

***Haroldius jechaer* sp. nov. (Coleoptera: Scarabaeidae)
from Yunnan, China**

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Abstract. *Haroldius jechaer* sp. nov. from Yunnan province, China, is described and illustrated. The new species resembles *H. stevensi* Arrow, 1931 in having a large body (length 3.8 mm) and a small semi-elliptic bordered area near the base of the pronotum. Both species can be separated mainly by their different colour, punctuation and macrosetation of the dorsal surface. An updated annotated checklist of all described species of *Haroldius* Boucomont, 1914 is added.

Key words. Coleoptera, Scarabaeidae, Scarabaeinae, *Haroldius*, taxonomy, new species, annotated checklist, China, Oriental Region, Palaearctic Region

Introduction

The genus *Haroldius* Boucomont, 1914 accommodates small, as far as we know, myrmecophilous scarabaeines. Because of myrmecophilous life, their morphology is rather unusual and some diagnostic characters are missing, or at least modified and hard to homologize for tribal classification within Scarabaeinae (cf. e.g., PHILIPS & SCHOLTZ 2000, PHILIPS et al. 2004, KRIKKE & HUIJBREGTS 2006, MONTREUIL 2010). *Haroldius* is currently classified either in Deltochilini (formerly Canthonini, see BOUCHARD et al. (2011) for the explanation) (KRIKKE & HUIJBREGTS 2006), Onthophagini (LÖBL et al. 2006, KRELL & PHILIPS 2010), or most recently in Ateuchini (MONTREUIL 2010).

The genus is distributed in the Afrotropical and the Oriental Regions, including 38 described species. Several species are known to penetrate to the transition zone between the Oriental and the Palaearctic Regions, especially to China and Himalaya where six species are recorded (KRÁL 2003; KRAJCIK 2006; KRIKKE & HUIJBREGTS 2006, 2009; DAVIS et al. 2008). The present finding of an unusually large *Haroldius* in Yunnan Province, China, revealed another undescribed species. The new species is described below and compared with the holotype of the most similar and probably closely related species, *H. stevensi* Arrow, 1931.

Material and methods

Specimens were examined with an Olympus SZ61 stereomicroscope, measurements were taken with an ocular graticule. The habitus photographs were taken using a Canon MP-E 65mm/2.8 1–5× Macro on bellows attached to a Canon EOS 550D camera. Partially focused images of specimen were combined using Helicon Focus 3.20.2Pro software.

Exact label data are cited for the type material. Authors' remarks and addenda are in square brackets, separate label lines are indicated by slash (/), separate labels by double slash (//). Information in 'brackets' indicates the original spelling in the original description.

The specimens included in this study are deposited in the following collections:

- BMNH The Natural History Museum [former British Museum (Natural History)], London, United Kingdom (Maxwell V. L. Barclay);
NMPC National Museum, Prague, Czech Republic (Jiří Hájek).

Taxonomy

Haroldius jechaer sp. nov.

(Figs. 1–3)

Type locality. China, Yunnan province, Tengchong, Laifeng Shan National Forest Park, 25°01.1'N 098°29.1'E, 1700–1900 m a.s.l.

Type material. HOLOTYPE: ♂ (NMPC), 'CHINA: Yunnan prov., 4.VI.2007 / TENGCHONG, 1700-1900 m, / LAIFENG SHAN Nat. Forest Park / 25°01.1'N 098°29.1'E, / J. Hájek & J. Růžička leg. // individually collected under / stones and logs, on soil surface, / on dead wood and on plants and / shrubs, wet mixed forest [printed] // *Haroldius jechaer* sp. nov., HOLOTYPUS ♂, David Král & Jiří Hájek det. 2012 [red, printed]'.

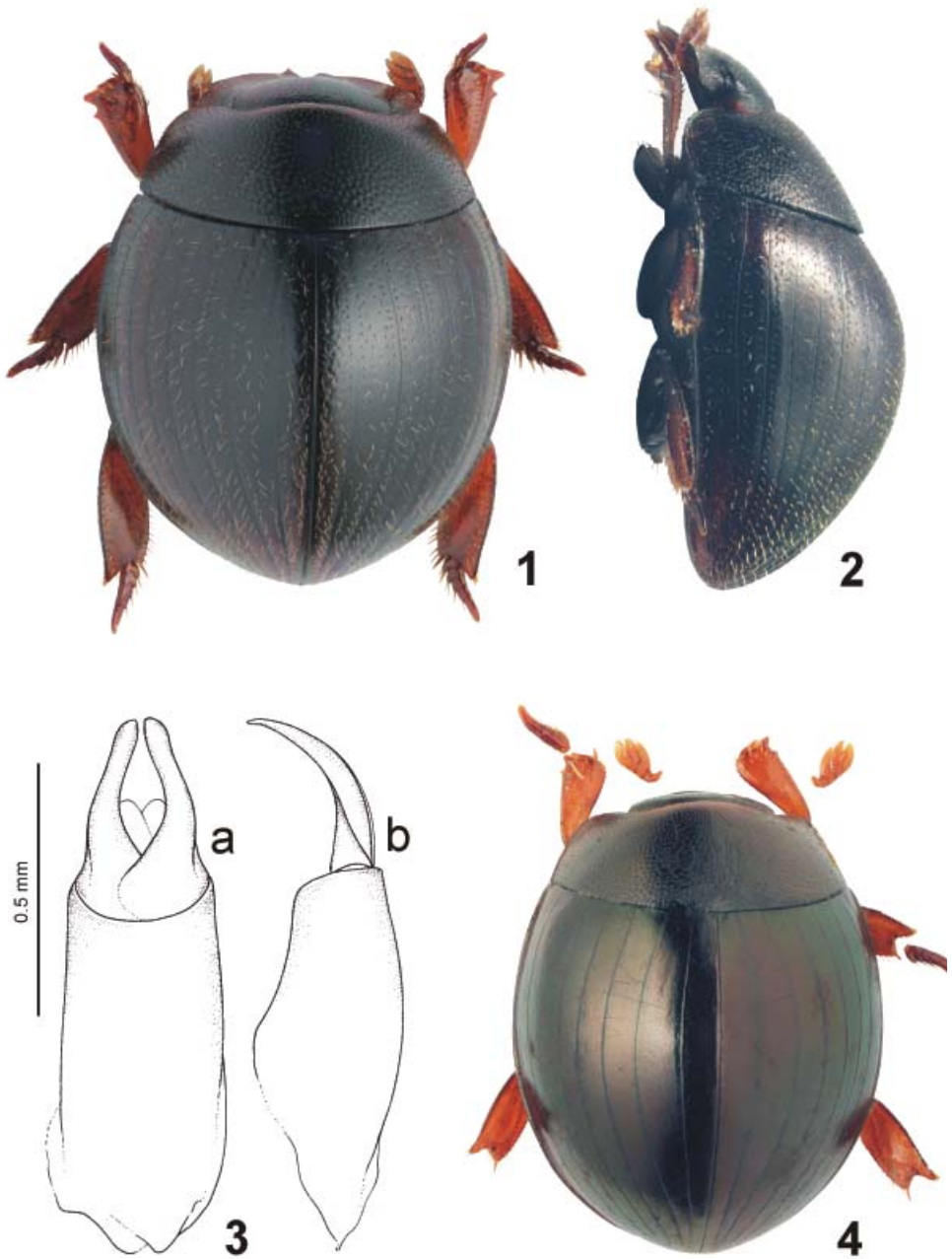
Description of holotype. Total body length 3.8 mm. Approximately hemispheric in shape, broadest at middle of elytra (maximum width 2.8 mm); colour of dorsal surface black, distinctly shiny; clypeus anterolaterally, genae laterally, tibiae and tarsi brownish; macrosetation pale (Figs. 1, 2).

Head. Anterior margin of clypeus with two sharp denticles separated by V-shaped emargination, distinctly depressed along anterolateral margin. Clypeo-genal and fronto-clypeal sulci absent. Frons feebly convex. Lateral outline of gena angulate, bordered. Dorsal surface of head slightly microsculptured and covered with shallow, densely distributed punctures separated by about three their diameters, several punctures mainly on clypeus bearing very fine and short, erect macrosetae. Ultimate maxillary palpomere much longer than three proximal palpomeres together.

Pronotum transverse, convex, basal area not depressed, about twice as wide as long, anterior margin bisinuate, anterior angles broadly rounded towards straight subparallel-sided lateral margins; basis simply rounded, finely bordered. Surface densely and coarsely punctate, each puncture bearing short semierect macroseta, shape of punctures broadly oval; small semi-elliptic area near base (reaching to beginning of elytron stria 2) with shallow, longitudinal striolae.

Scutellar shield absent.

Elytra distinctly convex, not considerably depressed basally in lateral view (Fig. 2); striae finely but distinctly impressed over whole length, intervals flat, all of approximately same



Figs. 1–4. 1–3 – *Haroldius jechaer* sp. nov. 1 – habitus of holotype, dorsal aspect (body length: 3.8 mm); 2 – same, left lateral aspect; 3 – aedeagus: a – dorsal aspect, b – lateral aspect. 4 – *H. stevensi* Arrow, 1931, habitus of holotype, dorsal aspect (body length: 3.1 mm).

Table 1. Differential characters of *Haroldius jechaer* sp. nov. and *H. stevensi* Arrow, 1931.

Character	<i>Haroldius jechaer</i> sp. nov.	<i>Haroldius stevensi</i> Arrow, 1931
dorsal surface colour (excepting extremities)	blackish (Figs. 1, 2)	black with weak metallic cupreous tinge (Fig. 4)
dorsal surface macrosetation	head microscopically, pronotum and elytra finely, densely macrosetaceous (Figs. 1, 2)	pronotum and elytra entirely glabrous (Fig. 4)
clypeus shape	distinctly depressed along anterolateral margin	shallowly depressed along anterolateral margin
head and pronotum punctation	finer	coarser
shape of pronotal punctures	broadly oval	narrowly oval
elytral punctation	coarse and more dense, arranged in somewhat irregular longitudinal rows along striae (Figs. 1, 2)	very fine and sparse, regularly distributed (Fig. 4)
distribution	China (Yunnan)	India (Darjeeling, Meghalaya), Nepal, Thailand, N Vietnam

width, punctation coarse and dense, punctures arranged in somewhat irregular longitudinal rows along striae, macrosetae simply acute, erect, only their apices bent slightly posteriad.

Protibiae moderately widened apicad, bidentate; meso- and metatibiae rather strongly widened, slightly sinuate externally, apical margin of metatibia straight (Fig. 1).

Male genitalia. Aedeagus symmetrical; parameres simple, broadly rounded to apex in dorsal aspect, strongly curved and acute apically in lateral aspect (Figs. 3a,b).

Differential diagnosis. *Haroldius jechaer* sp. nov. is similar and probably closely related to *H. stevensi* Arrow, 1931 in possessing a small bordered semi-elliptic area near the pronotal basis. This character is so far known only in these two species. They can be readily separated as given in Table 1.

Etymology. The name of the new species is composed from Czech phonetic transcription of initials of our ever helpful friend Jan Choleva Růžička (Prague, Czech Republic), an excellent student in Coleoptera, especially in Silphidae and Leiodidae, and co-collector of the holotype. Noun in apposition; pronounce as ye-kha-er.

Collecting circumstances. Wet mixed forest, collected individually.

Distribution. So far known only from the type locality in western Yunnan, China.

Haroldius stevensi Arrow, 1931

(Fig. 4)

Haroldius stevensi Arrow, 1931: 416.

Material examined. HOLOTYPE: not sexed (BMNH), 'Holo- / type [printed, round label, red margin] // Gopaldhara / Darjeeling. / 4,720-6,100 ft. [printed] 7. [handwritten] / H. Stevens [printed] 4-IX- [printed] 14: [printed, strikethrough handwritten] // H. Stevens. / Brit. Mus. / 1922-307. // Haroldius / Stevensi. / type Arrow [handwritten by Arrow] // Haroldius / stevensi Arr. [handwritten by Bacchus] / M.E.Bacchus det. 1975 / HOLOTYPE [printed]'.

Distribution. In addition of the type locality the species is recorded also from Nepal, India (Meghalaya), Thailand and Vietnam (Tonkin) (PAULIAN 1985, KRÍKKEK & HUIJBREGTS 2006). This additional material has not been studied by the authors.

Annotated checklist of the genus *Haroldius*

- Haroldius* Boucomont, 1914: 253.** Type species: *Haroldius rugatulus* Boucomont, 1914, by subsequent designation (ARROW 1931: 413).
- = *Afroharoldius* Janssens, 1949: 183. Type species: *Afroharoldius ennearthrus* Janssens, 1949, by original designation. Synonymised by PAULIAN (1985: 196).
- = *Cyclotrogus* Wasmann, 1918: 2. Type species: *Cyclotrogus heimi* Wasmann, 1918, by original designation. Synonymised by ARROW (1931: 413).
- = *Formicdubius* Philips & Scholtz, 2000: 227. Type species: *Formicdubius convexus* Philips & Scholtz, 2000, by original designation. Synonymised by KRELL & PHILIPS (2010: 44).
- = *Ponerotrogus* Silvestri, 1924: 583. Type species: *Ponerotrogus amandalei* Silvestri, 1924, by original designation. Synonymised by PAULIAN (1985: 197).
- Haroldius amandalei* (Silvestri, 1924): 586** (*Ponerotrogus*). Type locality: 'Barkuda Islands in the Chilka lake'. Distribution: India: Orissa (Silvestri 1924), Karnataka (Paulian 1934).
- = *Haroldius chapmani* Paulian, 1934: 163. Type locality: 'Bangalore: Chikkangalur'. Synonymised by PAULIAN (1985: 197).
- Haroldius borneensis* Paulian, 1993: 170.** Type locality: 'Sabah, Poring Hot Springs, Langanan Falls'. Distribution: Malaysia: Sabah.
- Haroldius brendelli* Krikken & Huijbregts, 2009: 259.** Type locality: 'Indonesia, N. C. Seram, Manusela NP'. Distribution: Indonesia: Maluku: Ceram.
- Haroldius cambeforti* Krikken & Huijbregts, 2006: 176.** Type locality: 'Indonesia, Sulawesi Utara, Dumoga Bone N. P.'. Distribution: Indonesia: Sulawesi.
- Haroldius cardoni* Boucomont, 1923: 83.** Type locality: 'Chota Nagpur, Nowatoli'. Distribution: India: Chhattisgarh.
- = *Haroldius oberthueri* Paulian, 1934: 163. Type locality: 'Chota Nagpur: Nowatoli'. Synonymised by PAULIAN (1985: 197).
- Haroldius celebensis* Krikken & Huijbregts, 2006: 174.** Type locality: 'Indonesia, Sulawesi Utara, Dumoga Bone N. P.'. Distribution: Indonesia: Sulawesi.
- Haroldius convexus* (Philips & Scholtz, 2000): 230** (*Formicdubius*). Type locality: 'South Africa, Gauteng Province, Pretoria, The Willows, 25.45S 28.21E'. Distribution: South Africa: Gauteng.
- Haroldius discoidalis* Paulian, 1993: 172.** Type locality: 'Sabah, Poring Hot Springs, Langanan Falls'. Distribution: Malaysia: Sabah.
- Haroldius ennearthrus* (Janssens, 1949): 183** (*Afroharoldius*). Type locality: 'Elisabethville [= Lubumbashi]'. Distribution: Democratic Republic of the Congo: Katanga (Janssens 1949), Kasai-Occidental (Krell & Philips 2010).
- Haroldius fairmairei* Boucomont, 1914: 254.** Type locality: 'Singapore'. Distribution: Singapore.
- Haroldius fleutiauxi* Paulian, 1945: 60.** Type locality: 'Tonkin, Yen Bay'. Distribution: N Vietnam (Paulian 1945); Thailand (Paulian & Scheuern 1994).

- Haroldius globosus* Boucomont, 1925:** 151. Type locality: ‘Luzon: Mont Banahao’. Distribution: Philippines: Luzon.
- Haroldius heimi* (Wasmann, 1918):** 4 (*Cyclotrogus*). Type locality: ‘Wallon (Ahmednagar-Distr.)’. Distribution: India: Maharashtra (Wasmann 1918); Pakistan: Swat (Paulian 1985).
= *Cyclotrogus nigrita* Wasmann, 1918: 4. Type locality: ‘Wallon (Ahmednagar-Distr.)’. Synonymised by ARROW (1931: 415).
- Haroldius herrenorum* Paulian, 1985:** 199. Type locality: ‘Ceylan (Sri Lanka) Sud, Palatupana, Yala National Park’. Distribution: Sri Lanka.
- Haroldius hwangi* Masumoto, Lee & Ochi, 2005:** 243. Type locality: ‘Taiwan, Kaohsiung Hsien, Tengchin’. Distribution: Taiwan.
- Haroldius jechaer* sp. nov.** Type locality: ‘China, Yunnan prov., Tengchong, Laifeng Shan National Forest Park, 25°01.1’N 098°29.1’E, 1700–1900 m a.s.l.’ Distribution: China: Yunnan.
- Haroldius kawadai* Masumoto, 1995:** 59. Type locality: ‘Doi Suthep, Chiang Mai Pref., NW Thailand’. Distribution: Thailand.
- Haroldius kolaka* Krikken & Huijbregts, 2006:** 174. Type locality: ‘SE Sulawesi, Kolaka, Sanggona Base Camp, alt.m 0200’. Distribution: Indonesia: Sulawesi.
- Haroldius krali* (Utsunomiya & Masumoto, 2000):** 407 (*Ponerotrogus*). Type locality: ‘Sri Lanka, Kanoy’. Distribution: Sri Lanka.
- Haroldius lassallei* Cambefort, 1986:** 69. Type locality: ‘Népal central, nord de Gorkha, 1800 m’. Distribution: Nepal.
- Haroldius leleupi* (Janssens, 1953):** 346, 347 (*Afroharoldius*). Type locality: ‘Katanga: Kanzenze’. Distribution: Democratic Republic of the Congo: Katanga.
- Haroldius loebli* Paulian, 1987:** 718. Type locality: ‘Thailand, Chiang Mai, Doi Suthep, 1050 m’. Distribution: Thailand.
- Haroldius maruyamai* Utsunomiya & Masumoto, 2005:** 487. Type locality: ‘Malay, Pahang, Fraser Hill’. Distribution: Malaysia: Pahang.
- Haroldius modestus* (Janssens, 1953):** 346 (*Afroharoldius*). Type locality: ‘Massif du Kundelungu, alt. 1750 m’. Distribution: Democratic Republic of the Congo: Katanga (Janssens 1953); Malawi (Krell & Philips 2010).
- Haroldius oharai* Ochi, Kon & Barclay, 2009:** 238. Type locality: ‘Indonesia, East Kalimantan, Bukit Bankirai, Kutai Kartanegara’. Distribution: Indonesia: East Kalimantan.
- Haroldius pahangensis* Král, 2003:** 193. Type locality: ‘Malaysia, Prov. Pahang, Fraser Hill, Jeriau Wf., 950 m’. Distribution: Malaysia: Pahang.

- Haroldius pauliani* Scheuern, 1995:** 764. Type locality: 'Borneo: Sabah, Mt. Kinabalu National Park, Poring Hot Springs, 510 m'. Distribution: Malaysia: Sabah.
- Haroldius penelopeae* Krikken & Huijbregts, 2006:** 175. Type locality: 'Indonesia, Sulawesi Utara, Dumoga Bone N. P.'. Distribution: Indonesia: Sulawesi.
- Haroldius perroti* Paulian, 1939:** 70. Type locality: 'Tonkin: Tam Dao'. Distribution: N Vietnam (Paulian 1939); Taiwan (Krikken & Huijbregts 2006).
- Haroldius philippinensis* Pereira, 1954:** 1. Type locality: 'Dingalan bay, East Luzon, Philippine Islands'. Distribution: Philippines: Luzon.
- Haroldius rugatulus* Boucomont, 1914:** 253. Type locality: 'Singapore'. Distribution: Singapore (Boucomont 1914); Malaysia: Sabah (Ochi et al. 2009).
- Haroldius stefanii* Montreuil, 2010:** 73. Type locality: 'Madagascar, Province d'Antsirana, Forêt d'Anabohazo, 21.6 km 247° WSW Maromandia, elev 120 m, 14°18'32"S 47°54'52"E'. Distribution: Madagascar: Antsirana.
- Haroldius stevensi* Arrow, 1931:** 416. Type locality: 'Bengal: Rungbong Valley, Darjeeling dist., 4720–6000 ft.'. Distribution: India: Darjeeling (Arrow 1931); India: Meghalaya, Nepal, Thailand, N Vietnam (Paulian 1985).
- Haroldius sumatranus* Paulian & Scheuern, 1994:** 436. Type locality: 'Sumatra Ouest, Anai Valley Nat. Res., 10 km ouest Pandangpanjan, 200 m'. Distribution: Indonesia: Sumatra (Paulian & Scheuern 1994); Malaysia: Sabah (Ochi et al. 2009).
- Haroldius tangkoko* Krikken & Huijbregts, 2006:** 175. Type locality: 'Sulawesi Utara, Tangkoko'. Distribution: Indonesia: Sulawesi.
- Haroldius thailandensis* Paulian & Scheuern, 1994:** 438. Type locality: 'Thaïlande, Chiang Maï, Doi Suthep, 1180 m'. Distribution: Thailand.
- Haroldius turnai* Král, 2003:** 195. Type locality: 'China, SE Hubei, Mufu Shan, 29.4 N 114.6 E, Jiugongshan forest, 1000 m a.s.l.'. Distribution: China: Hubei.
- Haroldius uenoi* Masumoto & Yin, 1993:** 84. Type locality: 'S China, Xishuangbanna, Menglun, 600 m alt.'. Distribution: China: Yunnan.

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