; same collection data as for holotype; NHMUK.

##### **Additional paratypes**

TOGO • 6 ♀♀, 1 ♂; same collection data as for holotype; NHMUK.

#### **Description**

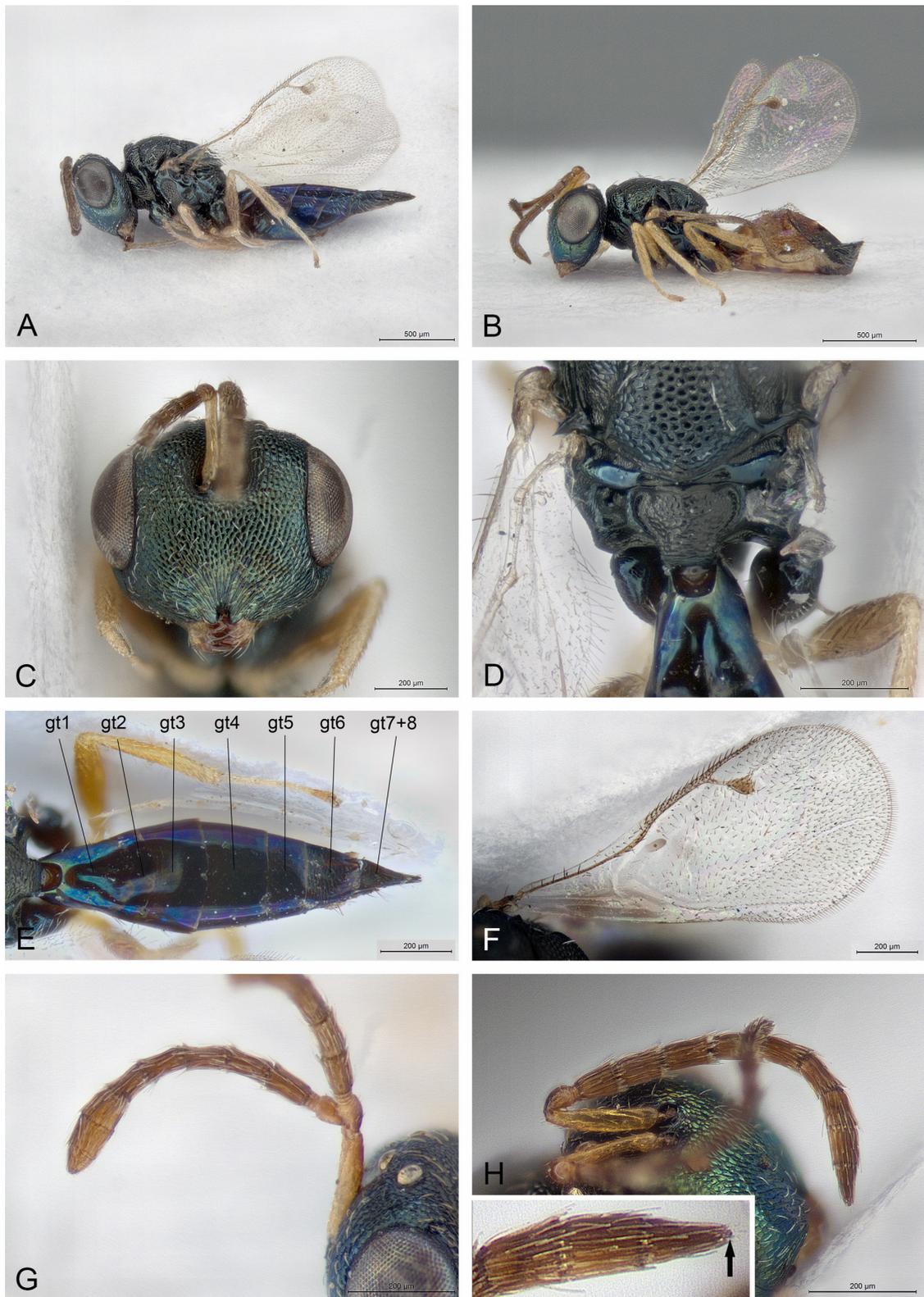
##### **Female holotype**

BODY LENGTH. 2.1 mm.

COLOUR. Head (Fig. 3C) green becoming dark bluish above toruli, including vertex and occiput. Eyes dark brown, ocelli brown. Scape, pedicel and anelli reddish-brown, funicle and clava brown (Fig. 3G). Mandibles reddish-brown, teeth darker. Mesosoma bluish-green (Fig. 3A, D). Coxae as mesosoma. Trochanters, tibiae and tarsi except distal segment reddish-brown. Femora and distal tarsal segment darker (Fig. 3A). Wings hyaline (Fig. 3F). Tegulae and venation reddish-brown. Metasoma steel blue (Fig. 3E). Body setation white, conspicuous (Fig. 3A, C).

HEAD. Reticulate except clypeal region. Gena not hollowed at mouth corner (Fig. 3C). Clypeus not well delimited, striate. Clypeal margin with two large lobes separated by deep incision (Fig. 3C). Mandibles not unusually large (Fig. 3C). Toruli much higher than centre of face. Scrobes fairly deep. Scape reaching above level of vertex (Fig. 3C). Anelli transverse, all five funicular segments longer than wide, with moderately long setae. Claval apex without spicula (Fig. 3G). Relative measurements: head L: 35, W: 68, H: 50; eye H: 32, L: 25; POL: 15; OOL: 11; malar space: 15; scape L: 23, W: 5; pedicel L: 6, W: 4.5; pedicel plus flagellum L: 70; fu1 L: 10, W: 5; fu5 L: 8, W: 5; clava L: 17, W: 7.

MESOSOMA. Pronotal collar uniformly reticulate, anterior margin rounded off into vertical neck (Fig. 3A). Mesoscutum reticulate. Notauli barely visible among reticulation, occupying about half the length of mesoscutum. Scutellum as coarsely reticulate as mesoscutum, frenal area not delimited (Fig. 3D).



**Fig. 3.** *Habritella noyesi* sp. nov. **A.** Holotype, ♀ (NHMUK). **B, H.** Allotype, ♂ (NHMUK). **C–G.** Paratype, ♀ (NHMUK). **A.** Habitus in lateral view. **B.** Habitus in lateral view. **C.** Head in frontal view. **D.** Detail of mesosoma in dorsal view. **E.** Metasoma in dorsal view. **F.** Fore wing in dorsal view. **G.** Antenna in lateral view. **H.** Antenna in lateral view (inset: detail of clava indicating the terminal process).

Dorsellum very short, groove-like (Fig. 3D). Propodeal median area more superficially reticulate than scutellum, laterally delimited by sinuate plicae reaching nucha. Posterior part of nucha finely striate (Fig. 3D). Central part of prepectus finely reticulate. Mesopleuron with two reticulate areas: a large elongate one in anterior part, and an oval, much smaller one, in posterior part; adjacent areas smooth (Fig. 3A). Metapleuron finely reticulate, separated from propodeal callus by deep groove. Fore wing (Fig. 3F) with basal cell, including basal vein, bare except one or two scattered setae. Costal cell with an irregular line of setae in distal half. Disc sparsely setose. Speculum large, gradually narrowing and reaching stigmal vein. Admarginal setae on ventral side of wing in one irregular row. Stigmal height as long as distance from stigma to PMV (Fig. 3F). Relative measurements: mesosoma L: 70, W: 55, H: 47; mesoscutum L: 26, W: 55; scutellum L: 30, W: 30; propodeum L: 16; fore wing L: 130, W: 65; MV: 27; SV: 15; PMV: 20; stigma H: 7; distance from stigma to PMV: 7.

METASOMA (Fig. 3E). Acute at both ends, slightly collapsing dorsally. Gt1 greatly produced posteriorly, its hind margin medially emarginate. Gt3 with posterior margin medially incised. Gt4 not unusually enlarged, not larger than gt3. Relative measurements: metasoma L: 110, W: 39; gt1 L: 22, W: 25; gt2 L: 9, W: 31; gt3 L: 15, W: 39; gt4 L: 15, W: 37; gt5 L: 12, W: 31; gt6 L: 15, W: 21; syntergum L: 14, W: 5.

#### **Male allotype**

Differs from the female holotype mainly in the following. Body length: 1.5 mm. Metasoma uniformly dark brown, with some blue-green metallic reflections mainly on gt1. Body setation mostly darker, less conspicuous. Antenna 11263. Flagellar setae slightly denser, but not more erect than those of the female (Fig. 3H). Clava with short spike-like terminal process (Fig. 3H). MV  $1.6 \times$  SV. Metasoma much narrower anteriorly than posteriorly, distinctly shorter than head plus mesosoma, distal tergites partly retracted. Posterior margins of all tergites virtually straight. Metasoma L: 73, W: 22.

#### **Variation**

##### **Females**

Body length: 1.75–2.10 mm. Hind femur from yellowish to yellowish-brown. Metasoma sometimes with violet reflections. POL  $1.2\text{--}1.4 \times$  OOL. MV  $1.6\text{--}1.8 \times$  SV. Metasoma length  $2.8\text{--}3.5 \times$  width.

##### **Males**

Body length: 1.2–1.5 mm. Hind femur from yellowish to yellowish-brown. Shape and length of metasoma variable according to degree of collapsation.

#### **Distribution**

Togo.

#### **Hosts**

Unknown.

*Habritella viridifrons* sp. nov.

[urn:lsid:zoobank.org:act:21C5C9E3-43B1-4E8D-B554-ED451B1CD633](https://doi.org/10.21203/rs.3.rs-1234567/v1)

Fig. 4

#### **Diagnosis**

##### **Both sexes**

Gena not hollowed at mouth corner (Fig. 4C). Clypeus striate, not well delimited. Clypeal margin with small lobes separated by shallow emargination (Fig. 4C). Mandibles not unusually large (Fig. 4C). Pronotal collar with anterior margin slightly raised but not carinate. Scutellum shorter than mesoscutum. Toruli above centre of face, although not very high (Fig. 4C). Fore wing (Fig. 4F) densely setose,

speculum smaller, not reaching stigmal vein thus admarginal setae on ventral side of wing not easily visible. Stigma very large, its height at least equal to minimum distance from stigma to PMV. Fore and mid coxae not metallic (Fig. 4A–B). Hind femur yellowish-brown.

### Female

Claval apex without spicula (Fig. 4G). Metasoma with all gastral tergites normally developed, each with its posterior margin entire (Fig. 4E). Head in frontal view with contrasting colours, bright green below toruli and blackish above (Fig. 4C). Metasoma mainly brown (Fig. 4E). Body setation light brown to whitish, not conspicuous except on the head (Fig. 4C).

### Male

Flagellar setae erect. Clava without spike-like terminal process (Fig. 4H). Metasoma brown, with a dorsal pale spot.

### Material examined

#### Holotype

D.R. CONGO • ♀; “Congo Belge, P. N. G., Miss. H. De Saeger, II/hd/9, 24-vi-1952, H. De Saeger. 3669”; RMCA.

#### Allotype

D.R. CONGO • ♂; same collection data as for holotype; RMCA.

#### Additional paratypes

D.R. CONGO • 15 ♀♀, 8 ♂♂; same collection data as for holotype; RMCA.

### Etymology

The specific epithet refers to the specific head colour.

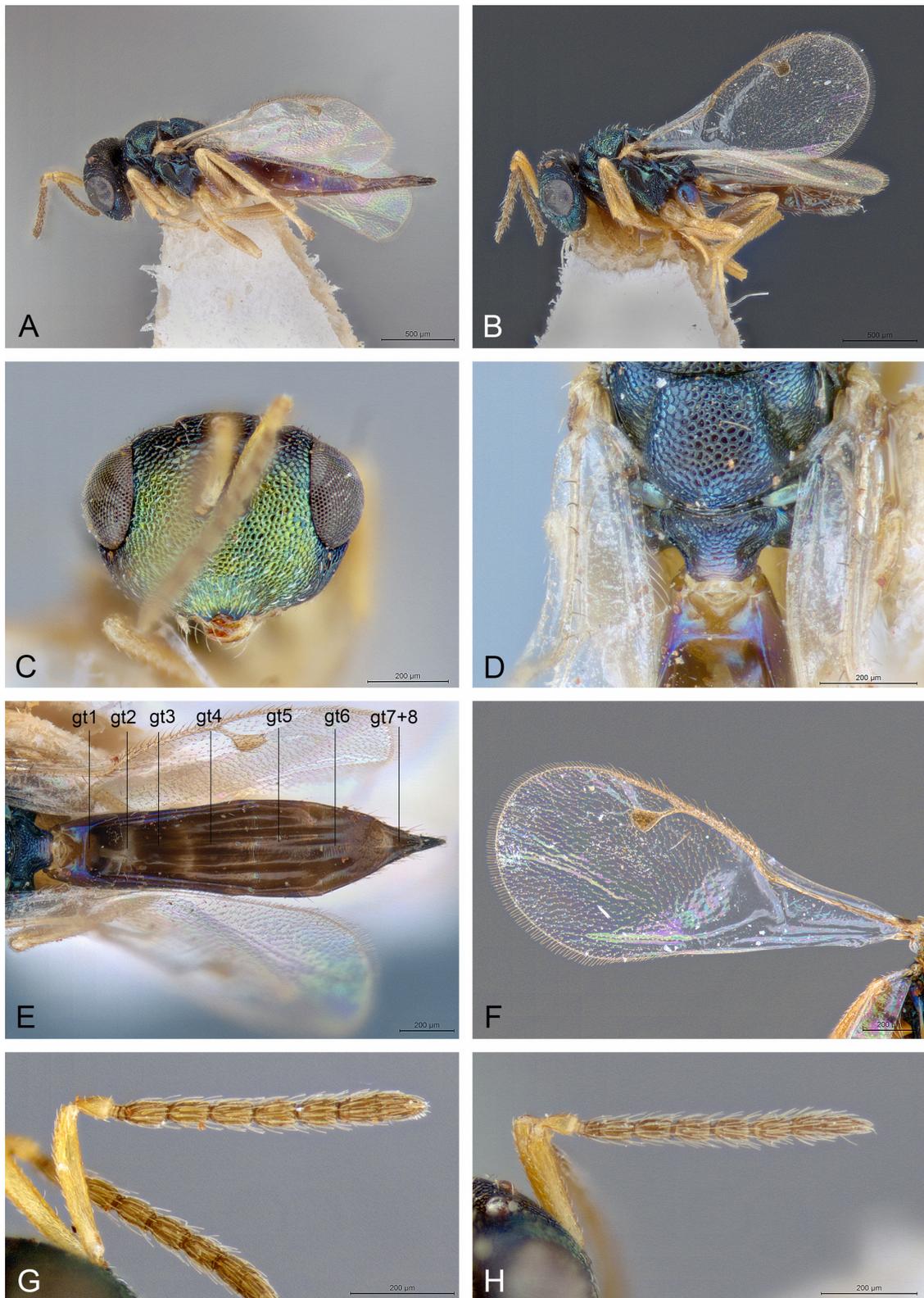
### Description

#### Female holotype

BODY LENGTH. 2.1 mm.

COLOUR. Head (Fig. 4C) bright green except bluish-black genae, scrobes, vertex and occiput. Eyes dark brown, ocelli reddish-brown. Scape and pedicel reddish-yellow, flagellum reddish-brown (Fig. 4G). Mandibles reddish-yellow, teeth reddish-brown. Mesosoma dark blue except blue green lateral corners of mesoscutum, axillae, lateral sides of scutellum, and anterior margin of mesopleuron (Fig. 4A, D). Fore and mid coxae reddish-yellow, hind coxa dorsally brown, with weak metallic reflections. Trochanters, tibiae and tarsi except distal segment reddish-yellow. Femora and last tarsal segment yellowish-brown (Fig. 4A). Wings hyaline (Fig. 4F). Tegula reddish-yellow, venation yellowish-brown. Metasoma brown, with some weak bluish reflections (Fig. 4E). Body setation light brown to whitish, not conspicuous except on lower face (Fig. 4C).

HEAD. Reticulate except clypeal region. Gena not hollowed at mouth corner (Fig. 4C). Clypeus not well delimited, striate. Clypeal margin with short lobes separated by broad emargination (Fig. 4C). Mandibles not unusually large (Fig. 4C). Toruli higher than centre of face (Fig. 4C). Scrobes shallow. Scape reaching above level of vertex (Fig. 4C). Anelli transverse, all five funicular segments longer than wide, with moderately long setae. Claval apex without spicula (Fig. 4G). Relative measurements: head L: 25, W: 62, H: 47; eye H: 25, L: 20; POL: 13; OOL: 10; malar space: 16; scape L: 26, W: 4.5; pedicel L: 7.5, W: 3.5; pedicel plus flagellum L: 61; fu1 L: 7, W: 4.5; fu5 L: 7, W: 4.5; clava L: 16, W: 5.



**Fig. 4.** *Habritella viridifrons* sp. nov. **A, C–E, G.** Holotype, ♀ (RMCA). **B, H.** Allotype, ♂ (RMCA). **F.** Paratype, ♀ (RMCA). **A.** Habitus in lateral view. **B.** Habitus in lateral view. **C.** Head in frontal view. **D.** Detail of mesosoma in dorsal view. **E.** Metasoma in dorsal view. **F.** Fore wing in dorsal view. **G.** Antenna in lateral view. **H.** Antenna in lateral view.

**MESOSOMA.** Pronotal collar with reticulation becoming shallower posteriorly, anterior margin slightly raised but not carinate. Mesoscutum reticulate. Notauli barely visible among reticulation, occupying almost half the length of mesoscutum. Scutellum as coarsely reticulate as mesoscutum, frenal area not delimited (Fig. 4D). Dorsellum very short, as a smooth band (Fig. 4D). Propodeal median area more coarsely reticulate than scutellum, laterally delimited by sinuate plicae reaching nucha. Posterior part of nucha striate reticulate (Fig. 4D). Central part of prepectus finely reticulate. Mesopleuron reticulate except for smooth triangular area under hind wing base (Fig. 4A). Mesepisternum with small depression before mid coxa. Metapleuron finely reticulate, with small depression in lower part, separated from propodeal callus by deep groove. Fore wing (Fig. 4F) with basal cell bare, basal vein with a few setae. Costal cell with two irregular lines of setae in distal half. Disc densely setose. Speculum moderate, reaching to proximal end of marginal vein. Admarginal setae on ventral side of wing in two irregular rows under marginal vein. Stigmal height slightly longer than distance from stigma to PMV (Fig. 4F). Relative measurements: mesosoma L: 66, W: 51, H: 49; mesoscutum L: 28, W: 51; scutellum L: 25, W: 29; propodeum L: 12; fore wing L: 145, W: 64; MV: 33; SV: 17; PMV: 25; stigma H: 8; distance from stigma to PMV: 7.

**METASOMA** (Fig. 4E). With sides almost parallel for about  $\frac{3}{4}$  of its length, strongly collapsing dorsally. Gt1 slightly produced posteriorly, none of the other gastral tergites enlarged or medially incised. Relative measurements: metasoma L: 133, W: 32; gt1 L: 23, W: 24; gt2 L: 3, W: 25; gt3 L: 20, W: 28; gt4 L: 20, W: 32; gt5 L: 20, W: 32; gt6 L: 20, W: 30; syntergum L: 12, W: 18.

#### **Male allotype**

Differs from the female holotype mainly in the following. Body length: 1.9 mm. Metasoma with pale spot in basal half. Antenna 11263. Flagellar setae as in female, i.e., erect, but somewhat denser (Fig. 4H). Petiole more visible. Metasoma about equal to head plus mesosoma, posterior end more blunt, distal tergites partly retracted. Metasoma L: 95, W: 38.

#### **Variation**

##### **Females**

Body length: 2.00–2.25. mm. Greenish areas of mesosoma more or less extended. Stigmal height from equal to slightly longer than maximum distance between stigma and PMV. POL  $1.3\text{--}1.5 \times$  OOL. MV  $1.8\text{--}2.0 \times$  SV. Metasoma length  $4.0\text{--}4.2 \times$  width.

##### **Males**

Body length: 1.5–2.0 mm. Greenish areas of mesosoma more or less extended. Shape and size of metasoma whitish spot variable. Shape and length of metasoma variable according to degree of collapse of gastral tergites.

#### **Distribution**

D.R. Congo.

#### **Hosts**

Unknown.

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## References

- Bouček Z. 1988. *Australasian Chalcidoidea (Hymenoptera). A Biosystematic Revision of Genera of Fourteen Families, with a Reclassification of Species*. CAB International, Wallingford, Oxon, U.K./ Cambrian News Ltd, Aberystwyth, Wales.
- Bouček Z. & Rasplus J.-Y. 1991. *Illustrated Key to West-Palaeartic genera of Pteromalidae (Hymenoptera: Chalcidoidea)*. Institut National de la Recherche Agronomique, Paris.
- Darilmaz M.C. & Özdikmen H. 2009. Replacement names for some preoccupied chalcidoid genera (Hymenoptera: Chalcidoidea). *Journal of Entomological Science* 44 (1): 37–42.  
<https://doi.org/10.18474/0749-8004-44.1.37>
- Gibson G.A.P. 1997. Morphology and terminology. In: Gibson G.A.P., Huber J.T. & Woolley J.B. (eds) *Annotated Keys to the Genera of Nearctic Chalcidoidea (Hymenoptera)*: 16–44. NRC Research Press, Ottawa.
- Girault A.A. 1915. Australian Hymenoptera Chalcidoidea – VIII. The family Miscogasteridae with descriptions of new genera and species. *Memoirs of the Queensland Museum* 4: 185–202. Available from <https://www.biodiversitylibrary.org/page/13217223> [accessed 9 Mar. 2022].
- Koçak A.Ö. & Kemal M. 2008. Nomenclatural notes on the genus group names in the order Hymenoptera (Chalcidoidea). *Miscellaneous Papers, Centre for Entomological Studies, Ankara* 143: 3–7.

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