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RESEARCH ARTICLE

Allenaltica, a new genus of flea beetles from the Oriental Region (Coleoptera: Chrysomelidae: Galerucinae: Alticini)

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Abstract: A new genus of flea beetles (*Allenaltica* **gen. nov.**) with a new species, *Allenaltica flavicornis*, **sp. nov.** from the Philippine Islands (Mindanao) is described, illustrated and compared with related genera.

Key words: Philippines, Mindanao, leaf beetles, taxonomy.

Introduction

The Oriental alticine fauna represented by about 220 genera is only next to that of the Neotropical Region in diversity of flea beetles (Seeno & Wilcox 1982). The Philippine Islands is one of the leading global hotspots of biodiversity in the Oriental Region. Of the global endemic plants and vertebrates, 1.9% belongs to the Philippine Islands (Myers *et al*. 2000). Medvedev (1996) listed 214 species level taxa of flea beetles under 52 genera from the Islands. A new genus of large sized flea beetles from Mindanao, the second largest island in the Philippines, is described here.

Material and methods

Dissecting techniques and terminology follow Konstantinov (1998). The holotype and paratypes are deposited in the National Museum of Natural History, Smithsonian Institution, Washington D.C. (USNM).

Results

***Allenaltica* gen. nov.** (Figs 1–4)

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Type species. *Allenaltica flavicornis* **sp. nov.**

Description

Oblong oval, 9.0-9.5 mm long, 5.1-5.8 mm wide, 2.4-2.6 times longer than high. Colour nonmetallic. Dorsum glabrous. Head (Fig. 1A) partially inserted into pronotum. In lateral view, vertex and frons separately form gently convex lines. Vertex (Fig. 1B) slightly convex, with punctures very small, rather uniform. Supraorbital pore adjacent to orbital sulcus near upper side of eye. One or two smaller punctures present anteriorly and posteriorly to supraorbital puncture. Antennal calli triangular, narrowly connected proximally, slightly raised, acute anterior angles enter into interantennal space. Supraantennal, suprafrontal, midfrontal sulci well developed. Midcranial suture deep, not extending posteriorly beyond upper level of eyes. Supracallinal sulcus represented by two sulci, nearly parallel to each other, narrow area between these sulci raised forming a transverse, convex band posterior to antennal calli, band being wide mesally than laterally. Orbital sulcus deep and curved, reaching posterior margin of eye. Frons higher than vertex. Frontal ridge broad, high, flat on top, raised, merge with anterofrontal ridge, forming raised triangle. Subgenal suture distinct. Lateral margin of frontal triangle concave, sparsely punctate on top. Clypeus narrow, much lower than anterior margin of frontal triangle. Lateral border of frontal ridge on either side with a row of setiferous punctures. Frontoclypeal suture with a row of long setae, apparently broken in middle. Labrum about three times broader than long; anterior margin distinctly emarginated. Labrum with a transverse row of three setiferous setae on each side; in one specimen, two more smaller setiferous pores are present on each side. Maxillary palpus four segmented; first smallest, second longest, third shorter than second but longer than first and fourth separately (Fig. 2A). Last two palpomeres form a distinct club. Apical palpomere broader than long, conical. Labial palpi three segmented, second widest, third thinner than first, second and third subequal in length, first shorter. Distance between antennal sockets wider than diameter of a socket, antennal sockets separated from adjacent eye by a distance subequal to half of transverse diameter of a socket. Eyes longer than wide, mesal margin gently concave, divergent ventrally. Frontal ridge proximally with a few small punctures. Vertex minutely punctate, punctures weaker than those on pronotum. Antenna (Fig. 3B) reach middle of elytra over pronotum. First antennomere club-shaped, a little thicker than rest. Distal antennomeres not thicker than middle ones. Second smallest, subequal to half of third.

Pronotum (Fig. 1C) without impressions, with distinct longitudinal callosity on each side near lateral margin. Pronotum 0.5-0.6 times longer than wide. Anteriorly 0.7-0.8 times wider than posteriorly. Lateral margins evenly curved, moderately reflexed, anteriorly as wide as posteriorly. Anterior margin concave, posterior margin weakly bisinuate, weakly

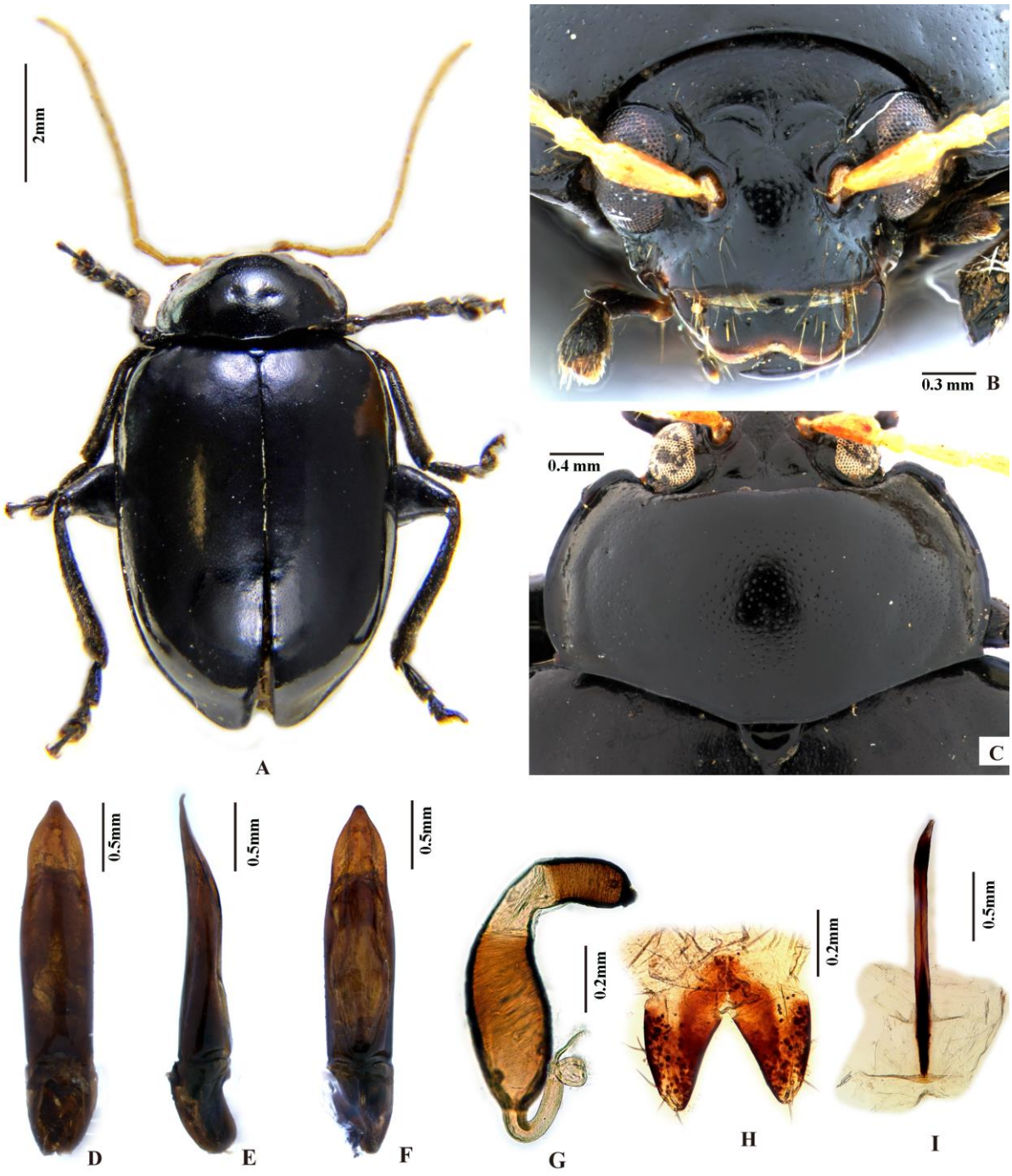

Figure 1. *Allenaltica flavicornis* sp. nov. **A,** dorsal habitus; **B,** head, frontal view; **C,** pronotum, dorsal view; **D,** aedeagus, ventral view; **E,** aedeagus, lateral view; **F,** aedeagus, dorsal view; **G,** spermatheca; **H,** vaginal palpi; **I,** tignum.

lobed in middle. Anterolateral callosity slightly concave, elongate, with setiferous pore on upper posterior face. Posterolateral callosity not protruding beyond lateral margin. Pronotum uniformly punctured, punctures very small, dense, larger than those on elytra or vertex, distance between adjacent punctures less than twice width of a puncture. Anterior coxal

cavities (Fig. 2B) widely open. Minimum width of intercoxal prosternal process subequal to or a little more than minimum distance from anterior margin of prosternum to procoxal cavity. Intercoxal prosternal process shallowly channeled along middle, apex depressed on top, broadened distally with convex apical margin. Intercoxal prosternal process pass well beyond posterior margin of procoxa. Mesoscutellum subtriangular, broader than long, with convex lateral margins, impunctate on top. Mesepisternum narrower than mesepimeron. Minimum width of intercoxal mesosternal process less than minimum distance from anterior margin of mesosternum to mesocoxal cavity (including edge of mesosternum anteriorly). Mesosternal intercoxal process (Fig. 2B) raised on top, apical margin concave. Approximate length ratio of pro-, meso-, and metasternum equals 1: 0.8: 1.8-2.2.

Elytra broader than pronotum at base, with maximum width anterior to middle. Humeral callus moderately developed with strong depression mesally and weak depression posteriorly. Basal callus poorly developed. Lateral border of elytra narrowly explanate, narrowly reaching apex. Elytral apex convex, lateral elytral margin preapically apparently concave. Epipleura (Fig. 2A) nearly horizontal, maximum width more than that of profemur, extending beyond distal 2/3rd, not reaching apex. Elytral punctures confused, minute, smaller than those on pronotum; distance between adjacent punctures 2–5 times diameter of a puncture in middle of elytron; each puncture with a minute seta visible under high magnification; interstices flat. Hind wings (Fig. 3C) well developed, with two closed cells.

Pro- and mesofemora oblong in cross section, dorsally convex, ventrally concave. Pro- and mesotibia nearly circular in cross section, dorsally with sharp ridge. Metafemora 1.9 to 2.0 times longer than wide, 0.7 to 0.9 times longer than metatibia. Metatibia slightly curved in dorsal and lateral views, a little widened towards apex, dorsal surface with a sharp ridge, apex flat with well defined lateral and mesal edges. In ventral view, apex of metatibia deeply cleft (Fig. 4A); articulation of first metatarsomere visible through the cleft; lateral edge of cleft with metatibial spine, mesal edge multipronged with thick bristles appearing like sharp, spines. Metatibia 4.5-4.8 times longer than first metatarsomere. Third tarsomeres not deeply bilobed in ventral view, ventrally with feather like setae in both sexes. Abdomen with five distinct ventrites, first longest, two to four each progressively shorter than preceding one. Fifth longer than fourth, subequal to or shorter than third and fourth together. Intercoxal part of first abdominal ventrite (Fig. 2C) narrowly truncate. Longitudinal groove along middle of apical abdominal tergite (Fig. 2E) does not reach apex of tergite.

Vaginal palpi (Fig. 1H) characteristic: fused in proximal 1/3, vaginal palpi together a little wider than long. Tignum (Fig. 1I) elongate, channeled along middle. Spermatheca (Fig. 1G) with distinct pump, receptable and duct. Duct of spermatheca shorter than receptacle, make simple loop.

Remarks: *Allenaltica* gen. nov. resembles *Sphaerometopa* Chapuis, 1875 in size, overall habitus and the structure of legs except the metatibial apex. However, the new genus can be differentiated from *Sphaerometopa* by the structure of the head, metatibial apex and female genitalia. The antennal calli are about as wide as long and posteriorly delimited from vertex by weak supracallinal sulcus while the supraorbital sulcus is deep in *Allenaltica* gen. nov. However, the antennal calli are about 2× wider than long and delimited from vertex by deep supracallinal sulcus while the orbital sulcus is weakly developed in *Sphaerometopa*. The general shape of the pronotum in *Allenaltica* gen. nov. and *Sphaerometoa* appears to be different as the posterior margin is gently lobed in *Allenaltica* gen. nov. while the same is evenly curved in *Sphaerometopa*. Vaginal palpi together are a little wider than long in *Allenaltica* gen. nov., while the same in *Sphaerometopa* are much elongate as is the case in most flea beetles. *Phygasoma* Jacoby, 1898 is similar to *Allenaltica* gen. nov. in large size

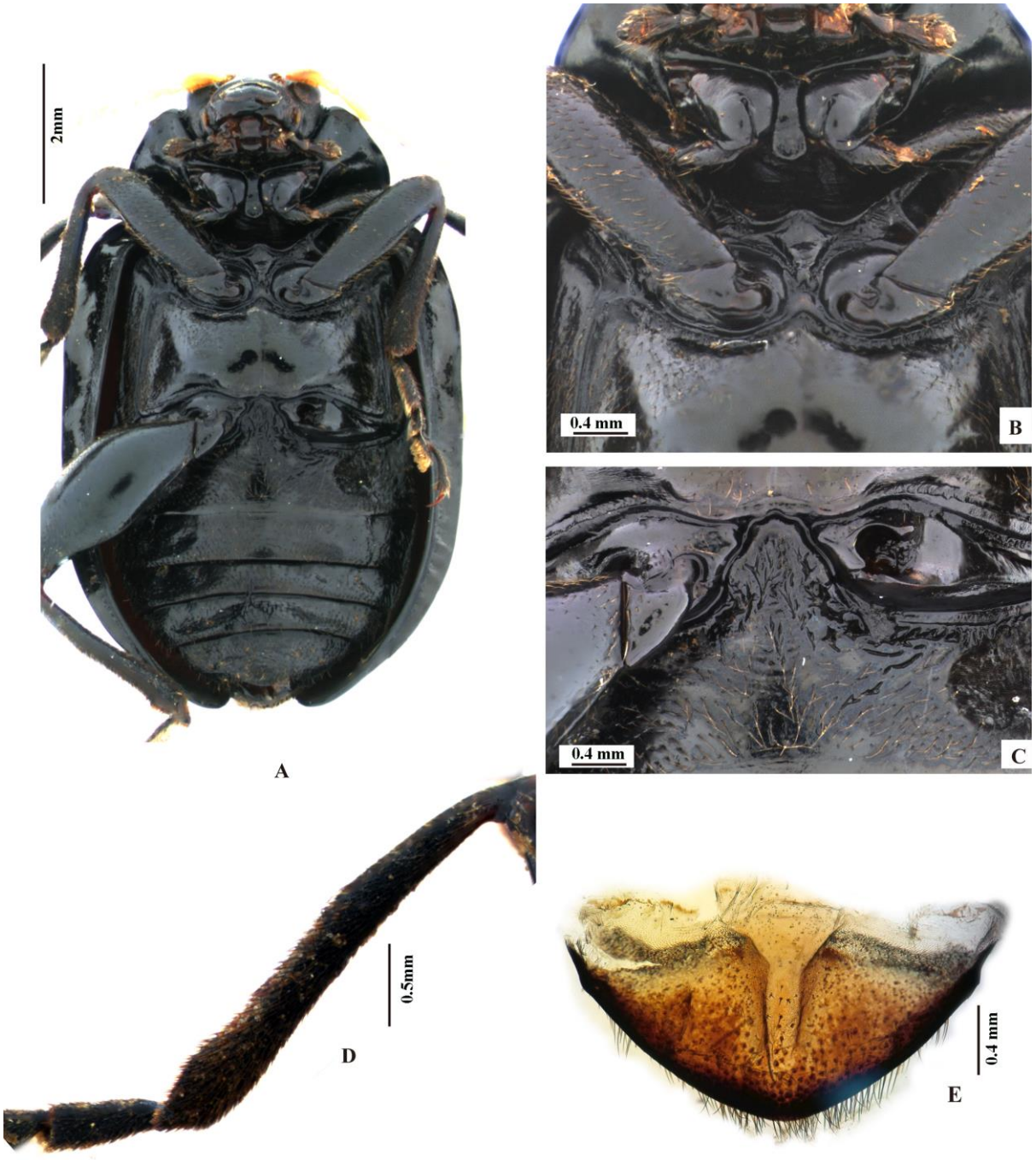

Figure 2. *Allenaltica flavicornis* sp. nov. **A,** ventral habitus; **B,** pro- and mesothorax, ventral view; **C,** metacoxae and intercoxal part of first abdominal ventrite; **D,** metatibia and first metatarsomere, lateral view; **E,** last visible tergite.

and general habitus, structure of head and sternites. However, *Phygasoma* can be separated from *Allenaltica* based on the laterally limited, curved antebasal transverse impression on pronotum (antebasal transverse impression absent on pronotum in *Allenaltica* gen. nov.). *Acrocrypta* Baly, 1862 resembles *Allenaltica* gen. nov. in the structure of the head, confused elytral punctation, and the overall habitus. However, they can be separated based on short

Figure 3. *Allenaltica flavicornis* sp. nov. **A,** lateral habitus; **B,** antenna; **C,** wing.

antenna not reaching middle of elytra with thicker distal antennomeres in *Acrocrypta* (antenna reach middle of elytra and the distal antennomeres are thinner than the middle ones in *Allenaltica* gen. nov.), deep supracallinal sulcus in *Acrocrypta* (supracallinal sulcus shallow in *Allenaltica* gen. nov.), closed procoxal cavities in *Acrocrypta* (procoxal cavities

are open in *Allenaltica* gen. nov.) and more spherical body in *Acrocrypta*. *Chabria* Jacoby, 1887, another moderately large Oriental genus of convex flea beetles, can be separated from *Allenaltica* gen. nov. based on antennal calli, which are separated widely by a distance subequal to orbit width (antennal calli are narrowly separated in *Allenaltica* gen. nov., by a distance much less than that of orbit width). Lateral pronotal margins in *Chabria* are strongly arched and the anterolateral corners are gently, but distinctly projecting forward compared to those in *Allenaltica* gen. nov. *Acrocrypta*, *Chabria*, *Phygasoma* and *Sphaerometopa* can easily be separated from *Allenaltica* gen. nov. based on the structure of the metatibia. In ventral view, apex of metatibia in *Allenaltica* gen. nov. (Fig. 4A) is deeply cleft with articulation of first metatarsomere visible through the cleft and lateral edge of the cleft with metatibial spine and the mesal edge with many sharp, spine like thick bristles. However, in *Acrocrypta, Chabria, Phygasoma* and *Sphaerometopa*, the apex of metatibia (Fig. 4B) is entire and not cleft.

Etymology: This interesting new genus is named after Albert Allen for the gift of specimens from Mindanao.

***Allenaltica flavicornis* sp. nov.** (Figs 1–4)

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Length 9.0-9.5 mm, width 5.1-5.8 mm. Entirely piceous black, except all coxae tinted flavus, mouth parts dark brown. Antenna entirely flavus, distal antennomeres being distinctly lighter than proximal.

Length of pronotum (Fig. 1C) 1.9-2.1 mm; maximum width of pronotum 3.8 mm. Vertical diameter of eye 1.4-1.5× transverse diameter. Distance between eyes equal to 2.3× transverse diameter of one eye. Distance between eye and adjacent antennal socket 0.3 times transverse diameter of antennal socket. Proportionate length of antennomeres (Fig. 3B) 1-11 equals: 1: 0.4-0.5: 1.1: 1.3-1.4: 1.5-1.6: 1.3: 1.3: 1.2: 1.2: 1.0-1.1: 1.2-1.3.

Length ratio of femur: tibia: tarsomere 1: tarsomere 2: tarsomere 3: tarsomere 4 equals 1: 0.9-1.1: 0.3: 0.2: 0.2: 0.4 (foreleg); 1.3-1.6: 1.2: 0.3-0.4: 0.2: 0.2: 0.4 (middle leg); 1.3-1.4: 1.6-1.7: 0.4: 0.2: 0.2: 0.4 (hind leg). Hind femur 2× longer than wide.

Receptacle of spermatheca (Fig. 1G) about 2.5× longer than wide, inner and outer sides convex; horizontal part of pump longer than vertical, pump with a blunt apical denticle. Duct makes loop towards receptacle. Vaginal palpus (Fig. 1H) with outer margin convex and inner margin concave. Both ends of tignum tapering, proximal end curved, distal membranous part unsclerotized except for narrow proximal margin. Length of spermathecal receptacle 0.4 mm. Length of vaginal palpi 0.6 mm. Length of tignum (Fig. 1I) 2.1 mm.

Aedeagus in ventral view (Fig. 1D) tapering towards apex, ventral side moderately convex, with a pair of deep, elongate depressions on each side of apex, besides a narrow linear impression in between paired depressions towards apex. In lateral view (Fig. 1E), apex acutely narrowed and recurved. Distal opening (Fig. 1F) longer than wide, partially covered with a lamina. Length of aedeagus 3.1 mm. Arms of tegmen longer than stem.

Sexual dimorphism. First foretarsomere in male a little wider and concave ventrally. Setae on ventral side of first pro-, meso- and metatarsomeres in male plumose with flat apex, while the same in female is ribbon like with pointed apex. Posterior margin of last ventrite entire in female, while the same is distinctly lobed in middle in male.

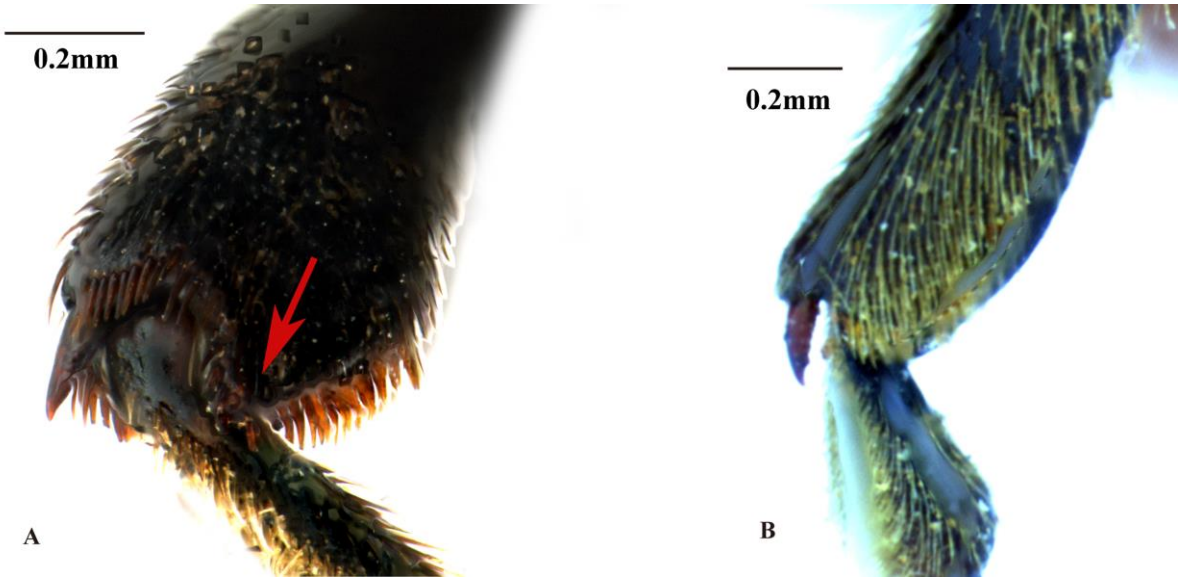

Figure 4. Apex of metatibia in ventral view. **A,** *Allenaltica flavicornis* sp. nov.; **B,** *Sphaerometopa acroleuca* (Wiedemann, 1819).

Etymology: The species name, *flavicornis*, refers to the color of the antenna.

Material examined: Holotype ♂, labeled as follows: Labels (1) Philippines: Mindanao / Mount Apo / -.xi. 2013 / Ismael Lumawig Coll. (2) Holotype / Allenaltica flavicornis n. gen. n. sp. / des. Prathapan, Konstantinov, Ruan 2016 (USNM). Paratypes 4 ♀. Same data as for holotype (USNM).

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