A revision of the genus *Anthaxia* from the Philippines
(Coleoptera: Buprestidae: Buprestinae: Anthaxiini)

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Abstract. A taxonomic revision of five species of the genus *Anthaxia* Eschscholtz, 1829 from the Philippines is performed and two new species are described: *Anthaxia* (*Haplanthaxia*) *palawanensis* sp. nov. (Palawan) and *A.* (H.) *philippines* sp. nov. (Luzon, Negros, Sibuyan). *Anthaxia* (H.) *attenuata* Fisher, 1922, stat. restit. is removed from the synonymy of *A.* (H.) *aeneocuprea* Kerremans, 1913 and revalidated as a species. *Anthaxia* (H.) *mindanaensis* Fisher, 1922, comb. nov. is transferred from the subgenus *Anthaxia* to the subgenus *Haplanthaxia* Reitter, 1911. The lectotype of *A.* (H.) *boettcheri* Obenberger, 1928 is designated. All species and their male genitalia are illustrated and the key to the Philippine species is provided.

Key words. Coleoptera, Buprestidae, Buprestinae, Anthaxiini, *Anthaxia*, taxonomy, key, type examination, lectotype designation, new combination, new species, Philippines

Introduction

The genus *Anthaxia* Eschscholtz, 1829 is widely distributed in the Holarctic, Oriental and Ethiopian Regions. In the Oriental Region the genus *Anthaxia* is represented by three subgenera: *Haplanthaxia* Reitter, 1911, *Merocrus* Bílý, 1989 and *Thailandia* Bílý, 1990. The nominotypical subgenus (*Anthaxia* s. str.) reaches the border of the Oriental region in southern China and in the Himalayas. The differential characters of some species-groups of all subgenera mentioned above have often the transitional states. In the Oriental Region this concerns especially the *A.* (*Haplanthaxia*) *collaris* species-group (Bílý 1995) and *A.* (*Anthaxia*) *weyersi* species-group (Bílý 1990), which can be only hardly attributed to the appropriate subgenus. *Anthaxia* (A.) *mindanaensis* Fisher, 1922, known so far only from the female holotype, has been also attributed to the subgenus *Anthaxia*. 
Due to the extensive material collected in the course of the last two decades in southeastern Asia it is clear that *A. (H.) aeneocuprea* Kerremans, 1913 *sensu* Bílý (1989) is a complex of many very similar and often undescribed species. Also the examination of additional specimens of *A. (A.) mindanaoensis* allowed us to transfer this species to the subgenus *Haplanthaxia*, so that all the species of *Anthaxia* in the Philippines, belong to the subgenus *Haplanthaxia*.

At present three species of the genus *Anthaxia* are known from the Philippines (Bílý 1997, Bellamy 2008): *Anthaxia (Anthaxia) mindanaoensis* Fisher, 1922, *A. (Haplanthaxia) boettcheri* Obenberger, 1928 and *A. (H.) aeneocuprea*. In the present paper *A. (H.) attenuata* Fisher, 1922 is removed from the synonymy of *A. (H.) aeneocuprea* and revalidated as a species. Two new species are described, bringing the total number of the Philippine *Anthaxia* species to five.

This revision was ignited by the possibility of the junior author to study Fisher’s types deposited in the USNM during his stay in the Smithsonian Institution, Washington and by the availability of the unidentified specimens of the genus *Anthaxia* from the Philippines deposited in the National Museum, Prague and Staatliches Museum für Tierkunde, Dresden.

**Material and methods**

All male specimens including types were dissected and male genitalia were extracted. Usually they were only half-pulled from the abdomen, but in some cases they had to be pulled completely and fixed on a separate label.

Data from locality labels of the types are cited “verbatim” with our comments in [square brackets]. The following abbreviations are used to indicate the form of the text: p = printed, h = handwritten, h+p = combined. Individual labels are indicated by a double slash (“//”), individual lines of every label line by a single slash (“/”). Content of the respective publication is given in (brackets) in the catalogues provided for each species.

A Canon D-550 digital camera with attached Canon MP-E65mm f/2.8 1–5× macro lens was used to capture the colour images.

The following codens of institutional collections are used in the text:

- NMPC National Museum, Prague, Czech Republic;
- SMTD Senckenberg Naturhistorische Sammlungen, Staatliches Museum für Tierkunde, Dresden, Germany;
- USNM United States National Museum of Natural History, Smithsonian Institutions, Washington D.C., U.S.A.

**Key to the Philippine species of Anthaxia**

1. Elytra parallel for anterior two thirds; elytral margins straight, or only slightly emarginate posteriad humeri; abdominal segments completely covered by elytra. .................................
   - subgenus *Anthaxia* Eschscholtz, 1829 (does not occur in the Philippines)
   - Elytra more or less sphenoidal, tapering posteriorly; elytral margins distinctly, very often deeply emarginate posteriad humeri; lateral portions of abdominal segments usually not covered by elytra, well-visible in dorsal view (more distinct in males) (subgenus *Haplanthaxia* Reitter, 1911). ........................................................................................................ 2

2. Elytral epipleura reaching only apical rounded part of elytra; head narrower than anterior pronotal margin; median lobe of aedeagus with lateral serration. .......................... 3
− Elytral epipleura reaching middle of apical rounded part of elytra (but not reaching elytral suture); head wider than anterior pronotal margin; median lobe of aedeagus without lateral serration. ................................................................. 5

3. Frons convex, microsculptured; lateral pronotal margins subparallel, maximum pronotal width at midlength; elytra subparallel at anterior two thirds; anal ventrite of female rounded apically; aedeagus as in Fig. 12; 3.6–3.9 mm; Figs. 8, 9. Luzon, Negros, Sibuyan. ............

................................................................. A. (H.) philippinensis sp. nov.

− Frons flat with feeble medial groove, without microsculpture; lateral pronotal margins rounded, maximum pronotal width at posterior third or at midlength; elytra tapering from humeri to apex; anal ventrite of female notched apically. ......................................................... 4

4. Pronotum distinctly wider than elytra, maximum pronotal width at midlength; parameres with fine dorsal denticulation at posterior half, aedeagus as in Fig. 14; 4.0 mm; Fig. 1. Negros. .................................................................................. A. (H.) attenuata Fisher, 1922

− Pronotum as wide as elytra across humeri, maximum pronotal width at posterior third; parameres with dorsal and lateral denticulation at posterior half; aedeagus as in Fig. 13; 3.3–5.1 mm; Figs. 2, 4, 5. Luzon, Mindoro, Palawan, Sibuyan. ............................................................... A. (H.) boettcheri Obenberger, 1928

5. Pronotal and elytral sculpture very fine; frons flat; lateroposterior pronotal depressions and postscutellar portion of suture with very weak lustre; frons of male black; male meso- and metatibiae not modified; aedeagus as in Fig. 11; 3.0–3.7 mm; Figs. 3, 6. Mindanao, Mindoro. ............................................................. A. (H.) mindanaeensis Fisher, 1922

− Pronotum and elytral sculpture rough; frons slightly depressed; lateroposterior pronotal depressions and circumscutellar portion of elytra golden green; frons of male golden green; male mesotibiae with deep, inner, preapical emargination (Fig. 7), metatibiae with inner, apical spine (Fig. 7); aedeagus as in Fig. 10; 3.6 mm; Fig. 7. Palawan. .................................................. A. (H.) palawanensis sp. nov.

Taxonomy

**Anthaxia (Haplanthaxia) attenuata** Fisher, 1922, stat. restit.
(Figs. 1, 14)

*Anthaxia attenuata* Fisher, 1922: 13. Type locality: Philippines, southeastern Negros Island, Mt. Talinis, ca. 9°15'N 123°11'E.

**Anthaxia attenuata**: **OBENBERGER** (1930): 546 (catalogue).


**Type specimen studied.** **HOLOTYPE** (by monotypy): ♂ (USNM, type no. USNMN 24667) (Fig. 1), **PHILIPPINES: NEGROS**: “Cuernos Mts. [= Cuernos de Negros, now Mt. Talinis, ca. 9°15'N 123°11'E] [p] / [SE] Negros, [C. F.] Baker [leg.] [p] // 83118 [h] // Type No. / 24667 / U.S.N.M. [p+h, red label] // Anthaxia / attenuata / Fisher [h]”.

**Diagnosis.** Small, navicular, bronze with blue-green frons and blue-green tinge around scutellum; pronotum laterally widely rounded, distinctly wider than elytra; aedeagus subcylindrical, parameres slightly enlarged at posterior fourth (Fig. 14).
Differential diagnosis. Aedeagus generally very similar to that of Anthaxia (Haplanthaxia) boettcheri but less cylindrical and somewhat swollen at posterior third (Figs. 14 vs. 13); fine denticulation at posterior half of parameres very fine, situated on the dorsal surface.

Remarks. In the revision of Anthaxia from Taiwan (Bílý 1989), A. (H.) attenuata was erroneously synonymised with A. (H.) aeneocuprea. Now, having the possibility to study types of both species side by side and after having studied hundreds of specimens from this group from southeastern Asia (see the Introduction) we see that they are two different, well defined although rather similar species. Anthaxia (H.) attenuata differs from A. (H.) aeneocuprea having a larger, more slender body, darker colouration, somewhat longer aedeagus and by the narrower, more pointed median lobe. Anthaxia (H.) aeneocuprea seems to be an endemic species of Taiwan.

Distribution. Philippines (Negros).

**Anthaxia (Haplanthaxia) boettcheri** Obenberger, 1928

(Figs. 2, 4, 5, 13)

*Anthaxia Boettcheri* Obenberger, 1928: 236. Type locality: Philippines, northern Luzon island, Kalinga province, Cordillera Central mts., Balbalasang – Balbalan National Park, Balbalasang, 17°29′N 121°03′E, ~ 950 m a.s.l.


**Diagnosis.** Small, navicular species with rather strong sexual dimorphism (Figs. 4, 5): male slender, nearly triangular, bronze, frons, antennae, anterior tibiae, pro- and mesofemora golden green or blue-green; mesotibiae with very fine, inner, preapical serration, anal ventrite truncate; female much robust, completely bronze with simple mesotibiae and rounded, medially notched anal ventrite; aedeagus (Fig. 13) slightly spindle-shaped, nearly subcylindrical, dorsal surface and lateral margins of parameres with fine denticulation at posterior half.

**Differential diagnosis.** See key and the diagnosis of Anthaxia (Haplanthaxia) attenuata.
Remarks. The denticulation of dorsal surface and lateral margins of parameres in *Anthaxia (H.) boettcheri* and *A. (H.) attenuata* is quite a unique phenomenon which has not been observed in the genus *Anthaxia*, yet. The male specimen from Palawan possesses parameres without distinct denticulation but other characters incl. the shape of aedeagus correspond well with *A. (H.) boettcheri*.

To avoid any confusion in the future, and for the sake of the stability, considering the fact that the number of syntypes of *A. (H.) boettcheri* is unknown, we hereby designate the well-preserved male syntype from NMPC as the lectotype (Fig. 2) and the female syntype from SMTD as the paralecotype.

**Distribution.** Philippines (Luzon, Mindoro, Palawan, Sibuyan). New for Mindoro, Palawan and Sibuyan.

*Anthaxia (Haplanthaxia) mindanaoensis* Fisher, 1922, comb. nov.

(Figs. 3, 6, 11)

*Anthaxia mindanaoensis* Fisher, 1922:13. Type locality: Philippines, eastern Mindanao island, Davao, 7º04'N 125º36'E.


**Further specimens studied.** PHILIPPINES: NORTHWESTERN MINDORO: Abra de Ilog [13º26’N 120º44’E], W. Schultze leg. (3 ♀♀, NMPC; 1 ♂, SMTD); Mt. Calavite [13º29’N 120º23’E], W. Schultze leg. (4 ♂♂ 3 ♀♀, SMTD).

**Diagnosis.** Very small (3.0-3.7 mm), suboval, black-bronze species (Fig. 3); elytra suboval with small, blue-green postscutellar stripe, frons very slightly convex, lateroposterior pronotal depressions very often with golden green tinge; parameres strongly constricted at apical third, median lobe sharply pointed (Fig. 11). Sexual dimorphism nearly absent: the female differs from the male only by somewhat stouter body and by nearly parallel anterior two thirds of elytra which nearly completely cover the abdomen (elytra of male more sphenoidal, not completely covering abdomen) – see Figs. 3, 6.

**Differential diagnosis.** *Anthaxia (Haplanthaxia) mindanaoensis* is similar to *A. (Anthaxia) weyersi* (Indonesia: Sumatra, Java) which differs from *A. (H.) mindanaoensis* only weakly by the characters distinguishing both subgenera (well-expressed only in males), by the elytral epipleura reaching only the apical, rounded part of the elytra, by the lighter colouration, by the more sphenoidal body and by the form of the median lobe, which is slender and more pointed in *A. (H.) mindanaoensis*.

**Remarks.** In the female holotype (see Fig. 3) the elytra completely cover the abdomen, which was the main reason for attributing this species to the *A. (A.) weyersi* species-group (BÍLY 1990). As a matter of fact, all members of this species-group are very close to the subgenus *Haplanthaxia*.

**Distribution.** Philippines (Mindanao, Mindoro). New for Mindoro.
**Anthaxia (Haplanthaxia) palawanensis** sp. nov.  
(Figs. 7, 10)

**Type locality.** Philippines, central Palawan island, Salakot waterfalls, 9º42′N 118º31′E, 800 m a.s.l.

**Type specimen.** HOLOTYPE: (NMPC): PHILIPPINES: Central PALAWAN: “PHILIPPINES, PALAWAN, 1–21.II. 2000, 800 m, / 9º42′N 118º31′E, / SALAKOT waterfalls, / E. Jendek leg. [p]”.

**Diagnosis.** Small (3.6 mm), suboval, moderately convex; dorsal surface black with very slight violet tinge, frons blue-green, anterior tibiae and tarsi, posterior pronotal angles and elytral base golden green, elytra with green lustre along suture; ventral surface (including legs) intensively green, abdominal ventrites and mesosternum bronze with green tinge; entire body asetose only abdominal ventrites with indistinct, very short and sparse white pubescence.

**Description** of the holotype (Fig. 7). Head relatively large, much wider than anterior pronotal margin; frons slightly impressed, clypeus nearly truncate, only slightly emarginate anteriorly; transverse, frontoclypeal depression well-developed; vertex 0.7 times as wide as width of eye; eyes large, subelliptical, strongly projecting beyond outline of head; frontal sculpture consisting of relatively large, dense, polygonal cells with large, flat, lustrous central grains; sculpture of vertex smaller, rougher, with small central grains; antennae missing.

Pronotum transverse, 2.5 times as wide as long, rather convex with well-developed, wide lateroposterior depressions; anterior margin deeply biarcuate with well-developed medial lobe, posterior margin nearly straight; lateral margins almost straight at midlength, steeply, shortly converging both to anterior and posterior angles; posterior angles obtuse-angled; pronotal sculpture rather rough, consisting of small, dense, polygonal cells with tiny central grains; occlusion of vertex smaller, rougher, with small central grains; antennae missing.

Elytra cuneiform, twice as long as wide, nearly regularly tapering from humeri to separately rounded apices; humeral swellings small, transverse, basal depression deep, wide, reaching scutellum; elytra regularly convex, slightly flattened at anterior fourth; elytral epipleura well-developed, wide, reaching elytral apex; only very tips of elytra with indistinct lateral serration; elytra with fine but sharp, subhumeral, lateral carina parallel with lateral margin, reaching elytral midlength; sculpture almost homogeneous, consisting of fine, somewhat transversely widened punctures.

Ventral surface lustrous, widely ocellate with fine central grains; prosternum densely, finely ocellate, nearly matt, prosternal process slightly convex; anal ventrite shortly truncate. Legs slender, relatively short, mesotibiae with small, deep, inner, preapical emargination (Fig. 7), metatibiae with wide, inner, preapical emargination and large, terminal spine (Fig. 7).

Aedeagus (Fig. 10) flat, nearly spatulate, parameres strongly widened at apical third with narrow, pointed apices; median lobe obtusely pointed apically, without lateral serration.

**Sexual dimorphism.** Female unknown.

**Measurements.** Length 3.6 mm, width 1.4 mm.

**Etymology.** The specific epithet is derived from the name of the Palawan Island, the type locality of the species.

**Distribution.** Philippines (Palawan).
Differential diagnosis. *Anthaxia (Haplanthaxia) palawanensis* sp. nov. differs from the sympatric species, *A. (H.) mindanaoensis* by the slender body, rougher sculpture of pronotum, shape of male genitalia (compare Figs. 10 and 11) and by the characters mentioned in the key.
Anthaxia (Haplanthaxia) philippinensis sp. nov.
(Figs. 8, 9, 12)

**Type locality.** Philippines, Sibuyan island [without exact data].


**Diagnosis.** Small (3.6–3.9 mm), convex, matt with silky lustre; vertex, pronotal disc, elytra, legs and antennae black-green, frons, lateral pronotal margins and elytral base golden green, posterior pronotal angles golden-orange (male) or entire dorsal surface black-violet, posterior pronotal angles golden-red and elytral base with green tinge (female); ventral surface black, pleurites with golden orange lustre in both sexes; entire body asetose.

**Description** (holotype, Fig. 8). Head relatively large, as wide as anterior pronotal margin; frontoclypeus very shallowly emarginate anteriorly, frons slightly convex with indistinct postclypeal depression; vertex 0.7 times as wide as width of eye; eyes large, reniform, slightly projecting beyond outline of head; antennae relatively long, reaching posterior pronotal third when laid alongside; scape pyriform, 4 times as long as wide, pedicel ovoid, 1.4 times as long as wide; third antennomere slightly widened apically, 1.8 times as long as wide, fourth antennomere triangular, nearly as long as wide; antennomeres 5–10 trapezoidal, about 1.5 times as wide as long; terminal antennomere rhomboid, nearly twice as long as wide; sculpture of head consisting of dense, fine basal microsculpture and small, polygonal cells with well-developed central grains.

Pronotum moderately convex, 2.2 times as wide as long, with well-developed, wide lateroposterior depressions; anterior margin deeply emarginate with small medial lobe, posterior margin nearly straight; lateral margins moderately arcuate, nearly parallel at middle, posterior angles obtuse; sculpture nearly homogenous consisting of small, polygonal cells with central grains. Scutellum flat, subcordiform, microsculptured.

Elytra regularly convex, 2.2 times as long as wide, subparallel at anterior two thirds, regularly tapering at posterior third; each elytron rounded separately, preapical lateral serration very fine, dense; elytral epipleura well-developed but not reaching elytral apex; humeral swellings small; transverse, basal depression narrow, deep, nearly reaching scutellum; sculpture fine, homogenous, consisting of basal microsculpture and small, rather sparse, shallow punctures.

Ventral surface rather lustrous, abdominal ventrites without distinct sculpture, prosternum and metasternum with rather indistinct ocellate sculpture; anal ventrite widely truncate, without lateral serration. Legs long and slender, mesotibiae straight, metatibiae slightly bent outwards, both without inner serration. Tarsal claws slender, hook-shaped, weakly enlarged at base.

Aedeagus (Fig. 12) rather long, subparallel, parameres only slightly enlarged at midlength; median lobe obtusely pointed apically, with fine, rather sparse lateral serration.

**Sexual dimorphism.** Except for the colouration (see above), the female (Fig. 9) differs from the male (Fig. 8) by the stouter body, distinctly more convex frons, projecting eyes and by the less truncate, nearly rounded apex of the anal ventrite.
Measurements. Length 3.6–3.9 mm (holotype 3.8 mm), width 1.3–1.4 mm (holotype 1.4 mm).

Etymology. The specific epithet is derived from the country of the origin – Philippines.

Distribution. Philippines (Luzon, Negros, Sibuyan).

Differential diagnosis. Anthaxia (Haplanthaxia) philippinensis sp. nov. somewhat resembles A. (H.) exsul Obenberger, 1914 (China ?) in body-shape and the microsculptured elytra, but strongly differs in the pronotal sculpturing and by the form of the male genitalia. From the sympatric species of the genus Anthaxia it differs by the characters given in the key.

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