https://doi.org/10.59893/bjc.25(2).014
Baltic J. Coleopterol. 25(2) 2025
ISSN 1407 – 8619

Description of a new species of *Amphisternus* Germar, 1843 (Coleoptera: Endomychidae: Lycoperdininae) from Eastern Mindanao Biodiversity Corridor

Stephannie Cadayona, Milton Norman Medina

Cadayona S., Medina M.N. 2025. Description of a new species of *Amphisternus* Germar, 1843 (Coleoptera: Endomychidae: Lycoperdininae) from Eastern Mindanao Biodiversity Corridor. *Baltic J. Coleopterol., 25(2): 287 – 293.*

This paper presents a new species of *Amphisternus* Germar, 1843, *A. hamugaway* sp. nov. from the Eastern Mindanao Biodiversity Corridor, Mindanao Island, Philippines. This is the second species of *Amphisternus* in the Philippines, along with *A. alberti*, described by Tomaszewska in 2014. High-definition images of the species' habitus and a brief note on the species ecology are also presented.

Keywords: Fungus beetle, new species, taxonomy, Oriental Region, Philippines.

Stephannie Cadayona. Master of Science in Environmental Science Program, Faculty of Advanced and International Studies, and Tropical Genomics and Invertebrate Research Laboratory - University Research Complex (URESCOM), Davao Oriental State University, City of Mati, 8200 Philippines; e-mail: stephanniecadayona@gmail.com
Philippine Coleopterists Society Incorporated, DORSU, Mati City, 8200 Philippines.
ORCID: https://orcid.org/0009-0002-1840-5535

Milton Norman Medina. Tropical Genomics and Invertebrate Research Laboratory and Faculty of Advanced and International Studies, University Research Complex (URESCOM), Davao Oriental State University, City of Mati, 8200 Philippines;
National Museum of Natural History, Ermita, Manila, Philippines;
Philippine Coleopterists Society Incorporated, DORSU, Mati City, 8200 Philippines; e-mail: miltonnormanmedina@gmail.com
ORCID: https://orcid.org/0000-0001-6858-8048

INTRODUCTION

The genus *Amphisternus* belongs to the subfamily Lycoperdininae (Tomaszewska, 2005; Chang & Ren, 2013; Tomaszewska, 2014), the largest group within the family Endomychidae, which is primarily mycophagous. In the Philippines, the subfamily contains 33 described species belonging to 9 different genera (Tomas-zewska, 2014). The Lycoperdininae larvae are also fungus feeders, fungus-infested bark, rotten wood, or bark surfaces (Tomaszewska, 2005). This mycophagous family serves as an effective ecological indicator of forest health, responsible for nutrient cycling and facilitating decomposition, highlighting their contribu-tions to the forest food web (Shockley et al., 2009a,b). The genus was established by Germar in 1843 as an oriental species characterized by "*having remarkable appendages in the form of long spines and*

high tubercles. *These appendages rise from the pronotum or elytra near the scuttellar shield, humeral, discal, and preapical parts referred to as 'humeral spine', 'humeral carina' or 'post humeral lateral spine' depending on its character states"* (Germar, 1843; Tomaszewska, 2005; Chang & Ren, 2013; Yoshitomi, 2020). Currently, at least 16 species of *Amphisternus* are described worldwide, with only one recorded in the Philippines (Chang & Ren, 2013; Tomaszewska, 2014; Yoshitomi & Sogoh, 2018).

Despite the megadiverse status of the Philippines (Cabras & Barševskis 2016; Barševskis et al. 2022), having a numerous new species being discovered and described every year, still, the beetle fauna of this hyperdiverse region is still considered to be partially explored (Cabras et al. 2023; Medina et al. 2024), especially for the family Endomychidae, as reflected in its *Amphisternus* record, for example. On another note, the island of Mindanao, the second-largest island in the Philippines, remains one of the country's major final biological frontiers (Cabras et al., 2021; Cabras et al., 2024). The island's diverse mountain ecosystems house numerous undescribed species of beetles waiting for discovery (Cabras et al. 2024; Medina et al. 2024). A decade ago, two species of Endomychids were described from the island: *Amphisternus alberti* Tomaszewska, 2014, and *Gerstaeckerus rufiplagiatus* Tomaszewska, 2014 (Tomaszewska, 2014). Since then, no *Amphisternus* has been added to the Philippines.

One of the pristine mountain ecosystems in Mindanao is the Eastern Mindanao Biodiversity Corridor (EMBC). The EMBC is a long stretch of mountain ecosystems lining the east coast of Mindanao, including the high-elevated montane and mossy forests of Mt. Kampalili Range, located between the provinces of Davao de Oro and Davao Oriental (Ibanez, 2015). A couple of years ago, the EMBC was almost impossible to explore for scientific purposes due to insurgencies, poor accessibility, and unwelcoming indigenous communities to researchers. Recently, due to the government's effort in connecting remote communities within EMBC, concrete roads have been constructed, making the remote areas easily accessible (Medina et al. 2024). With the recent access to EMBC, a Biodiversity Research Project between Davao Oriental State University (DORSU) and the Department of Environment and Natural Resources (DENR) has been crafted. Part of the program is the coleopterological assessment of EMBC led by the Tropical Genomics and Invertebrate Research team of DORSU. During the team's recent coleopterological expeditions to Mt. Kampalili, a few specimens of Endomychidae were collected, including a new species of *Amphisternus*, described in this paper.

MATERIALS AND METHODS

Morphological characters were observed under Olympus SZ51 stereomicroscope. Habitus images were taken using a Canon EOS 6D digital camera equipped with an MP-E 65mm macro lens mounted in a StackShot macro rail automated with Helicon Remote version 4.3.0.w. All images were stacked using Helicon Focus version 8.1.1 and processed using licensed Photoshop CS6 Portable software. Measurements of the various body parts as follows: LB = length of body from apical end of head to apex of elytra; WH = maximum of the head; LP = maximum length of pronotum; WP = maximum width across pronotum; LE = length of elytra from level of basal margins to elytral apex; WE = width of elytra (widest section); / separates different lines on a label; // separates different labels. All measurements are given in millimeters (mm).

Comparative materials and specimens used in this study are deposited in the following collections:
MMCP Milton Medina Collections, Tagum City, Philippines.
PNM Philippine National Museum, Ermita, Manila, Philippines.

TAXONOMY

Amphisternus hamugaway sp. nov. (Fig. 1)

Type material. HOLOTYPE: ♀, 'PHILIPPINES/ MINDANAO/ Davao de Oro/ Maragusan/ Langawisan/ Mt. Kampalili Range, 10-14.vi.2025/ leg. I. M.Medina, P.Camposo, J.Ytang, beating sheet// (written on white card). HOLOTYPE *Amphisternus hamugaway* sp. nov., Cadayona & Medina sp. nov.' written on red card, currently at MMCP, to be deposited at PNM. No paratype.

Description. Dimensions. LB: 7.5, WE: 4.0, LE: 5.0, WP: 3.0, LP: 1.7. Body 1.90 times as long as wide; pronotum 0.60 times as long as wide; elytra 1.25 times as long as wide, 2.94 times longer than pronotum, 1.33 times wider than pronotum. Body (Figs 1 A-B) short-oval, convex, opaque; colour black with only elytral tubercles yellowish to light brown. Head. Wider than long, with very shallow rugosities at frons; frons and underside of head covered with very fine punctures. Eyes elongated, whitish at margin, matte at middle side. Antennae. Antenna reaching elytral base, densely covered with very fine recumbent yellowish pubescence, apical end of antennomeres IX to XI lined with semi-recumbent yellowish pubescence; scape to antennomeres VIII moniliform; antennomeres X-XI retuse, XI ovate; scape robust, longer than scape; antennomere III about twice longer than antennomere 4 or 5 (Fig. 1E). Prothorax. Pronotum wider than long, impunctate, weakly reticulated; pronotal disc slightly convex without tubercles, with very shallow median groove; with blunt, rounded tubercles at each side; humeral angles reaching eyes; anterior angles blunt, posterior angles not acute (Fig. 1D). Elytra. Elytra weakly wider than base of pronotum; shoulders obliquely widened and carinate; humeral carina with prominent yellowish to light brownish tubercle; each elytron with basal moderately high, round-oval yellowish to light brownish tubercle, a large similar tubercles at apical third, and a large, carinate black tubercle, somewhat rectangular in shape (in lateral view), slightly recurve (in dorsal view), a little in front of mid length (Fig. 1A-B); elytral punctures very fine and distant from one another. Left side of elytra near margin tinged with light yellowish accent. Hind wings absent. Underside of the body. Prosternum matte black. Abdomen lustrous black. Coxae lustrous brownish to black; basal half of femora slender, apical half robust; apical end of tibiae covered with recumbent to semi-erect yellowish setae; claws light brown, divergent.

Differential diagnosis. This species is most similar to *A. alberti*, but can be distinguished by the following characteristics: tubercles yellowish to light brown (vs. red orange in *A. alberti*); antennomere III about twice longer than antennomere 4 or 5 (vs. 1.3 times longer in *A. alberti*); posterior angles of pronotum not acute (vs. posterior angle of pronotum weakly acute in *A. alberti*); only one tubercle at apical third (vs. two pairs of tubercle in *A. alberti*); and elytral punctures very fine and distant from one another (vs. elytral punctures coarse and almost touching one another in *A. alberti*).

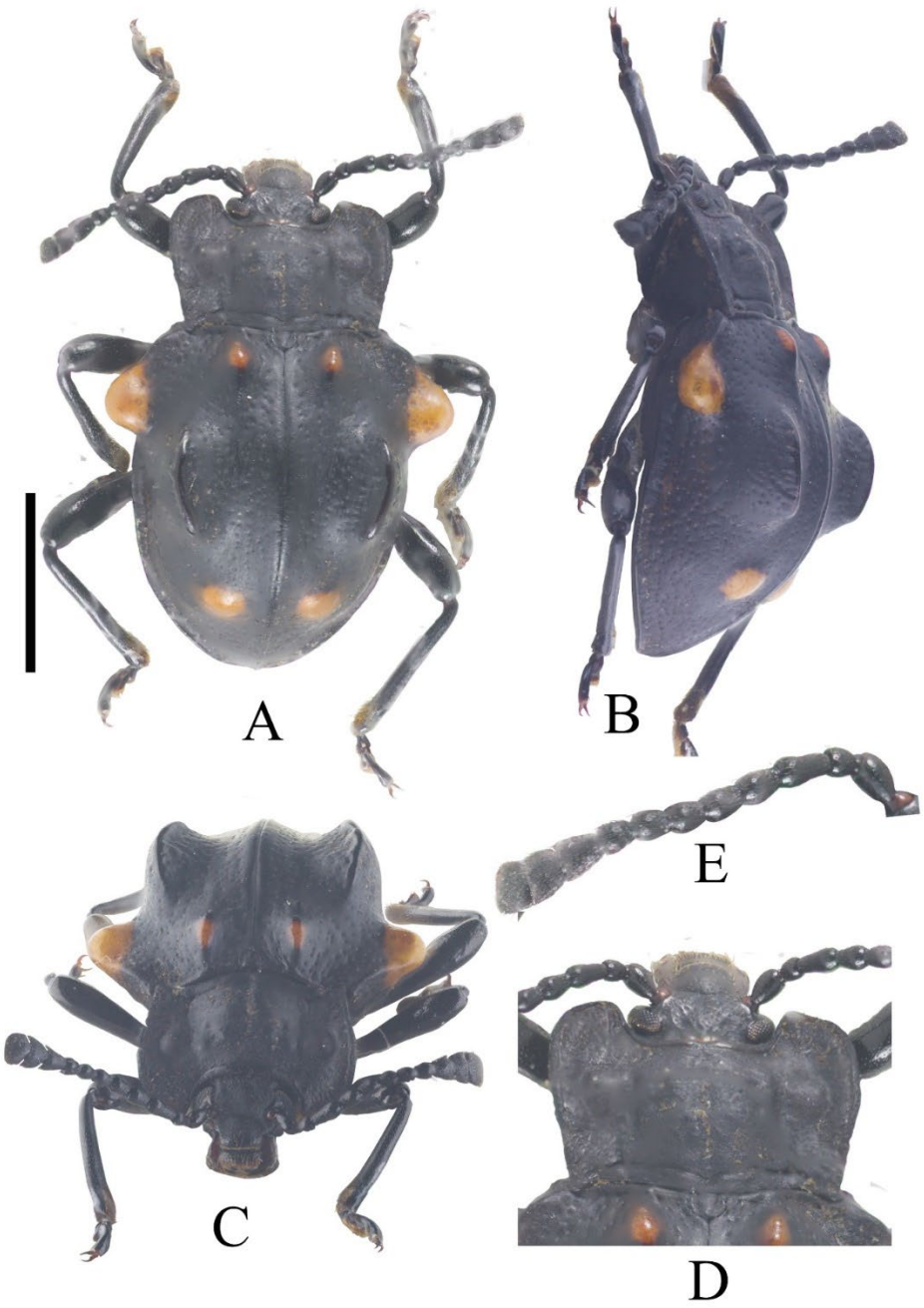

Fig. 1. Habitus of *Amphisternus hamugaway* sp. nov., female: A. Dorsal, B. Lateral, C. Frontal, D. close view of pronotum, E. Close view of antennae

Fig. 2. A. Forest understory of Mt. Kampalili where the specimen was collected. B. Ongoing bridge and road construction in the area. Photo credits: A. P.Camposo; B. G.Obrial

Etymology. The new species name is derived from the Filipino-Visayan term "hamugaway" which means comfort, peace, and tranquility.

Distribution. Philippines (Mindanao: Davao de Oro, Maragusan, Mt. Kampalili).

Notes on species habitat. The corridor's highest peak in EMBC is Mt. Kampalili, with an elevation of 2,396 masl, located between the provinces of Davao Oriental and Davao de Oro, covering 169,908 hectares of wildlife habitat. This Key Biodiversity Area (KBA) is the second largest along Eastern Mindanao, situated at 7º27' to 7º57'N and 126º08' to 126º30'E that covers mossy montane forest and lowland dipterocarps. Mt. Kampalili is an ancestral domain of both the Mansaka and Mandaya Tribes and is legally designated as an Indigenous Community Conserved Area (ICCA), governed by the local councils of these tribes as mandated by the Indigenous Peoples' Rights Act of the Philippines (Ibanez, 2015).

The species habitat is situated in the montane area of Mt. Kampalili at an elevation of approximately 1600 masl. Our campsite was set-up at an elevation of 1,500 masl, within the montane ecosystem of the mountain range. There was relatively high humidity with temperatures ranging from 21ºC during the daytime and as low as 13ºC at nighttime. The dominant vegetation consists of towering trees such as *Shorea contorta* or White Lauan (Dipterocarpaceae), *Agathis philippinensis*, commonly known as Almaciga (Araucariaceae), *Lithocarpus* sp., locally known as Ulayan (Fagaceae), and *Syzygium* sp. (Myrtaceae). The forest understory where the specimen was collected was dominated by *Dicksonia* sp. (Dicksoniaceae), *Alsophila* sp. (Cyatheacae), *Medinilla* sp. (Melastomataceae), *Begonia* spp. (Begoniaceae), and a few unidentified shrubs (Fig. 2A). We also documented several species of *Nepenthes* spp. or pitcher plants (Nepenthaceae) along the trails. Since the specimen was collected through a beating sheet using a large white cloth, the species may thrive on one of these plants with a fungal population.

Currently, the area is accessible through a newly constructed road that connects the provinces of Davao de Oro and Davao Oriental, leading to the east coast of Mindanao. Still, it is just a matter of time before they are cleared up, as ongoing bridge construction cuts through the old-growth

secondary forests of Mt. Kampalili (Fig. 2B). The remaining forests are still intact. Still, it is only a matter of time before they are cleared if unsustainable development or progress is not properly managed. In addition to the newly constructed road and bridge, forest clearing for subsistence agriculture, poaching, slash-and-burn farming, mining, commercial agriculture, illegal logging, and habitat fragmentation pose a grave threat to the species' survival.

ACKNOWLEDGEMENT

The authors would like to express sincere gratitude to the Eastern Mindanao Biodiversity Corridor (EMBC) Project and Amy G. Ponce, project leader, who facilitated the field expedition, together with the Department of Environment and Natural Resources (DENR) - United Nations Development Programme (UNDP) and the Global Environment Facility (GEF) for invaluable partnership and collaborative assistance. To the Municipal Environment and Natural Resources Office (MENRO) and the Local Government Unit (LGU) of Maragusan, Davao de Oro, for the support and dedication in ensuring smooth implementation and resource allocation for the success of this project. To our local guides, Doming Talidasan and Jimboy Talidasan, for the expertise, guidance, and practical assistance. Also, we want to thank the Philippine Coleopterist Society Inc. (PCSI), together with Ricksterlie Verzosa and Jhonnel P. Villegas, for the enabling support of Coleopterological research in DORSU and the Tropical Genomics and Invertebrate Research (TROGENIR) team; Daven Agbas, Graden Obrial, Eleuterio Avergonzado, Kate Lourenz Dagpin, Jules Loguinsa for the lab assistance, especially to Pheobe Camposo and Jenlie Ytang for the species collection. To Arvids Barsevskis, for the wonderful collaboration throughout the years.

REFERENCES

Barševskis A., Cabras A.A., Medina M.N. 2022. A new species of *Callimetopus* Blanchard, 1853 (Coleoptera: Cerambycidae) from Panay Island, Philippines. *Baltic Journal of Coleopterology. 22(1):133-138.*

Cabras A.A., Barševskis A. 2016. Review on *Doliops* Waterhouse, 1841 (Coleoptera: Cerambycidae) of Mindanao, Philippines with description of a new species. *Baltic Journal of Coleopterology. 16(2): 143 – 156.*

Cabras A.A., Buenavente P.A., Villegas J.P. 2024. Two new species of *Metapocyrtus* Heller from Mindanao Island, Philippines (Coleoptera, Curculionidae, Entiminae, Pachyrhynchini). *Ecologica Montenegrina. 73: 125-137.*

Cabras A.A., Medina M.N., Bollino M. 2021. Two new species of the genus Metapocyrtus Heller, 1912 (Coleoptera, Curculionidae, Entiminae, Pachyrhynchini), subgenus Orthocyrtus Heller, 1912, from Mindanao Island, Philippines. *ZooKeys. 1029: 139–154.*

Cabras A.A, Villegas J., Ponce A., Medina M.N.D. 2023. *Metapocyrtus madayaw* Sp. N. (Coleoptera: Curculionidae, Entiminae), A New Flightless Weevil from Eastern Mindanao, Philippines. *Far Eastern Entomologist. Number 490: 1-9.*

Chang L-X., Ren G-D. 2013. A New Species of *Amphisternus* Germar, 1843 (Coleoptera: Endomychidae) from China. *Annales Zoologici. 63(3):413-416.*

Ibanez J.C. 2008. Philippine Eagle Foundation, Conservation International-Philippines, Department of Environment and Natural Resources. Eastern Mindanao Biodiversity Corridor

Conservation Framework. *Davao City, Philippines. 95 pp.*

Medina M.N., Agbas D., Obrial G., Cabras A. 2024. Description Of a New Species of The Genus *Doliops* Waterhouse, 1841 (Coleoptera: Cerambycidae, Lamiinae) from Davao De Oro with Notes on Other Endemic Species and Mimicry Complex in Mindanao Island, *The Philippines. 1029: 139–154.*

Shockley F.W., Tomaszewska K.W., McHugh J.V. 2009a. An annotated checklist of the handsome fungus beetles of the world (Coleoptera: Cucujoidea: Endomychidae*). Zootaxa 1999: 1–113.*

Shockley F.W., Tomaszewska K.W., McHugh J.V. 2009b. Review of the Natural History of the Handsome Fungus Beetles (Coleoptera: Cucujoidea: Endomychidae). *Insecta Mundi. 0072: 1-24.*

Tomaszewska W.K. 2005. Phylogeny and Generic Classification of the Subfamily Lycoperdininae with A Re-Analysis of the Family Endomychidae (Coleoptera: Cucujoidea). *Annales Zoologici. 55 (Supl. 1): 1-172*

Tomaszewska W. 2014. New species of the *Amphisternus*-group of Lycoperdininae from Philippines (Coleoptera: Endomychidae). *Acta Entomologica Musei Nationalis Pragae. 54(2), pp. 635–644*

Yoshitomi H., Koichi S. 2018. Description of the Larva of *Amphisternus corallifer* Gerstaecker (Coleoptera: Endomychidae), with Specimens List of the Genus *Amphisternus* Preserved in EUMJ. *Japanese Journal of Systematic Entomology. 24 (2): 225–229.*

Yoshitomi H. 2020. Two New Species of the Genus *Amphisternus* (Coleoptera: Endomychidae: Lycoperdininae) from Malaysia, with Redefinition of Pronotal and Elytral Appendages. *Japanese Journal of Systematic Entomology. 26 (1): 121–126.*

Received: 24.04.2025.
Accepted: 01.12.2025.