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Therates hubertusi sp. nov. a new species of tiger beetle (Coleoptera: Cicindelidae) in Davao City Philippines

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Therateshubertusi sp.nov. is described from Davao City, Philippines. The new species is distinct from its known congeners for its size, slender neck, blunt elytral apex, and long slender bottle-shaped aedeagus tapering towards the apex. The present species is endemic in the Philippines and known so far from its type locality.

Keywords: Cicindelini, Therates, new species.

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INTRODUCTION

There are about 160+ species of tiger beetles in the Philippines with approximately 80–90% endemism. In so far, few species are being added (Zettel&Pangantihon, 2017; Anichtchenko& Medina, 2019; Medina et al. 2019; Medina et al. 2020; Zettel&Wiesner, 2018).The genus *Therates* Latreille, 1816 is a charismatic species of Cicindelidaedistributed mainly in the Oriental Region, from India to southern Japan and the Solomon Islands (Medina et al. 2019; Zettel& Pangantihon, 2017).

Cabras et al. (2016) listed 13 species of *Therates* of which five species belongs to the *Therates fasciatus* group. Moreover, Zettel&Pangantihon (2017) added two species *T. negrosicola* and *T. monticola* bringing the total to 15 species in the Philippines and seven species under *T.fasciatus* group. Members of *T. fasciatus*sub-species group found in the Philippines deposited in the University of Mindanao Coleoptera Research Center are examined including *T. f. quadrimaculatus* Horn, 1895, *T.f. pseudolatreillei* (Horn, 1895), *T.f. fasciatus* Fabricius, 1801, and *Therates* fasciatus group including *T. monticola* Zettel&Pangantihon, 2017. Additional materials examined includethe *Therates* collections of Herr Jürgen Wiesner during the first and third author's visit in his hometown in Wolfsburg, Germany. Other Philippine *Therates* materials deposited in Museum fur Tierkunde Dresden were also examined. The current materials were also compared using the high definition images in Carabidae.org (www.carabidae.org). Considering the fact that

there are a number of ambiguous species particularly in the *T.fasciatus* group, a thorough review of the genus is highly needed.

Although, the new species has a very close affinity to *T. fasciatus* group for having clypeus without setae and elytron without tumescence at mid-length and with weak anteapical tumescence, we refrain from assigning this new species to any sub-species group and its correct sub-generic placement will be revealed after a thorough review of this genus.

MATERIALS AND METHODS

The holotype of this new species is deposited in the University of Mindanao Coleoptera Research Center (UMCRC), to be deposited at the Philippine Museum of Natural History (formerly Philippine National Museum or PNM). The specimens were collected primarily through opportunistic sampling between 8:00AM and 11AM, Philippine Standard Time. Specimens were killed in vials with ethyl acetate.

Morphological characters were observed under Luxeo 4D and Nikon SMZ745T stereomicroscopes. Habitus and genitalia images were taken using Canon EOS 800D digital camera and Sigma 18-250 macro lens. All images were then stacked using Helicon Remote and Helicon Focussoft wares and processed using a licensed version of Photoshop CS6 Portable.

The measurements taken are adopted from Matalin (2015) with modification as follows: total body length (TBL) from anterior margin of clypeus to apex of elytra (without labrum); length of labrum (LL) from anterior margin of clypeus to anterior margin of labrum (without apical tooth); length of mandible (LM), length of pronotum (LP) along midline; length of elytra (LE) from shoulders to apex of sutural angle (without sutural tooth); width of labrum (WL), width of pronotum (WP), width of elytra (WE) in broadest sense, and length of aedeagus (LA), width of aedeagus (WA) in broadest sense.

Materials examined:
MTD – Museum fur Tienkunde Dresden, Germany;
UMCRC – University of Mindanao Coleoptera Research Center, Philippines ;
JWCG – Jürgen Wiesner Collections, Dresdener Ring Wolfsburg, Germany.

TAXONOMY

***Therates hubertusi* Medina & Cabras**, sp.nov. (Fig. 1)

Type depository. Holotype 1 male in UMCRC, paratype 1 male in UMCRC.

Type material. HOLOTYPEmale (Figure 1): Philippines – Mindanao, Mindanao, / Davao City, / 4-5.vi.2021, 700 masl, local collector leg. (UMCRC), printed on red card. PARATYPE: Same data as holotype (1 male, UMCRC), printed on yellowcard. Each specimen also bears a red (holotype) or yellow (paratype) label under the locality label that states "Holotype [or Paratype] / *Therates hubertusi* / Medina&Cabras, 2021".

Etymology. Named after Dr. Hubertus van Dierendonck, a Dutch national for his invaluable contribution in protecting the environment within the *Obu-Manuvu* tribe ancestral domain in Davao City Philippines.

Description. Measurements: Male (n=2), TBL: 7.2-7.5 mm. LL: 1.0 mm. WL: 1.0 mm. LP: 0.8 mm. WP: 1.0 mm. LP: 1.5 mm. LM: 1.2 mm. LE: 4.4mm. WE: 3.5 mm. LA: 1.7 mm. WA: 0.3 mm.

Male. Length without labrum 7.2-7.5 mm (Holotype, 7.5mm) (Fig. 1A-B). Head dorsal aspect-dark metallic blue, frons glabrous lustrous metallic blue, vertex lustrous dark metallic blue, with supraorbital striae, clypeus lustrous fulvous brown without setae, antennal plates glabrous; lateral aspect genae lustrous black with tinge of fulvous brown near the base of the teeth; ventral aspect-gulalustrous black with metallic brown at the middle. Eyes black, large distinctly protruding, globose, as wide as the humerus, supraorbital

area glabrous, with one setae near each eyes, setae yellow. Labrum (Fig. 1C) with one pair of short basal teeth, one pair of distinct distolateral teeth, and middle lobe bearing 6 longer sharp teeth and 5 smaller teeth in between, 9 golden brown setae. Mandibles, light yellow at base, golden brown towards the apex; labial palp white at base, golden brown otherwise, length 1mm. Antennae filiform, when projected posteriorlydo not reach at the middle of elytra; scape golden yellow on one side, golden brown on the other side with 1 yellow setae; antennomeres 1-4 golden brown, with 2-7 setae in between antennomeres; antennomeres 5-10 evenly covered with fine golden yellow setae. Prothorax distinctly globose; Pronotumlustrous black, 1.5 times longer than wide, glabrous althroughout; pronotal disc finely striated metallic green; pronotal groove deep. Prosternum, prosternalepimeron, mesosternum, mesipisternumlustrous black, glabrous. Intercoxal process golden brown. Metasternum golden brown. Coxa and trochanters of front, middle, lower legs light golden yellow. Femur as long as tibia, femur and tibia light golden yellow sparsely covered with minute golden yellow setae: front leg 2.0 mm, middle 2.5 mm, hind leg 3.5 mm.

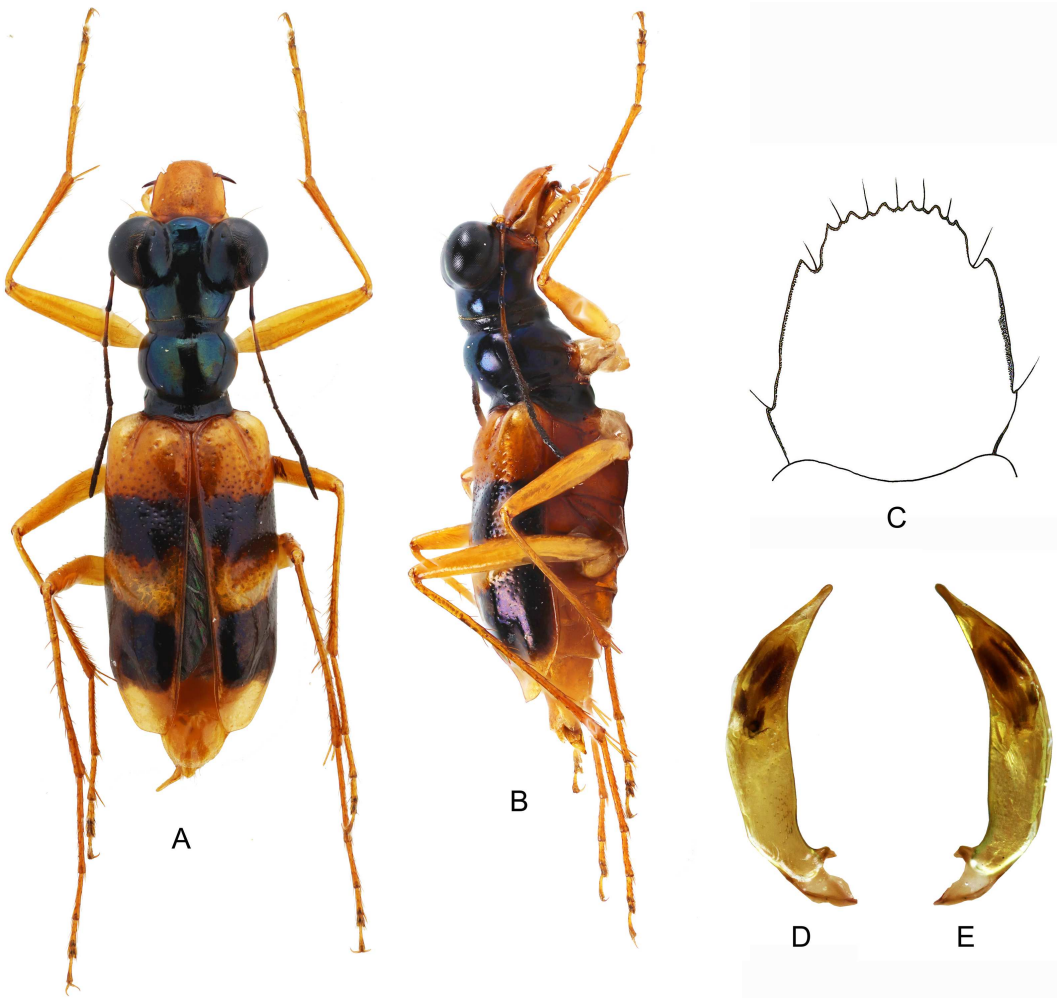

Figure 1. *Therates hubertusi* Medina&Cabras, sp.nov. A: Habitus, B: Lateral side, C. Labrum, D-E: Aedeagus.

Abdominal sternites 1-5 golden brown with 2 fine golden yellow setae, anal sternitegolden brown. Elytra 1.25 times longer than wide, LE: 4.4 mm, WE: 3.5 mm, scutellum and epipleura golden brown, elytral suture golden brown from the base up to near the apex, light golden yellow towards the apex. Thick transverse maculation after the base separated at the middle, and from the middle slightly recurve transverse black maculation up to before the apex. Apex of elytra blunt, flat (Fig. 1D-E). AedeagusWA: 0.3 mm. LM: 1.2 mm. long slender bottle-shaped aedeagus tapering towards apex (Fig. X).

Distribution. *Therates hubertusi* Medina& Cabras, sp. nov., is known only from the type locality in Carmen Baguio District, Davao City Philippines.

Ecology. The present species was collected approximately 200 meters from the riparian ecosystem, around 700 masl, perching in *Cyatheacontaminans* (Giant Tree Fern). The biotype has clayish soil partially covered with shrubs mostly members of Pteridophyta and Anthophyta.

Differential diagnosis. This new species is distinct from its congeners in *T. fasciatus* group *T.f. fasciatus* (sensustricto), *T.f. quadrimaculatus, T.f. pseudolatreilli,* and *T. palawanensis* but can be easily recognize in size difference, labrum, very distinct elytral apex (Fig. 2A-E), and slender neck of the head. Based on size, it is very similar to *T. monticola,* and on maculation with *T. palawanensis* but differ in many ways. Ultimately, its genitalia is unique from its known congeners.

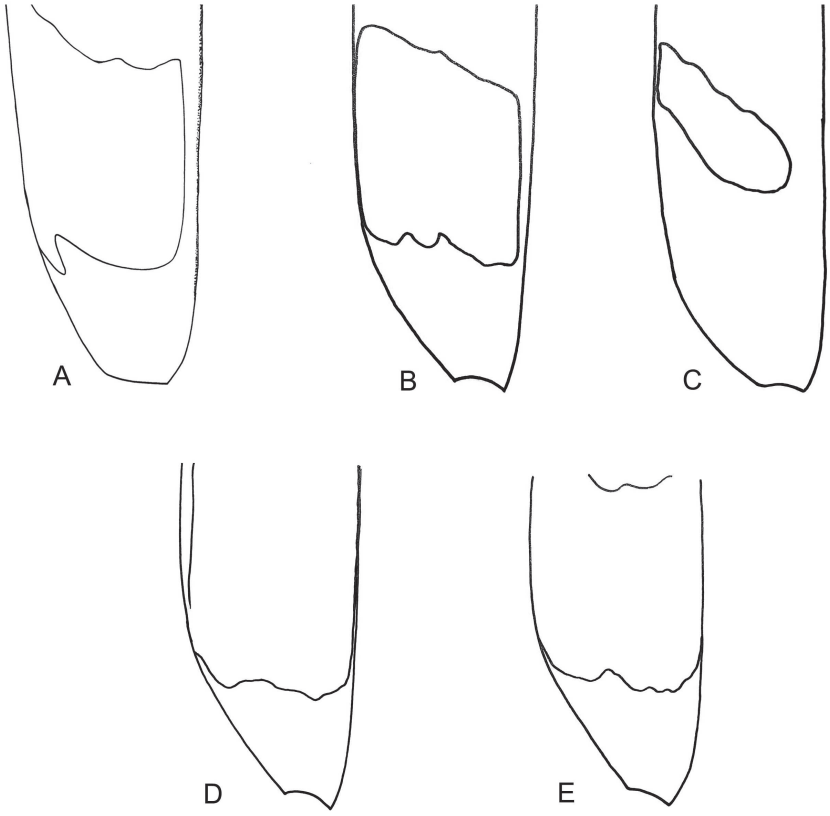

Figure 2. Elytra apex: A: *Therates hubertusi* Medina&Cabras, sp.n., B: *Therates fasciatus fasciatus* Fabricius, 1801, C: *Therates monticola* Zettel&Pangantihon, 2017, D: *Therates fasciatus pseudolatreillei* (Horn, 1895), E: *Therates fasciatus quadrimaculatus* Horn, 1895.

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