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A new species-group of the genus *Anthaxia* (*Haplanthaxia*) from south-eastern Asia, with descriptions of two new species (Coleoptera: Buprestidae: Anthaxiini)

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Abstract. Two new species of the genus *Anthaxia* Eschscholtz, 1829 are described: *A*. (*Haplanthaxia*) *phobos* sp. nov. (Thailand) and *A*. (*H*.) *deimos* sp. nov. (China, Laos, Thailand). *Anthaxia* (*H.*) *phobos* species-group is defined and a review of all the currently defined species-groups in the subgenus *Haplanthaxia* Reitter, 1911 is provided. New species are illustrated and the newly defined species-group is differentiated from previously defined groups.

Key words. Coleoptera, Buprestidae, Anthaxiini, taxonomy, *Anthaxia*, *Haplanthaxia*, *A. phobos* species-group, new species, China, Laos, Thailand

Introduction

The large genus *Anthaxia* Eschscholtz, 1829 (about 800 species according to Bellamy (2008)) of worldwide distribution (except for the Australian Region) is currently divided into six subgenera (Bellamy, 2008). There is no doubt that the subgenus *Haplanthaxia* Reitter, 1911 is the largest subgenus, comprising about 60 % of species of the genus. So far 11 species-groups have been defined in this subgenus according to Bellamy (2008) and 5 species-groups were defined subsequently by Bílý (2010, 2015), Bílý & Kubáň (2010, 2012) and Bílý & Sakalian (2014). Moreover two species-groups were omitted by Bellamy (2008) in his catalogue and one more was transferred from *Anthaxia* s. str. into *Haplanthaxia* by Bílý & Kubáň (2012), so at present there are 19 species-groups defined in the subgenus *Haplanthaxia* and many more are awaiting definition; one of them (20th) is defined in this paper.

The currently defined species-groups of the subgenus *Haplanthaxia* are:

A. aeneocuprea species-group (Bílý 2015)
A. atomaria species-group (Bílý 2000)
A. cichorii species-group (Obenberger 1917)
A. collaris species-group (Bílý 1995)
A. flammifrons species-group (Obenberger 1917)
A. hilaris species-group (Bílý 2002)
A. kheiliana species-group (Bílý 2008)
A. malachitica species-group (Obenberger 1917)
A. mashuna species-group (Bílý & Sakalian 2014)
A. melancholica species-group (Bílý & Kubáň 2010)
A. millefolii species-group (Obenberger 1917)
A. mundula species-group (Obenberger 1917)
A. olympica species-group (Obenberger 1917)
A. phobos species-group (here defined)
A. proteus species-group (Bílý 1993)
A. rothkirchi species-group (Bílý 2000)
A. sculptipennis species-group (Bílý 2002)
A. thunbergi species-group (Bílý & Kubáň 2010)
A. weyersi species-group (Bílý 1990)
A. zanzibarica species-group (Bílý 2010)

Having studied the rich material of *Anthaxia* collected in the course of the last decades in south-eastern Asia I found two undescribed species from China, Laos and Thailand belonging to a very characteristic, so far undefined species-group, which is defined in this contribution together with the descriptions of the two new species.

Material and methods

A Canon D-550 digital camera with attached Canon MP-E65mm f/2.8–5× macro lens was used to capture the colour images; multiple photographs taken were combined with Helicon Focus image stacking software.

The body length was measured in the middle of the body following the elytral suture (the same for the pronotal and elytral length); width of body means the maximum body width (usually the maximum span between lateral pronotal margins or span between outer margin of humeral callosities). The double slash (//) is used for the separating data on the different labels, the square brackets ([]) for clarification of the text of the locality labels. The morphological terminology follows that of Bílý (2010) and Bílý & Kubáň (2010).

Codens of collections used in the text:

MNCA Manfred Niehuis collection, Albersweiler, Germany
NMPC National Museum, Prague, Czech Republic
SOCT Sadahiro Ohmomo collection, Tsukuba, Japan

Taxonomy

Anthaxia (*Haplanthaxia*) *phobos* species-group

The *Anthaxia* (*H.*) *phobos* sp. nov. species-group differs from other currently defined species-groups of *Haplanthaxia* by the following set of characters:

– rather strongly, regularly convex frons;
– frontoclypeus not separated from frons by depression or transverse groove;
– relatively short antennae reaching posterior third of lateral pronotal margins when laid alongside;
– vertex narrow, 0.9 – 1.0 times as wide as width of eye;
– anterior pronotal margin deeply bisinuate;
– pronotal sculpture homogeneous consisting of small, dense, regular, rounded or slightly polygonal cells with well-developed central grains;
– lateroposterior pronotal depressions usually wide;
– elytra only very weakly wedge-shaped almost subparallel (Figs. 1–2, 4–5);
– basal, transverse elytral groove very wide, reaching scutellum;
– only the apex of elytra with very fine, lateral serrations;
– scutellum almost 1.5 times as long as wide;
– legs relatively short, male meso- and metatibiae straight, unmodified;
– third and fourth tarsomeres pale, distinctly widened;
– anal ventrite of both sexes of the same shape, only with very fine lateral serrations;
– aedeagus spindle-shaped, apical portion of parameres narrow, apically obliquely truncate, somewhat bent outwards (Figs 3, 6);
– median lobe with sparse, fine, dorsolateral serrations.

The species-group can be simply attributed to the subgenus *Haplanthaxia* due to the general body-shape, morphology of the elytral margins and the form of the elytral epipleura at subhumeral part. The species-group is defined by the complete set of the above mentioned characters since each of them separately can be found also in other species-groups and not only in the subgenus *Haplanthaxia*.

Anthaxia (*Haplanthaxia*) *phobos* sp. nov.

(Figs 1–3)

Type locality. Thailand, Khao Bandai It, Petchaburi Province**.**

Type material. Holotype: ♂, 'Peninsular Thai[land], S. Ohmomo leg. // 22.v.2005, Khao Bandai It, Petchaburi' (NMPC). Allotype: ♀, 'C–Thai[land], PKK [Prachub Khiri Khan Province], Hua Hin, Mt. Hin Lek Phai, 11.iv.2003, S. Ohmomo leg.' (NMPC). Paratypes: 1 ♂, same data as holotype (NMPC); 1 ♂, same data as allotype (NMPC); 1 ♀, 'Peninsular Thai[land], S. Ohmomo leg. // Khao Bandai It, Petchaburi, 22.v.2005' (MNCA); 1 ♂ 1 ♀, 'Thailand, Hua Hin, PKK Prov.[Prachub Khiri Khan Province], Khao Hin Lek Phai, 12.v.2007, S. Ohmomo leg.' (NMPC); 1 ♀, 'Peninsular Thai[land], Khao Hin Lek Phai, Hua Hin, PKK [Prachub Khiri Khan Province], 15.v.2008, S. Ohmomo leg.' (SOCT); 1 ♂ 1 ♀, same data but 15.v.2008 (SOCT); 1 ♀, same data but 21.v.2009 (SOCT); 3 ♀♀, same data but 18.v.2010 (SOCT); 1 ♀, 'C-Thai[land], Katchaburi, Khao Khaeng Chan, 24.v.2013, S. Ohmomo leg.' (SOCT).

Additional material examined. 1 ♀ (almost completely destroyed), 'Peninsular Thai[land], S. Ohmomo leg. // Khao Bandai It, Petchaburi, 22.v.2005' (SOCT).

Diagnosis. Medium-sized (length 4.2–6.0 mm), stout, convex, completely asetose, lustrous (Figs 1–2); dorsal surface black-bronze with fine green lustre (more intense at basal portion of elytra and along suture); pronotum with red-orange lateroposterior depressions and narrow, medial stripe; frons dark golden-orange in both sexes, vertex black; antennae and legs black with green lustre; ventral surface black, proepisterna and lateral portions of abdominal ventrites golden-orange.

Description of the male holotype (Fig. 1). Head large as wide as width of anterior pronotal margin; anterior margin of frontoclypeus almost straight; frons regularly, rather strongly convex, vertex weakly convex, 0.9 times as wide as width of eye; eyes large, widely reniform, not projecting beyond outline of head; sculpture of head homogeneous consisting of small, dense, regular, oval cells with well developed central grains; antennae short reaching posterior third of lateral pronotal margins when laid alongside; scape 5 times as long as wide, slightly curved, claviform, pedicel elliptical, 1.5 times as long as wide; third antennomere obtusely triangular, as wide as long, antennomeres 4–10 trapezoidal, somewhat wider than long; terminal antennomere rhomboid, 1.5 times as long as wide.

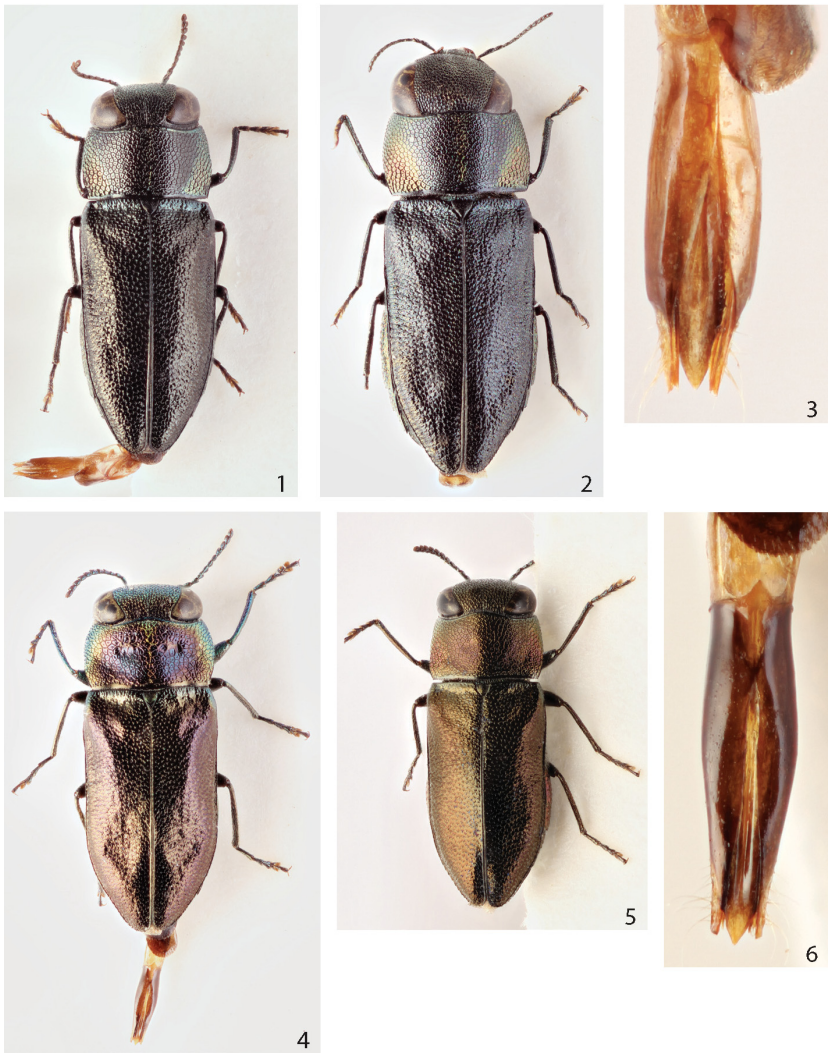
Pronotum rather strongly convex, 1.8 times as wide as long, with weak, shallow lateroposterior depressions; anterior margin deeply bisinuate with wide, projecting medial lobe, posterior margin very weakly bisinuate, almost straight; lateral margins weakly arcuate, posterior angles obtuse-angled, maximum pronotal width just anterior to mid-length; sculpture consisting of small, dense, regular, polygonal cells with tiny central grains; sculpture rougher and more distinct in lateroposterior depressions. Scutellum large, triangular, flat, microsculptured, slightly longer than wide.

Elytra almost regularly convex, 1.9 times as long as wide, weakly wedge-shaped, very slightly uneven at posterior fourth; each elytron regularly rounded apically, humeral callosities small, not projecting beyond outline of elytra; basal, transverse depressions deep, wide, almost reaching scutellum; elytral epipleura narrow, parallel-sided, not reaching elytral apex; only very tips of elytra with very fine, lateral serrations; sculpture very fine, homogeneous, almost scale-shaped, rougher, weakly granulate in basal, transverse depressions.

Ventral surface lustrous, with rather rough eye-like sculpture with large central grains, abdominal ventrites with very fine, eye-like sculpture; prosternal process weakly convex, strongly widening behind procoxae, pointed apically. Anal ventrite narrowly truncate with very fine, lateral serrations. Legs thin, relatively short, tibiae almost straight, without inner serrations; tarsi slender, distinctly shorter than corresponding tibiae, fourth tarsomere yellow-brown with wide adhesive pads. Tarsal claws fine, weakly hook-shaped, yellow-brown, only slightly enlarged at base.

Aedeagus (Fig. 3) wide, short spindle-shaped, moderately sclerotised, parameres conspicuously narrowed in posterior fifth, obliquely truncate apically; median lobe broad, widely pointed apically with fine dorsolateral serrations.

Measurements. Length: 4.2–6.0 mm (holotype 4.3 mm); width: 1.5–2.2 mm (holotype 1.5 mm).



Figs 1–6. 1 – *Anthaxia* (*Haplanthaxia*) *phobos* sp. nov., holotype, 4.3 mm; 2 – the same, allotype, 3.7 mm; 3 – the same, aedeagus, holotype; 4 – *A.* (*H.*) *deimos* sp. nov., holotype, 4.3 mm; 5 – the same, allotype, 3.7 mm; 6 – the same, aedeagus, holotype.

Sexual dimorphism. Only very slightly expressed; the female differs from the male only by the stouter body, slightly different colouration (Fig. 2) and by the wider vertex (vertex as wide as width of eye in female).
Variability. No variability was observed except for the size and sexual dichromatism.
Bionomy. Unknown.

Differential diagnosis. *Anthaxia* (*Haplanthaxia*) *phobos* sp. nov. is similar and most probably related to the following species, *A.* (*H.*) *deimos* sp. nov., from which it differs by the characters given in the differential diagnosis of *A.* (*H.*) *deimos* sp. nov. (see below).
Etymology. This species is named after the larger moon of Mars – "*Phobos*"; noun in apposition.
Distribution. Thailand.
Note. One female labelled: 'Laos NE, Hua Phan Province, Ban Saleui, Phou Pan (Mt), 20°12′N 104°01′E, 1300–1900 m, 1.–31.v.2011, Leg. C. Holzschuh' (NMPC) was not included among paratypes since (apart from the locality) it differs by the completely golden-orange ventral surface and almost unicolorous, dark, black-bronze pronotum; other characters completely fit to *Anthaxia* (*H.*) *phobos* sp. nov. but it could belong to a different species and without a male it is impossible to evaluate this specimen.

Anthaxia (*Haplanthaxia*) *deimos* sp. nov.

(Figs 4–6)

Type locality. North-eastern Laos, Houa Phan Province, 20°12–13.5′N 103°59.5–104°01′E, Ban Saluei–Phou Pane Mt., 1340–1870 m a.s.l.
Type material. Holotype: ♂, 'Laos-NE, Houa Phan Prov., 20°12–13.5′N 103°59.5–104°01′E, Ban Saluei–Phou Pane Mt., 1340–1870 m, 15.iv.–15.v.2008, Lao collectors leg.' (NMPC). Allotype: ♀, 'Thai[land]-N, Chiang Mai Prov., San Pakia vill., 19°19′N 98°50′E, 1400 m, 1.–15.v.1998, Vít Kubáň leg.' (NMPC). Paratype: ♂, 'China: S-Yunnan (Xishuangbanna), 34 km NW Jinghong above Guo Men Shan // 22°14′35″N 100°36′56″E, 1200–1300 m, 10.v.2009, NNNR leg. A. Weigel on *Castanopsis* flower' (NMPC).

Diagnosis. Relatively small (length 3.2–4.3 mm), flattened, subparallel, completely asetose, very lustrous (Figs 4–5); dorsal surface bronze-violet, frons, anterior pronotal angles, antennae and legs golden green, vertex bronze (male) or anterior pronotal angles coppery red, antennae and legs green, frons and vertex dark bronze (female); ventral surface red-bronze with green lustre, meso- and metafemora bright green (male) or ventrally entirely red-bronze (female).
Description of the male holotype (Fig. 4). Head large as wide as width of anterior pronotal margin; anterior margin of frontoclypeus almost straight; frons regularly, rather strongly convex, vertex weakly convex, 1.1 times as wide as width of eye; eyes large, widely reniform, only very weakly projecting beyond outline of head; sculpture of head homogeneous consisting of small, dense, regular, oval cells with tiny central grains; antennae relatively short almost reaching posterior pronotal angles when laid alongside; scape 4.5 times as long as wide, slightly curved, claviform, pedicel elliptical, twice as long as wide; third antennomere obtusely triangular, as wide as long, fourth antennomere triangular, slightly wider than long, antennomeres 5–10 trapezoidal, somewhat wider than long; terminal antennomere rhomboid, 1.5 times as long as wide.

Pronotum flattened, 1.7 times as wide as long, with deep, wide lateroposterior depressions almost occupying posterior half of pronotum; anterior margin deeply bisinuate with wide, projecting medial lobe, posterior margin very weakly bisinuate, almost straight; lateral margins weakly arcuate, posterior angles obtuse-angled, maximum pronotal width at anterior third; sculpture consisting of small, dense, rather poorly defined, polygonal cells with tiny central grains. Scutellum large, subcordiform, flat, microsculptured, 1.4 times as long as wide.

Elytra very weakly convex, 1.9–2.0 times as long as wide, almost subparallel, slightly uneven at posterior fourth; each elytron regularly rounded apically, humeral callosities small, not projecting beyond outline of elytra; basal, transverse depressions deep, wide, reaching scutellum; elytral epipleura narrow, parallel-sided, not reaching elytral apex; only very tips of elytra with very fine, lateral serrations; sculpture very fine, homogeneous, almost scale--shaped, weakly granulate in basal, transverse depressions.

Ventral surface lustrous, with rather rough eye-like sculpture with large central grains, abdominal ventrites with very fine, eye-like sculpture; prosternal process flat, strongly widening behind procoxae, pointed apically. Anal ventrite obtusely rounded with very fine, lateral serrations. Legs thin, relatively short, tibiae almost straight, without inner serrations; tarsi slender, distinctly shorter than corresponding tibiae, fourth tarsomere yellow-brown with wide, adhesive pads. Tarsal claws fine, weakly hook-shaped, yellow, only slightly enlarged at base.

Aedeagus (Fig. 6) slender, spindle-shaped, strongly sclerotised, parameres regularly narrowed in posterior fourth, obliquely truncate apically; median lobe broad, widely pointed apically, with sparse, fine dorsolateral serrations.

Measurements. Length: 3.2–4.3 mm (holotype 4.3 mm); width: 1.3–1.5 mm (holotype 1.5 mm).

Sexual dimorphism. The female differs from the male by the different colouration (see above and Fig. 5), more convex elytra and by the less developed lateroposterior pronotal depressions and depressions at the posterior fourth of elytra (unfortunately poorly visible in Fig. 5).

Variability. No variability was observed except for the size and sexual dimorphism; the male paratype (China) possesses somewhat longer elytra (2.1 times as long as wide) and almost unicolorous pronotum.

Differential diagnosis. *Anthaxia* (*Haplanthaxia*) *deimos* sp. nov. is similar and most probably related with the previous species, *A.* (*H.*) *phobos* sp. nov., from which it differs by the colouration and smaller, lustrous, flattened body (see above and Figs 4–5), uneven posterior fourth of elytra, and significantly by the wide, deep lateroposterior pronotal depressions. Male genitalia of both species are very characteristic differing from each other by the shape, sclerotisation and form of the apical part of parameres (Figs 3 vs. 6). The shape of the male genitalia is one of the main reasons for separating both species into the separate species-group of *Haplanthaxia*.

Etymology. This species is named after the second moon of Mars – "*Deimos*"; noun in apposition.

Distribution. China, Laos, Thailand.

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