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Front cover: *Aenictus brutus* sp. nov., head of the holotype.

Aenictus brutus sp. nov., a new species of the army ants (Hymenoptera: Formicidae: Dorylinae) from Mount Nimba Strict Nature Reserve Forest (Liberia)

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Abstract

A new army ant species is described from the Mount Nimba Strict Nature Reserve Forest and surroundings. *Aenictus brutus* **sp. nov.** is the biggest *Aenictus* found in Africa. Identification keys and high-resolution images are provided.

Keywords: *Aenictus*, Afrotropical, army ants, taxonomy, key

Introduction

Afrotropical ant taxonomy is moderate to weak (Robertson, 2000; Hita Garcia *et al*., 2013; Fisher & Bolton, 2016). Even recently revised genera are known to have dozens of to-be-described species (e.g., *Tetramorium* Mayr, 1855), and the estimate is that between one-third and half of the region's ant species are still to be described (Kiko Gómez & Peter Hawkes unpublished data). Major factors influencing these circumstances are that the region remains vastly undersampled, as evidenced by the fact that every field trip continues to provide species new to science, and the scarcity or lack of trained and supported local taxonomists.

The Mount Nimba ant fauna is treated in one of the scarce monographs on the Afrotropical fauna by Bernard (1953), who cites 193 species and subspecies (of which he described 54) belonging to 53 genera, two of them described as new in that treatment. Although the status of several of these forms has changed since its publication, it is one of the most outstanding achievements on the Afrotropical ant fauna, and is still relevant today as it is the only one covering the West African fauna.

One of the authors (TJ) conducted a field trip to the Mount Nimba Strict Nature Reserve in Liberia during October-November 2022. The area has been revealed as highly biodiverse, with circa 190 species in 48 genera collected even though the primary forest was not sampled and that samples were collected only by hand (unpublished data). Among the collected material were ants belonging to an undescribed species in the genus *Aenictus*. As the Afrotropical members of this genus were recently revised by Gómez (2022), we here describe this new species and provide an updated identification key to the species-group where the new species belongs.

Material and methods

Specimens were examined under a Leica MZ16A stereo microscope and measured at x100. Morphological terminology follows Bolton (1994) and Borowiec (2016). Type images of the new species were taken with a Leica DMC4500 camera attached to a Leica Z6 APO microscope on a motorised focus stand, to produce raw photo stacks processed to single montage images with Leica LAS X. Additional images have been modified with permission from www.antweb.org. Images were edited from originals using GIMP free software (v. 2.10.36). Current taxonomic status and taxonomic history follow Bolton (2023). Updated distributions and citations have been consulted in www.antmaps.org (Janicki *et al*., 2016).

Acronyms used for the collections

AFRC = AfriBugs Collection., Pretoria, South Africa

CSPC = Sándor Csősz Personal Collection, Budapest, Hungary

KGAC = Kiko Gómez Abal Collection. Barcelona, Spain

MNHNC = Museu Nacional de História Natural e da Ciência, Lisbon, Portugal

NHMUK = Natural History Museum, London, UK

RBINS = Royal Belgian Institute for Natural Sciences, Brussel, Belgium

Specimens examined have alphanumeric specimen codes (i.e., CASENT#, KGCOL#, being # a number), uniquely identifying the specimens for databasing purposes. All the data have been uploaded to Antweb and details can be consulted via www.antweb.org/specimen.do?code=CASENT#. KGCOL#: Kiko Gomez's unique collection number.

Measurements and indices follow Gómez (2022). All measurements are in mm.

Results

Taxonomy

Class Hexapoda Blainville, 1816
Order Hymenoptera Linnaeus, 1758
Sub-order Apocrita Gerstaecker, 1867
Infraorder Aculeata Latreille, 1802
Superfamily Vespoidea Latreille, 1802
Family Formicidae Latreille, 1809
Subfamily Dorylinae Leach, 1815

Aenictus Shuckard, 1840

Synopsis of Afrotropical species with described worker caste (Gómez (2022) for a discussion of the pragmatic exclusion of species based solely on queens or males).

asantei group

asantei Campione, Novak & Gotwald, 1983

decolor group

bidentatus Donisthorpe, 1942
decolor (Mayr, 1879)
=*batesi* Forel, 1911
villiersi Bernard, 1953

eugenii group

eugenii Emery, 1895
=*brazzai* Santschi, 1910
=*eugenii caroli* Forel, 1910
=*eugeniae v. kenyensis* Santschi, 1933
=*eugenii henrii* Santschi, 1924
mvuvii Gomez, 2022

koloi group

koloi Gomez, 2022
susanae Gomez, 2022
xegi Gomez, 2022

popeyei group

brutus sp. nov.
popeyei Gomez, 2022

rixator group

mentu Weber, 1942
rixator Emery, 1901

rotundatus group

mariae species complex
boltoni Gomez, 2022
hitai Gomez, 2022
mariae Emery, 1895
=*mariae natalensis* Emery, 1901
steindachneri Mayr, 1901

rotundatus species complex
congolensis Santschi, 1911
guineensis Santschi, 1924
jacki Gomez, 2022
nyuyi Gomez, 2022
rotundatus Mayr, 1901
=*furibundus* Arnold, 1959
=*rotundatus merwei* Santschi, 1932
ugaduwensis Gomez, 2022
weissi Santschi, 1910

Key to species in the *popeyei* group (workers)

1. Upper half of mandibles flat, square and rugulated, sometimes becoming thin and translucent close to the medial edge (Fig. 1A). Bigger size (HW 0.98-1.04) .....***brutus* sp. nov.**

– Upper half of mandibles semispherical, rounded, smooth (Fig. 1B). Smaller size (HW 0.78-0.89) .....***popeyei*** Gomez, 2022

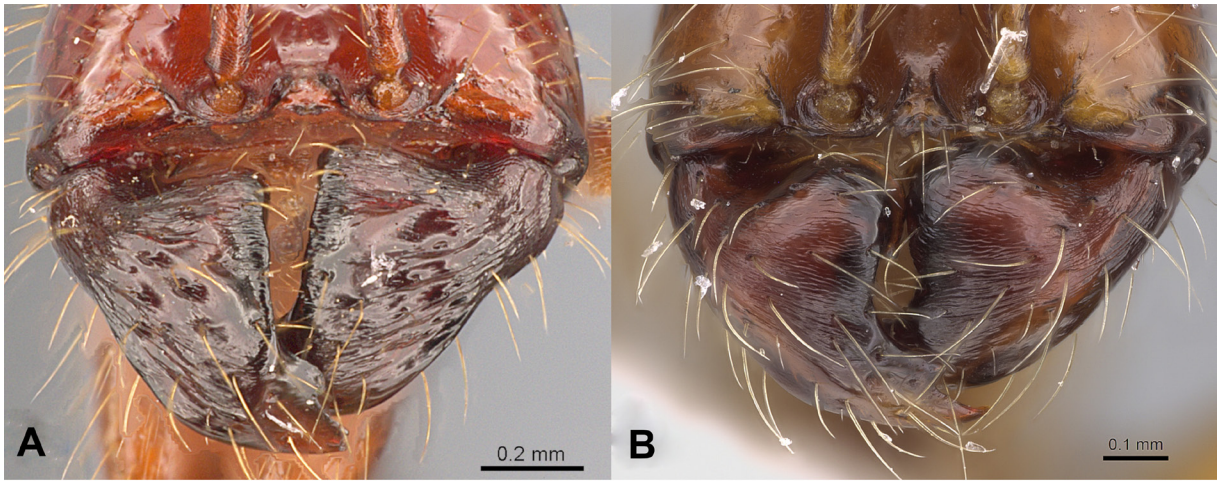

Fig. 1. Detail of the mandibles. **A**, *Aenictus brutus* sp. nov. © Roberto Keller. **B**, *A. popeyei* Gomez, 2022. © Michele Esposito

Aenictus brutus sp. nov.

Urn: 2b734f9f-6b4f-42e2-908a-7821a312376c

Figs 1A, 2A-D

Material examined.

Holotype worker, LIBERIA: Nimba: Bt. Zolowee & Gbarpa (Sanniquellie-Mahn) 470m, 7.45446, -8.6262, Savannah. Tamas, J. 30.x.2022, Hand Collected, foraging on ground, 1w [KGCOL02854] (RBINS)

Paratype workers, same data 1w [KGCOL02852] (CSPC) • 1w [KGCOL02853, KGCOL02855] (KGAC) • 1w [KGCOL02856] (MNHNC) • 1w [KGCOL02857] (NHMUK) • 1w [KGCOL02858] (AFRC) • 1w [KGCOL02859] (RBINS)

Diagnosis.

This species is unmistakable due to its extremely developed mandibles. The only other species with similar mandibles is *Aenictus popeyei* Gomez, 2022 (Fig. 3A-D). However, the mandibles differ in the upper half being hemispherical and smooth in *A. popeyei*, but flat, rugulose, quadrate and with its central part excavated becoming almost translucent in some individuals in *A. brutus*. Also, the new species is bigger (HW 0.98-1.04 vs. HW 0.78-0-90).

Description.

WORKER: SL 0.66 - 0.69; HL 0.77 - 0.84; HW 0.98 - 1.04; ML 1.34 - 1.49; PL 0.31 - 0.35; PPL 0.22 - 0.26; PH 0.25 - 0.29; PPH 0.21 - 0.26; CI 119 - 128; SI 64 - 68; MSI 128 - 146; PI 115 - 136; PPI 91 - 114 (n=8)

With the characters defined for the *popeyei* group and: funicular segments 1-8 elongated, the apical almost three times longer than wide. Head subrectangular, widest apically, occipital line straight and rounded at the sides; ventrolateral margin reaching ventrally half the distance to the mandibular insertions.

Mandibles massive, their surface similar or even bigger that the cephalic surface, with a long sharp apical tooth followed by a preapical, both teeth pointing 45 degrees ventrally, masticatory margin long straight and edentate. The whole surface flat and rugulose, with certain central zones seeming excavated, thinner and almost translucent in some individuals

Mesosoma in lateral view with rounded pronotum and flat propodeum, propodeal suture demarcated and concave propodeal declivity. Propodeal carina strongly developed dorsally and laterally.

Petiole with anterolateral and anterodorsal carinae present, dorsolateral carina absent. In lateral view straight anterior face sloping approximately 45 degrees to a flat rounded dome, similar posterior face; postpetiole in lateral view from elliptical to subrectangular and rounded with almost vertical anterior and posterior faces. Subpetiolar process strongly developed as a rectangular lamella.

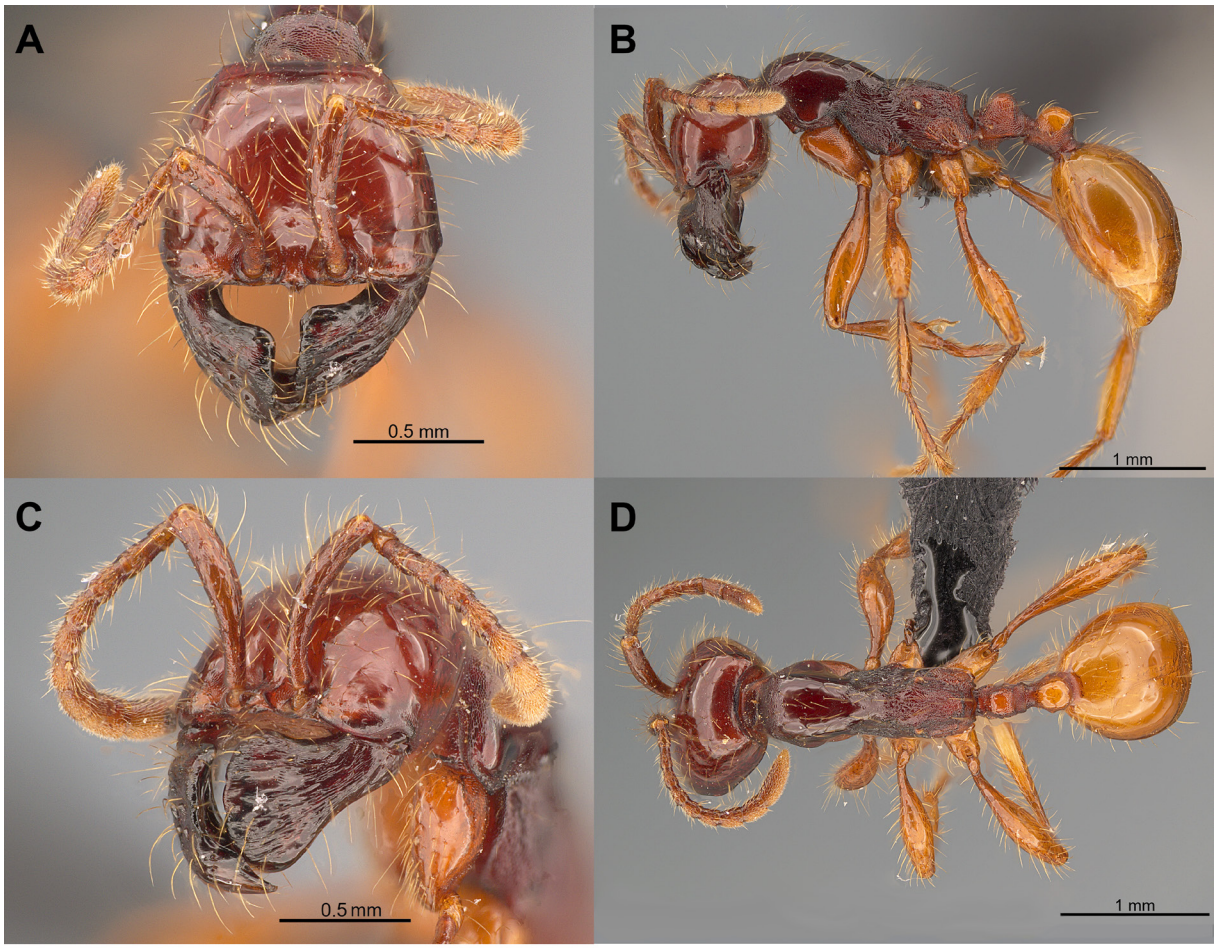

Fig. 2. *Aenictus brutus* sp. nov. Holotype (KGCOL02854). **A**, head in frontal view. **B**, habitus, lateral view. **C**, head 3/4 view. **D**, habitus, dorsal view. © Roberto Keller

Head, pronotum, mesonotum, dorsum of postpetiole, gaster and legs glassy smooth. Mesopleura, metathorax, propodeum and petiole strongly alutaceus, becoming rugulose laterally. Overall colour dark brown, with funiculus, legs and gaster brighter, yellowish brown. Metatibial gland yellowish, conspicuous.

Long, yellowish semierect to erect setae present everywhere. Longest setae on head and mesosoma longer than petiole height, shorter on petiole, scapes and legs.

Derivatio nominis.

The species name *brutus* is a Latinized noun, dedicated to the fictional character Brutus, Popeye's, bigger and fiercer looking nemesis.

Other material examined.

Known only from the type series.

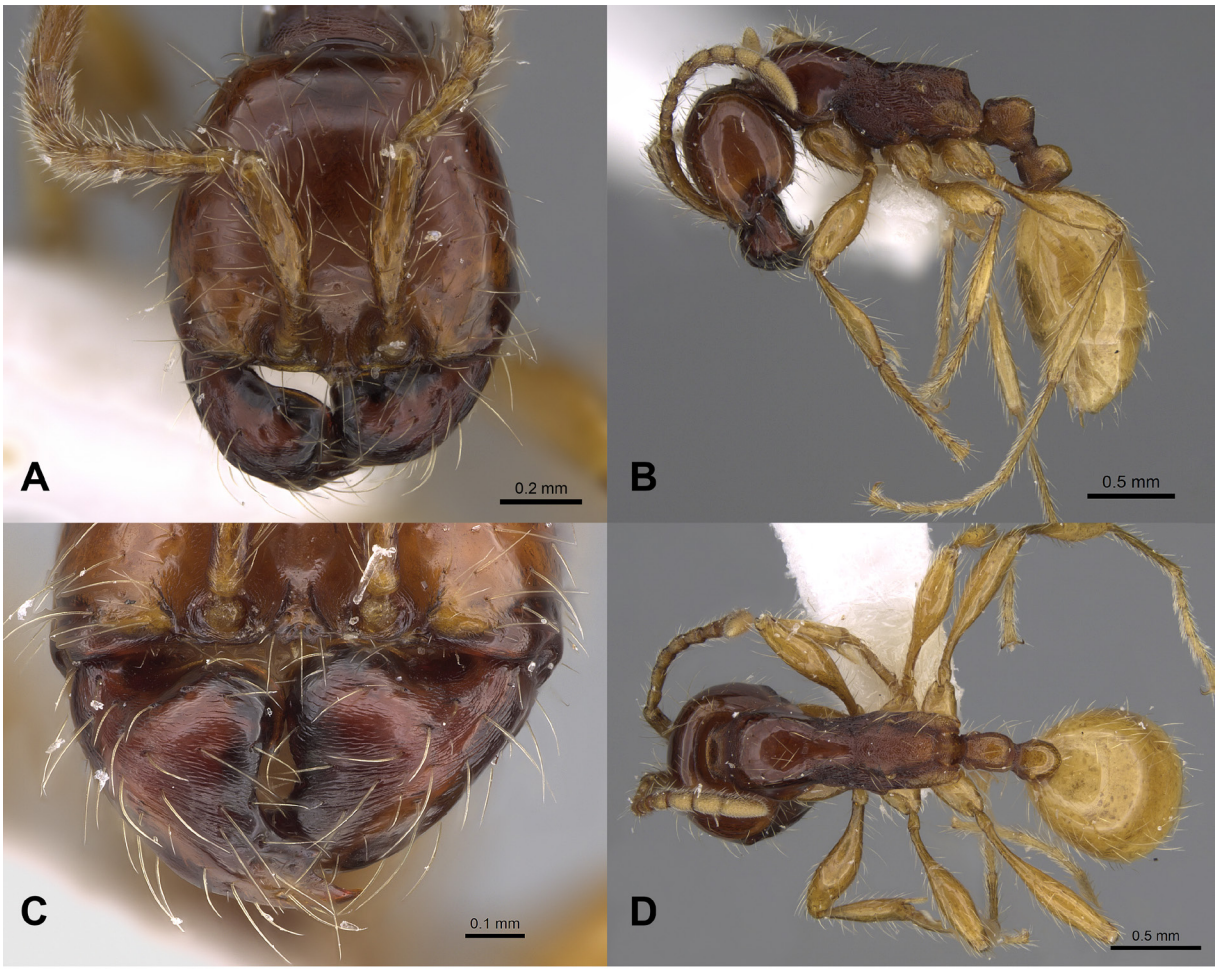

Fig. 3. *Aenictus popeyei* Paratype (CASENT0810234). **A**, head in frontal view. **B**, habitus, lateral view. **C**, mandibles, frontal view **D**, habitus, dorsal view Gomez, 2022. © Michele Esposito

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References

Bernard F., 1953 ("1952"). - La réserve naturelle intégrale du Mt Nimba. XI. Hyménoptères Formicidae. *Mémoires de l'Institut Français d'Afrique Noire*, 19: 165-270.

Bolton B., 1994. - *Identification guide to the ant genera of the world*. Harvard University Press, Cambridge, 222pp.

Bolton B., 2023. - An online catalogue of the ants of the world. http://antcat.org. [accessed 2023].

Borowiec M. L., 2016. - Generic revision of the ant subfamily Dorylinae (Hymenoptera, Formicidae). *ZooKeys* 608: 1-280. https://doi.org/10.3897/zookeys.608.9427

Fisher B. L. & Bolton, B., 2016. - *Ants of the world. Ants of Africa and Madagascar. A guide to the genera*. Berkeley: University of California Press, ix + 503pp.

Gómez K., 2022. - A revision of the Afrotropical species of the Dorylinae ant genus *Aenictus* (Hymenoptera: Formicidae) based on the worker caste. *Belgian Journal of Entomology,* 124: 1–86.

Hita Garcia F., Wiesel E., & Fischer G., 2013. - The Ants of Kenya (Hymenoptera: Formicidae) Faunal Overview, First Species Checklist, Bibliography, Accounts for All Genera, and Discussion on Taxonomy and Zoogeography. *Journal of East African Natural History,* 101(2): 127-222. https://doi.org/10.2982/028.101.0201

Janicki J., Narula N., Ziegler M., Guénard B. Economo E.P., 2016. - Visualizing and interacting with large-volume biodiversity data using client-server web-mapping applications: The design and implementation of antmaps.org. *Ecological Informatics*, 32: 185-193.

Robertson H.G., 2000. - Afrotropical ants (Hymenoptera: Formicidae): taxonomic progress and estimation of species richness. *Journal of Hymenoptera Research*, 9: 71-84.