

Two new species of the genus *Pseudotaphoxenus* (Coleoptera: Carabidae: Sphodrini) from Xinjiang, China

Два новых вида рода *Pseudotaphoxenus* (Coleoptera: Carabidae: Sphodrini) из Синьцзяна, Китай

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Two new species of the genus *Pseudotaphoxenus* Schaufuss, 1865 are described from the basin of upper Ili, Xinjiang, China: *P. achillei* sp. nov. (type locality: the right bank of the Tekes River, south of Karatogai Vill.), and *P. tarantsha* sp. nov. (type locality: southern foothills of Boro-Horo Range, left bank of Piliktshi [Pilikchi] River, east of Karagatsh [Karagach] Vill.).

Описаны два новых вида рода *Pseudotaphoxenus* Schaufuss, 1865 из верховий бассейна Или, Синьцзян, Китай: *P. achillei* sp. nov. (типовое местонахождение: правый берег р. Текес, южнее пос. Каратогай) и *P. tarantsha* sp. nov. (типовое местонахождение: южные склоны хр. Боро-Хоро, левый берег р. Пиликчи, восточнее пос. Карагач).

Key words: ground beetles, China, Xinjiang, taxonomy, Coleoptera, Carabidae, *Pseudotaphoxenus*, new species

Ключевые слова: жуужелицы, Китай, Синьцзян, таксономия, Coleoptera, Carabidae, *Pseudotaphoxenus*, новые виды

INTRODUCTION

Pseudotaphoxenus Schaufuss, 1865 is a diverse genus comprising so far more than 110 species (Casale, 2017) distributed from the Caspian Sea to the Far East. The present paper contains the description of two new species of this genus from the Tien Shan Mountains in the upper Ili River basin in the Ili Kazakh Autonomous Prefecture, Xinjiang Uyghur Autonomous Region of China. The Ili basin is unique within Xinjiang in presence of a number of ephemeral beetles characterized by short periods of the imaginal activity in spring and occurring in steppe and semiarid habitats on foothills and plains. In the Tien Shan, the ephemeral carabids belong mostly to the genus *Callisthenes* Fischer von Waldheim, 1820 and to the subgenera *Cyclocarabus* Reitter, 1896 and *Cryptocarabus* Reitter, 1896 of the

genus *Carabus* Linnaeus, 1758. Additionally, some members of the genera *Poecilus* Bonelli, 1810 and *Pseudotaphoxenus* as well as several other groups of beetles are also associated with these biotopes. The ephemeral species are distributed within the Tien Shan mostly along the northern and western peripheral massifs as well as in the Fergana, Talas and Ili Valleys opened to humid air masses coming from the west. The species described below seem to be members of this ephemeral complex.

MATERIAL AND METHODS

The present study is mainly based on the material collected by the author in the mountains of Xinjiang in 2017.

Specimens were examined and measured with a LOMO MBS 10 stereomicroscope equipped with an ocular micrometer; the

habitus and genitalia photographs were taken with a Canon EOS 40D digital camera, using stacking, and subsequently processed with the Zerene stacker software version 1.04.

The following measurements were taken: body length (BL) from the anterior margin of the labrum to the elytral apex; head width (HW) across the eyes; pronotal length (PL) along its median line; elytral length (EL) from the apex of the scutellum to the apex of the elytra; width of the pronotum (PW) and elytra (EW) at their broadest point; pronotal base (PB) between the posterior angles; elytral base (EB) between the humeral teeth. The average values of measurements and indices are given in parentheses.

In all male specimens, genitalia were extracted and examined.

The following abbreviations are used for the depositories of the newly described species: ZIN – Zoological Institute, Russian Academy of Sciences (St Petersburg); cBK – private collection of I.A. Belousov and I.I. Kabak (St Petersburg).

TAXONOMY

Order COLEOPTERA

Family CARABIDAE

Tribe SPHODRINI Laporte, 1834

Genus *Pseudotaphoxenus* Schaufuss, 1865

Pseudotaphoxenus achillei sp. nov.

(Figs 1, 4–6)

Holotype. Male (ZIN), China, Xinjiang, right bank of Tekes River, S of Karatogai Vill., 43°11'46"N / 82°15'38"E, h = 1290 m, 6.V.2017 (I.I. Kabak leg.).

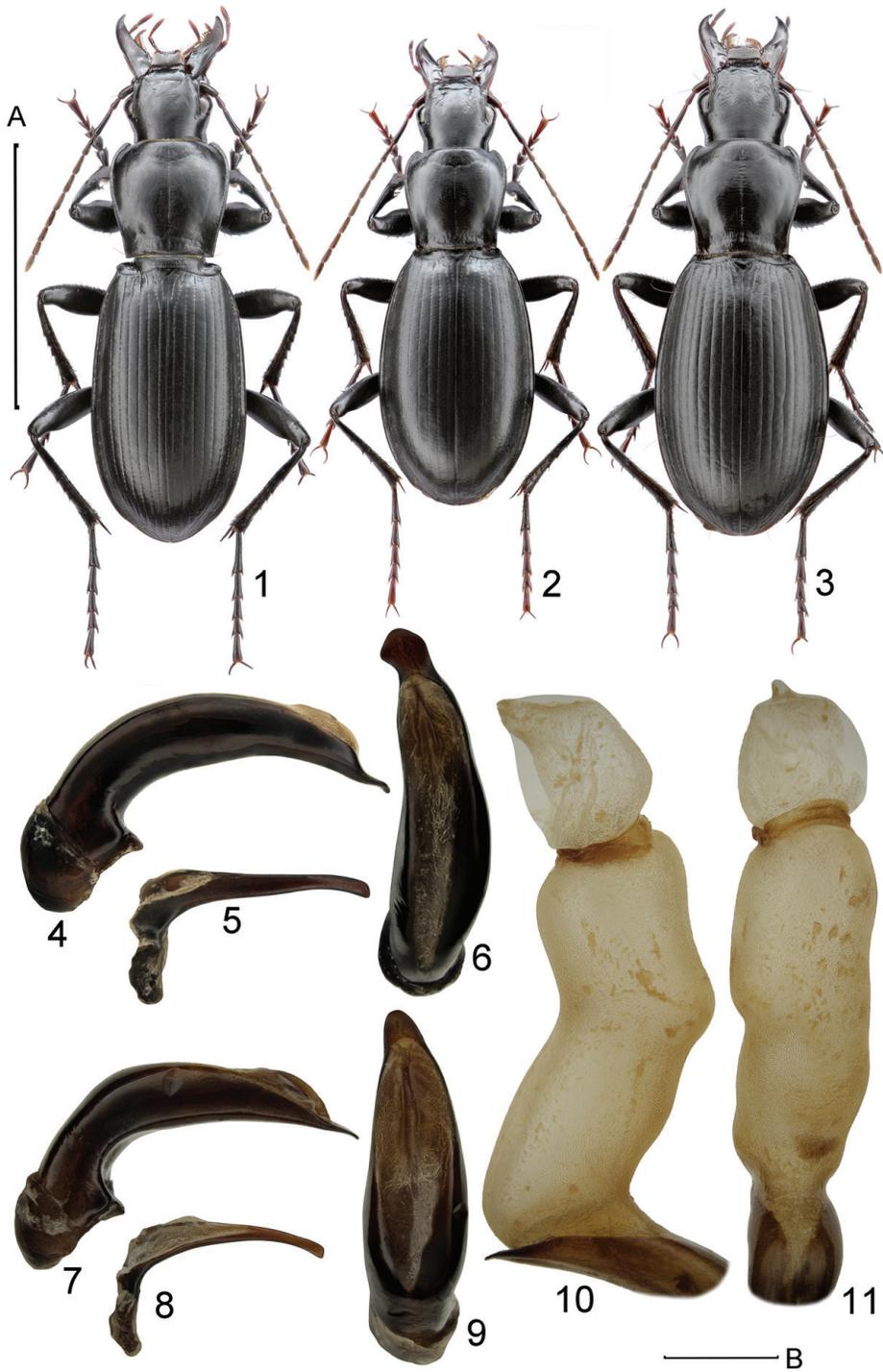
Paratypes. One male (cBK), collected together with holotype; 1 male (ZIN), "Kuldzha, A. Wilkins, konets 70-kh" (in Cyrillic) [Kuldja, A. Wilkins, late 1870s], "*Taphoxenus? planicollis?* Gebl., Kuldja, 5-VIII.", "*Pseudot.* n. sp., pr. *substriatus* Ball. AS. 88", "coll. Semenov-Tian-Shansky" (some of pronotal ratios of this specimen not considered in description, because its pronotum misshaped).

Description. Habitus as in Fig. 1. Body medium-sized for this genus: BL = 17.2–18.3 (17.9) mm. Body convex, parallel-sided. Antennae medium in length. Legs long, with femora rather stout. Dorsum and legs black; mandibles and tarsi slightly paler, brownish; palpi and margins of labrum reddish brown.

Head slightly larger than average for this genus [PW/HW = 1.33]. Eyes markedly convex; tempora flat, rather short. Frontal foveae shallow to moderately impressed, reaching middle of eye length. Only posterior supraorbital pore present on each side. Labrum with anterior margin moderately concave. Mandibles long and narrow, evenly curved distally. Median tooth of mentum short and wide, its apex bifid. Antennae surpassing basal pronotal edge by 2.5 distal segments.

Pronotum narrow, almost as wide as long [PW/PL = 1.02–1.06], broadest in anterior third, moderately narrowed toward base [PW/PB = 1.33–1.38]. Anterior margin straight or slightly salient medially; anterior angles moderately produced. Sides widely rounded anteriorly, slightly sinuate posteriorly; lateral margin notched in basal quarter. Posterior angles medium in size, acute, pointed apically, directed backward. Posterior margin markedly concave, with subrectilinear median portion. Lateral groove narrow, widened before posterior angles. Disc evenly convex, narrowly depressed along median line; this line thin, not reaching anterior and posterior margins of pronotum. Apical transverse impression not deep, clearly defined. Basal foveae narrow, deep, fused with flat surface near posterior angle, rather sharply delimited anteriorly and medially. Prebasal transverse impression wide, rather deep; its lateral portions angularly convergent toward median line of pronotum. Basal surface smooth in medial part, shallowly punctured in basal foveae and near posterior angles. Two lateral setae on each side of pronotum: in anterior third and in posterior angle.

Elytra oblong, moderately narrow [EL/EW = 1.64–1.73 (1.68); EL/PL = 2.22–



Figs 1–11. *Pseudotaphoxenus*: 1, 4–6, *P. achillei* sp. nov. (holotype); 2, 3, 7–9, *P. tarantsha* sp. nov. (2, 7–9, holotype; 3, 10, 11, paratypes). General view, male (1, 2); same, female (3); median lobe of aedeagus (4, 6, 7, 9); right paramere (5, 8); endophallus (10, 11). Lateral view (4, 5, 7, 8, 10); dorsal view (1–3, 6, 9); anterior view (11). Scale bars: A – 10 mm (1–3), B – 1 mm (4–11).

2.37 (2.31); EW/PW = 1.29–1.32 (1.31)], broadest behind middle, rounded in common apically, convex, not flattened along suture. Base wider than that of pronotum [EW/EB = 1.47–1.52 (1.49)]. Humeri protruding; humeral tooth large and wide, pointed at apex, markedly projecting outward. Basal border widely arcuate laterally, sinuate medially. Elytra along basal border shortly impressed. Lateral groove narrow. Discal striae moderately impressed, distinctly (in one paratype finely) punctured; interspaces flat. Parascutellar setigerous pore present; parascutellar striole long. Marginal umbilicate series consisting of 27–30 setigerous pores. Stria 7 with two setigerous pores near apex.

Microsculpture on dorsum very shallow, especially on head and pronotum, consisting of small isodiametric meshes; surface of dorsum slightly shining. Elytral interspaces with a few superficial punctures.

Mesosternum of male without tubercle before mesocoxa. Only one paramedian seta on each side of ventrites 3–5; anal ventrite with one pair of setae in male.

Mesotibiae barely arched, without pubescence on inner surface. Tarsi smooth on dorsal surface. Segments 1–3 of male protarsi asymmetric, slightly (in one specimen moderately) dilated and covered with adhesive setae ventrally. Segments of metatarsi grooved externally; metatarsomere 1 with setae on dorsal surface.

Male genitalia. In lateral view: median lobe of aedeagus unevenly curved, markedly sinuate distally; apex of apical lamella curved in ventral direction (Fig. 4). In dorsal view: median lobe curved to right; apical lamella flat, long, asymmetrically widened, broadly rounded at apex (Fig. 6). Distal half of right paramere markedly curved in dorsal view, and parallel-sided and slightly arched in lateral view (Fig. 5).

Comparison. The new species is rather isolated within the genus, differing from all its currently known members in the following combination of characters: the anterior supraorbital pore is lacking, the dorsal sur-

face of tarsomeres is without sulci, and the apical lamella of aedeagus peculiarly widened in dorsal view.

In external characters (body medium-sized, narrow, with subparallel sides), *P. achillei* sp. nov. is similar to *P. pongraczi* (Jedlička, 1952) which belongs to the *juvencus* species group (sensu Casale, 1988) and is known from the Northern Tien Shan (Casale, 1988; Kryzhanovskij et al., 1995). The new species is distinguished from it, in addition to the above-mentioned characters, by the convex pronotum, elytra with large humeral teeth, and aedeagal median lobe curved to the right in dorsal view and markedly sinuate near the apex in lateral view.

Etymology. The new species is named after Prof. Achille Casale (Torino), celebrated entomologist, for his inestimable contribution to the knowledge of the subtribe Sphodrina.

Distribution. The holotype and one paratype of *P. achillei* sp. nov. were collected on foothills of the right bank of the Tekes River, Xinjiang, China. The label data of the other paratype could not be exactly located because “Kuldzha” on A. Wilkins’ labels is referred to the entire Ili (or Kuldja) Territory, including the city of Kuldja.

Bionomics. In the Tekes Valley, the specimens of this species were found at an elevation of 1290 m, in steppe habitats with *Artemisia* (Fig. 12).

Pseudotaphoxenus tarantsha sp. nov.

(Figs 2, 3, 7–11)

Holotype. Male (ZIN), China, Xinjiang, S foothills of Boro-Horo Range, left bank of Piliktshi River, E of Karagatsh Vill., placor, 44°04'38"N / 81°30'49"E – 44°04'48"N / 81°30'55"E, 990–1040 m, 7.V.2017 (I.I. Kabak leg.).

Paratypes. Four males, 5 females (ZIN, cBK), collected together with the holotype (endophallus of one male inflated).

Description. Habitus as in Figs 2 and 3. Medium-sized for the genus: BL = 16.0–18.3 mm (average 17.0 mm in males and 17.6 mm in females). Body convex. Legs and antennae rather thin, average in length.



Figs 12, 13. Habitats of *Pseudotaphoxenus achillei* sp. nov. (12) and *P. tarantsha* sp. nov. (13).

Dorsum and legs brownish black; mandibles, and distal segments of tarsi slightly paler, reddish; palpi yellowish brown.

Head above average for this genus in size [PW/HW = 1.21–1.33 (1.27)]. Eyes convex; tempora long, slightly convex. Frontal foveae wide, moderately impressed, extend-

ing beyond middle of eye length. Two supra-orbital pores on each side. Anterior margin of labrum slightly concave. Mandibles long, rather narrow, curved only in apical portion. Median tooth of mentum wide; its apex bifid. Antennae surpassing basal pronotal edge by 2.5–3.5 distal segments.

Pronotum narrow [$PW/PL = 1.00-1.13$ (1.06)], broadest in anterior third, moderately constricted toward base [$PW/PB = 1.26-1.31$ (1.29)]. Anterior margin straight or slightly salient; anterior angles moderately protruding. Sides widely rounded anteriorly, sinuate posteriorly; emargination before posterior angles long. Posterior angles large, usually acute, rarely right, pointed at apex. Posterior margin concave, occasionally straight medially. Lateral groove narrow anteriorly, widened behind middle. Disc moderately convex, narrowly depressed along median line; this line not reaching both anterior and posterior margins of pronotum. Apical transverse impression shallow, clearly defined. Basal foveae oblong, vaguely delimited anteriorly, deep (especially in posterior part), barely reaching the basal margin of pronotum. Prebasal transverse impression wide, rather deep; its lateral portions convergent anteriorly or parallel to pronotal posterior margin. Basal surface smooth or slightly longitudinally rugulose in medial part, without distinct punctures. Two lateral setae on each side of pronotum: in anterior third and in posterior angle.

Elytra oblong-oval, rather broad [$EW/PW = 1.40-1.54$ (1.48); $EL/PL = 2.29-2.47$ (2.40)], broadest noticeably behind middle, markedly narrowed anteriorly [$EW/EB = 1.60-1.73$ (1.67)]. In females, on average, elytra proportionally wider than in males [$EL/EW = 1.49-1.55$ (1.52) versus $1.52-1.61$ (1.57)]. Humeral tooth acutangular or rounded at tip, slightly projecting outward. Basal border wide, evenly arcuate. Elytral disc convex; basal impressions short, not deep, vague posteriorly. Lateral groove narrow. Elytral striae thin, faintly to distinctly punctured; interspaces subconvex or flat. Parascutellar setigerous pore present; parascutellar striole moderately long. Marginal umbilicate series consisting of 21–23 setigerous pores. Stria 7 with two setigerous pores near apex.

Microsculpture on dorsum consisting of small shallow isodiametric meshes. Integu-

ments of anterior part of body slightly shining; elytra dull.

Mesosternum of male without tubercle before mesocoxa. Only one paramedian seta on each side of ventrites 3–5; anal ventrite with one pair of setae in both sexes.

Mesotibiae straight, in addition to fixed setae, with long supplementary hairs on inner surface. Segments 1–3 of male protarsi slightly dilated and covered with adhesive setae ventrally. Segments of metatarsi shallowly grooved externally; metatarsomere 1 with 2–4 setae on dorsal surface. Segments of meso- and metatarsi dorsally sulcate in basal two thirds.

Median lobe of aedeagus slightly arched in lateral view; its ventral margin straight medially, faintly sinuate apically; apex of apical lamella curved in ventral direction (Fig. 7). In dorsal view: median lobe slightly asymmetric; apical lamella moderately long, triangularly shaped, narrowly rounded at apex (Fig. 9). Distal half of right paramere barely arched, subparallel-sided, blunt at apex (Fig. 8). Endophallus slender, bent near middle of length (Figs 10, 11).

Comparison. Based on the endophallus structure, *P. tarantsha* sp. nov. is most similar and probably closely related to *P. pongrazci* (Jedlička, 1952) of the *juvencus* species group (sensu Casale, 1988). The new species differs from *P. pongrazci* in having: the body more convex and not parallel-sided; the pronotum less transverse; the elytra ovoid, proportionally wider, with smaller and less projecting humeral teeth; the median lobe of aedeagus stouter and with its apical lamella shorter.

The new species is easily distinguished from *P. planicollis* (Gebler, 1833), species related to *P. pongrazci* and inhabiting the neighboring region (Dzhungarian Alatau and Tarbagatai), by the following characters: colour is darker, black; elytra are convex, ovoid, with their basal border less markedly arched; tarsi including male protarsi are thinner; median lobe of the aedeagus is stouter in lateral view; its apical lamella is shorter and markedly curved in

ventral direction; in dorsal view, median lobe is curved to the right, and apical lamella has sides converging distally; endophallus is proportionally longer, bent near middle of length.

In external characters, *P. tarantsha* sp. nov. is most similar to *P. ferghanensis* Vereschagina et Kabak, 1996. The latter is known from the Syr Darya Valley near Shardara Town and from the mountains bordering the Fergana Valley except for Turkestan and Alai ranges (Kabak, 2015). The new species distinctly differs from *P. ferghanensis* in structure of the male genitalia: the median lobe of aedeagus is less arcuate in lateral view, asymmetric in dorsal view; its apical lamella is longer; endophallus is thinner, bent medially.

The new species is also similar in body shape to *P. lutshniki* (Jedlička, 1952), which is distributed in the northern part of Kyrgyzstan and in South and South-Eastern Kazakhstan, including the Ili River Valley. However, *P. tarantsha* sp. nov. differs from the latter species in having: the body larger; the dorsum black; the pronotum less constricted toward the base, with the lateral margins shortly and not deeply sinuate before the posterior angles; the elytra wider, with the elytral striae distinctly punctured, and with the humeral tooth narrower and less projecting forwards; the male protarsi thinner (segments 2 and 3 clearly elongate); the median lobe of aedeagus stouter and with its apical lamella shorter.

The new species is distinctly distinguished from *P. khan* Casale, 1988 described from Urumqi by the larger and more convex body, black colour, and stouter median lobe of aedeagus with the shorter apical lamella.

Apart from the above-mentioned species, *P. tarantsha* sp. nov. is also somewhat similar in appearance to *Taphoxenus* (*Lychnifugus*) *hauserianus* Casale, 1988 which is known only from one female labelled "Dsungaria Borocho-ro-Gb.". Based on the original description of the latter, the new species differs in lack of the subgeneric characters

of *Lychnifugus* Motschulsky, 1864 (mesotibiae arcuate, parascutellar pore and pronotal posterior lateral pore missing), and additionally in having the wider humeral tooth and a well-developed pubescence on the inner surface of mesotibiae.

Etymology. The species name is a substantive and based on Tarantsha (or Taranchi), the old name of the Muslim Turkic sedentary population living in Xinjiang, including the Ili River Valley.

Distribution. The new species is only known from the type locality on the left bank of the Piliqtshi [Pilikchi] River, southern foothills of the Boro-Horo Mountain Range, Xinjiang, China.

Bionomics. The new species was collected in an open dry habitat with *Artemisia* at elevations of 990–1040 m (Fig. 13).

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