

## Descriptions of New Taxa of the Palearctic Saprininae (Coleoptera: Histeridae)

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### ABSTRACT

Descriptions of a new genus and three new species of the Palearctic Saprininae (Coleoptera: Histeridae) based on the material from the collection of the Zoological Institute, Russian Academy of Sciences, St. Petersburg, are given. Apparently psammophilous *Turanostyphrus* gen. n. with two species, *T. ignoratus* and *T. kizilkumis* spp. n., are described from sandy deserts of Turkmenistan and Uzbekistan, respectively. Adaptations to psammophily in this and some other specialized genera of Saprininae are briefly discussed. Also, *Hypocaccus* (s. str.) *lopatini* sp. n. from Mongolia is described.

### KEY WORDS

Histeridae, new species, new genus, *Hypocaccus*, psammophily, Saprininae, *Turanostyphrus*.

The Palearctic fauna of Histeridae is well studied and up-to-date major monographic revisions are available for most regions (Kryzhanovskij & Reichardt 1976, Vienna 1981, Óhara 1994, Yélamos 2002). Nevertheless, the process of describing the Palearctic histerid taxa is far from being complete and recent examination of museum collections or newly collected material still yield new taxa (e.g., Olexa 1992, Kapler 1993, Kryzhanovskij 1993, Óhara 1999, Lackner & Yélamos 2001, Lackner 2003). Herein, I describe three new species of Palearctic Saprininae, including a new, apparently specialized psammophilous genus.

### MATERIAL AND METHODS

This study is based on specimens discovered in the collection of the Zoological Institute, Russian Academy of Sciences, St. Petersburg (ZIN hereafter), where they were misplaced as incorrectly identified species of the genus *Hypocacculus* Bickhardt.

In descriptions, I followed conventional terminology for histerid morphology (Kryzhanovskij & Reichardt 1976, Kanaar 1997). Male genitalia were extracted using a thin hooked entomological pin, then cleared by treatment with hot 10% KOH solution and an excess of water wash. Genitalic sclerites and aedeagus were separated and kept in glycerol in a microvial pinned under the specimens. Puncture density (distances between punctures) is expressed as a ratio of separa-

tion distance to puncture diameters. Images were taken using a Photo-Montage system (Syncroscopy, Inc.) for the production of illustrations and templates for ink drawings.

All collection label information was originally written in Russian and is listed in “type material” in English translation by me. Also, I added necessary extra geographical information in square brackets. Abbreviations PEL and PPL stand for body length measured between anterior margin of pronotum and apices of elytra and pygidium, respectively.

### *Turanostyphrus gen. n.*

Body oval and convex, dorsal surface flattened (Fig. 1). Frons densely punctate, without frontal stria. Pronotum densely punctate, its marginal stria complete; epipleura with long sparse setae. Dorsal striae thin, without punctures, their pattern is typical for Sapriniinae (Fig. 1); elytral epipleura with long, sparse setae. Propygidium short and flat, pygidium long and convex, with dense punctures. Prosternal keel rather wide, flattened, both carinal and lateral prosternal striae present, apical foveae absent (Fig. 2, 3). Lateral discs of meso- and metasternum without setae. Protibia wide, with numerous teeth which are nearly completely concealed in explanate outer margins (Fig. 4). Mesotibia long and narrow, with one row of short spinules on outer side. Metatibia moderately widened, with 2 rows of short spinules on expanded flattened outer side (Fig. 5). Both meso- and metatibia with one row of long sparse setae on inner side. All tarsi long and thin, with long, thin, nearly straight claws. Eighth sternite of male without sclerotized parts and ciliation (Fig. 6), aedeagus short, curved in profile (Fig. 7, 8).

Type species: *T. ignoratus sp. n.*

Ethymology. The generic name represents combination of the histereid generic name *Styphrus* and the name of the Central Asian desert province of Turan where the representatives of new genus were collected. Gender masculine.

Diagnosis. *Turanostyphrus gen. n.* occupies a rather isolated position among Sapriniinae as a result of a peculiar combination of external features: the absence of frontal stria and apical foveae, flattened prosternal keel with well-developed carinal striae, specific distribution of setae on ventral

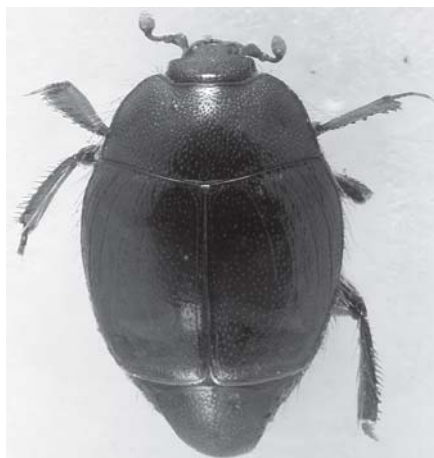


Fig. 1. *Turanostyphrus kizilkumis*. Habitus, dorsal view.

side and unique structure of protibia. Apparently, this genus represents a special adaptive form among sabulicolous (sandy habitat adapted) Saprininae, quite distinct from other specialized genera within the subfamily, *i.e.* *Ammostyphrus* Reichardt, *Chivaenius* Olexa, *Ctenophilothis* Kryzhanovskij, *Monachister* Mazur, *Paraphilothis* Vienna, *Philothis* Reichardt, *Philoxenus* Mazur, *Terametopon* Vienna, *Xenonychus* Wollaston and *Xenophilothis* Kryzhanovskij. These genera in addition to a development of abundant and diverse setae on ventral and leg surfaces demonstrate a clear trend towards oligomerization and enlargement of protibial teeth, expansion of metatibia and an acute shape of prosternal keel. These characters presumably represent an adaptation to a sabulicolous way of life (Kryzhanovskij & Reichardt 1976, Olexa 1990, Vienna 1981). In *Turanostyphrus* however, structure of tibia and prosternum is quite different from the above, although development and distribution of setae along with available habitat information suggest its psammophilous habits.

Habitat. Known specimens were collected in sandy deserts, in a rodent burrow and by pitfall trapping.

Key to the species of *Turanostyphrus* *gen. n.*

- 1 (2) Body size smaller, PEL=1.7 mm. Carinal stria nearly parallel, barely descendent towards apex where united by transverse sulcus. Lateral prosternal striae not united with carinal striae (Fig. 2). Abdominal sternites without setae ..... *T. ignoratus* *sp.n.*
- 2 (1) Body size larger, PEL=2.2 mm. Carinal stria clearly curved between base and apical conjunction. Lateral prosternal striae united with carinal striae (Fig. 3). Dorsal parts of abdominal sternites with long yellow setae ..... *T. kizilkumis* *sp.n.*

*Turanostyphrus ignoratus* *sp. n.* (Fig. 2, 4-8)

Length: PPL=2.1 mm, PEL=1.7 mm. Body oval, 1.15 times longer than wide, convex, with flattened dorsal surface. Color yellowish-brown, antennal clubs and tarsi yellowish.

Frons moderately convex, covered with small, shallow, dense (0.7-1.2) punctures and fine background microsculpture, any signs of frontal stria absent. Clypeus convex, its punctures are smaller and denser and arranged into transverse wrinkles. Labrum short, emarginated anteriorly.

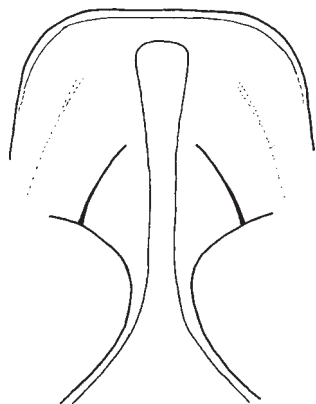


Fig. 2. *Turanostyphrus ignoratus*. Prosternum.

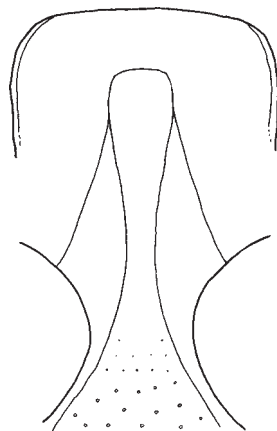


Fig. 3. *Turanostyphrus kizilkumis*. Prosternum.

Antennae short, scape widened, nearly triangular, clubs with thin sutures, their apical halves covered with tomentose pubescence.

Pronotum 2.0 times wider than long in median line, its lateral sides rounded, anterior angles weakly marked. Marginal stria distinct, complete. Pronotal disc covered with moderate, shallow, dense (0.5-1.2) punctures which are somewhat obsolete at the middle and become denser and arranged into longitudinal wrinkles laterally. Scutellum minute, triangular.

Elytra together 1.02 times wider than long, completely covered with small, shallow, sparse (2-5) punctures which become smaller and sparser towards apices, with alutaceous ground microsculpture being more distinct apically. Epipleural and marginal elytral striae indistinct. Elytral striae thin and impunctate, subhumeral striae nearly complete reaching apical sixth, oblique humeral striae present in basal fifth. First to 4th dorsal striae slightly enter apical half, nearly equal in length, 1st being the longest and 4th - the shortest ones. Any traces of 5th dorsal striae absent, 4th striae arched with complete sutural ones. Epipleura covered with thick long yellow setae.

Propygidium narrow, with few minute shallow punctures and fine ground microsculpture. Pygidium long and convex, covered with small, shallow, dense (0.5-1) punctures and alutaceous microsculpture.

Prosternal keel flattened, with long complete carinal striae which are convergent between procoxae, then barely descendent towards apices where united by transverse sulcus. Lateral prosternal striae well-developed, convergent, not united with carinal striae. Apical foveae absent (Fig. 2). Carinal profile straight. Epipleura smooth, covered with long yellow setae.

Mesosternum transverse, with few small, shallow punctures along apical margin and shallow-arched transverse row of small punctures in basal third. Meso-metasternal suture thin, impunctate. Metasternum long, convex, covered with small, shallow, rather sparse (2-4) punctures being larger and denser posteriorly. Metasternal longitudinal suture distinct, thin and impunctate. First abdominal sternite long, convex, with complete lateral striae, covered with minute, shallow, sparse (3-6) punctures and fine ground microsculpture.

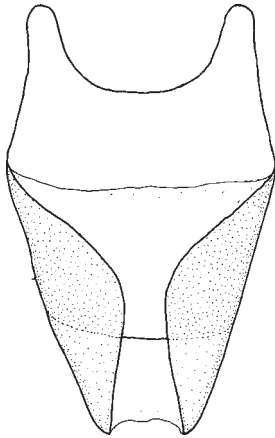
All femora wide, profemora with row of short spindle-shaped stiff setae on ventral margins and with row of longer curved setae on dorsal margins. Protibia wide, with nine teeth nearly



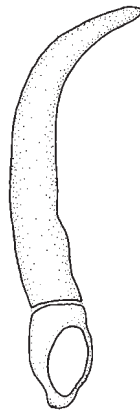
Fig. 4. *Turanostyphrus kizilkumis*. Protibia.



Fig. 5. *Turanostyphrus ignoratus*. Metatibia.



**Fig. 6.** *Turanostyphrus ignoratus*. Male 8<sup>th</sup> sternite.



**Fig. 7.** *Turanostyphrus ignoratus*. Aedeagus, lateral view.



**Fig. 8.** *Turanostyphrus ignoratus*. Aedeagus, dorsal view.

completely concealed in explanate outer margins. Mesotibia long and narrow, with row of short spinules on outer margin and row of long yellow setae on inner side. Metatibia moderately flattened, with two rows of short spinules along expanded flattened outer margin and row of long yellow setae along inner side (Fig. 5). All tarsi long and thin, claws nearly straight, about 0.75 of the length of correspondent apical tarsomere.

Aedeagus short, curved in profile, 8th sternite of male without sclerotized parts and ciliation (Fig 6-8).

Holotype. A male labeled: "Turkm. [=Turkmenistan], Repetek, *Haloxylon persicum* scrub, pitfall trap, 28.4.1967, V. Kuznetsov leg. / *Hypocacculus eremobius* Rchdt. Kryzhanovskij det. 1981 / HOLOTYPE *Turanostyphrus ignoratus* sp.n. A.Tishechkin des. 2004" (ZIN).

Etymology. The specific epithet refers to the fact that this species remained undiscovered for more than two decades as a result of misplacement because of incorrect original identification.

### *Turanostyphrus kizilkumis* sp. n. (Fig. 1, 3-4)

Length: PPL=2.7 mm, PEL=2.2 mm. Body oval, 1.20 times longer than wide, convex, with flattened dorsal surface (Fig. 1). Color piceous-brown, antennal clubs and tarsi yellowish.

Frons nearly flat, covered with small, shallow, dense (0.2-1) punctures, punctures absent at small area on mid upper part and arranged into transverse wrinkles on apical part and on clypeus. Labrum short, widely emarginated anteriorly. Antennae short, scapes expanded, nearly triangular, clubs with thin sutures, their apical halves covered with tomentose pubescence.

Pronotum (Fig. 1) 2.03 times wider than long in median line, its lateral sides rounded, anterior angles weakly marked. Marginal stria distinct, complete. Pronotal disc with distinct microsculpture, covered with moderate, shallow, dense (0.3-1.5) punctures, denser and arranged into longitudinal wrinkles laterally. Scutellum minute, triangular.

Elytra (Fig. 1) together 1.15 times wider than long, completely covered with small, shallow, moderately dense (2-3.5) uniform punctures, alutaceous ground microsculpture distinct only in apical fourth. Epipleural and marginal elytral striae indistinct. Elytral striae thin and impunctate,

only sutural striae bear several small punctures. Subhumeral striae nearly complete reaching apical fifth, oblique humeral striae present in basal fifth. First-4th dorsal striae slightly enter apical half, their lengths decline from 1st to 4th, the longest reach apical third and the shortest – barely cross the middle. Any traces of 5th dorsal striae absent, 4th striae arched with complete sutural striae. Epipleura covered with thick long yellow setae.

Propygidium very narrow, almost completely covered with elytral apices. Pygidium long and convex, covered with moderate, shallow, dense (0.5-1.2) punctures and alutaceous microsculpture.

Prosternal keel flattened, long complete carinal striae convergent between procoxae, next barely descendent forming oval loop (Fig. 3). Lateral prosternal striae well-developed, convergent, united with carinal striae near their apices. Apical foveae absent. Carinal profile shallow concave. Epipleura smooth, covered with long yellow setae.

Mesosternum transverse, with few small, shallow punctures along anterior margin and shallowly arched transverse row of small punctures in basal third. Meso-metasternal suture thin, impunctate. Metasternum long, convex, covered with very small, shallow, rather sparse (2-4) punctures, larger and somewhat denser posteriorly. Metasternal longitudinal suture distinct, thin and impunctate. First abdominal sternite long, convex, with complete lateral striae, covered with minute, shallow, sparse (3-6) punctures. Dorsal parts of lateral discs of all abdominal sternites with long yellow setae.

All femora wide, profemora with row of short scale-like stiff setae on ventral margins and with row of longer curved setae on dorsal margins. Ventral surfaces of meso- and metafemora with moderate yellow setae. Tibia (Fig. 4) and tarsi as in *T. ignoratus* sp.n. Male unknown.

Holotype. A female labeled: “[Uzbekistan] Karakalpak A.S.S.R. [Autonomous Republic], Kizil-Kum [Desert], Chaban-Kazgan, out of rodent burrow, 12.5.1978, V. Kashcheev leg. / *Hypocaccus eremobius* Rchdt. Kryzhanovskij det. 1981 / HOLOTYPE *Turanostyphrus kizilkumis* sp.n. A.Tishechkin des. 2004” (ZIN).

Etymology. The specific epithet derives from the name of Kizil-Kum Desert where the species was collected.

### *Hypocaccus (s. str.) lopatini* sp. n. (Fig. 9-14)

Length: PPL=2.4 mm, PEL=1.9 mm. Body oval, 1.12 times longer than wide, convex. Color piceous-brown, with light bronze tinge, antennal clubs and tarsi yellowish.

Frons flat, with several longitudinal irregularly rugulose wrinkles. Frontal keel well-developed, slightly curved outwards at the middle, united with supraorbital keels. Labrum and clypeus short, with rugulose surface. Mandibles short, impunctate. Antennae short, scapes widened, with several long, thick, yellow bristles on anterior margin. Antennal clubs small, rounded, their apical halves covered with short tomentose pubescence.

Pronotum 1.97 times wider than long in median line, its lateral sides slightly rounded, anterior angles wide and short. Marginal stria distinct, complete. Pronotal disc with small, transverse, impunctate space with indistinct border near the base, the rest is covered with small, shallow, dense (0.3-1.5) punctures which become denser and arranged into longitudinal wrinkles towards lateral margins. Scutellum minute, triangular.

Elytra together 1.35 times wider than long, their apical parts covered with small, shallow, rather dense (0.7-2) punctures. Punctures absent in 1st interval, but enter into other intervals where they reach basal half in 2nd interval and basal third in 3rd and 4th intervals. Epipleural striae indistinct, marginal elytral striae thin, impunctate, complete and united with sutural striae.

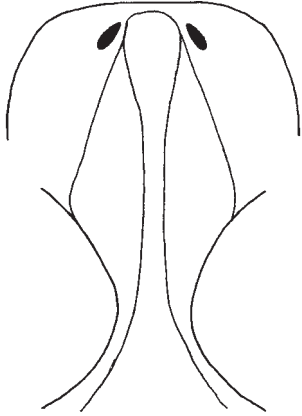


Fig. 9. *Hypocaccus lopatini*. Prosternum.

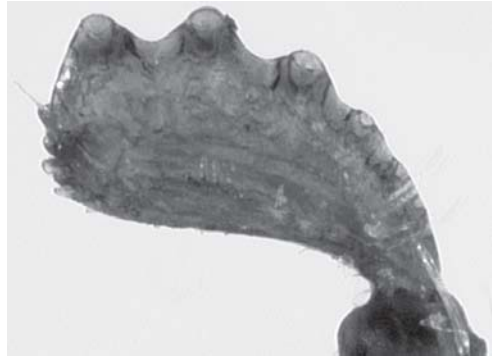


Fig. 10. *Hypocaccus lopatini*. Protibia.

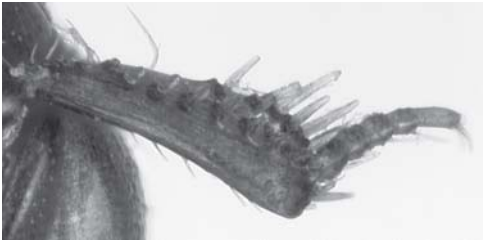


Fig. 11. *Hypocaccus lopatini*. Metatibia.

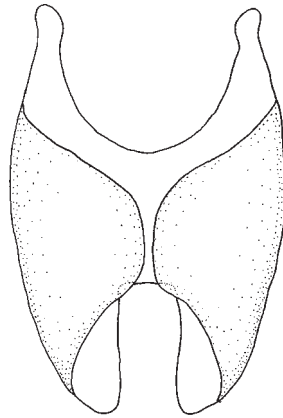


Fig. 12. *Hypocaccus lopatini*. Male 8<sup>th</sup> sternite.

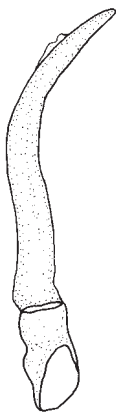


Fig. 13. *Hypocaccus lopatini*. Aedeagus, lateral view.

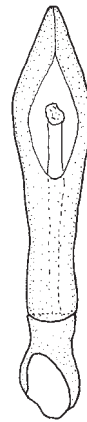


Fig. 14. *Hypocaccus lopatini*. Aedeagus, dorsal view.



Elytral striae thin and impunctate, only with several small punctures near bases. Subhumeral striae present as short fragments near the middle, nearly united with oblique humeral stria. Dorsal striae long, 1st striae are the longest reaching apical sixth, 2nd-4th nearly equal reaching apical third. Traces of 5th dorsal striae absent, 4th striae arched with complete sutural ones.

Propygidium short, covered with moderate, shallow, dense (0.3-1) punctures. Pygidium rather short and convex, its punctuation is similar to that on propygidium, but punctures somewhat smaller.

Prosternal keel (Fig. 9) narrow and acute, with long complete carinal striae which are strongly convergent in basal half and form short oval apical loop. Lateral prosternal striae well-developed, convergent, united with carinal ones at the loop. Apical foveae small and deep. Carinal profile concave.

Mesosternum transverse, with complete deep marginal stria, covered with moderate, deep, rather sparse (2-3) punctures. Meso-metasternal suture crenulate. Metasternum rather short, convex, smooth, with only few rows of moderate, deep punctures along posterior margin. Metasternal longitudinal suture distinct, thin and impunctate. Dorsal parts of metasternal discs covered with long yellow setae. First abdominal sternite long, convex, with complete lateral striae, only with few small, shallow punctures along striae and posterior margin. Dorsal parts of lateral discs of 1st abdominal sternite with short compressed yellow setae.

All femora wide, profemora with row of short yellow stiff flattened setae on ventral margins and with row of longer curved setae on dorsal margins. Protibia (Fig. 10) wide and short, with 5 short obtuse teeth and a short linear file of long setae dorsally along outer margins near the bases. Meso- and metatibia (Fig. 11) long and rather narrow, each with row of short, thin spinules and row of longer and thicker spines on outer margin and row of long yellow setae on inner side. All tarsi rather short, with short claws.

Aedeagus short, curved in profile, 8th sternite of male without sclerotized parts and ciliation (Fig. 12-14).

Holotype. Male labeled: "Mongolia, Kobdo Aimak, low Bodontchin-Gol River, 20 km SW Altai-som, 4.8.1968, Arnoldi leg. / *Hypocacculus tigris* Mars. Kryzhanovskij det. 1970 / HOLOTYPE *Hypocaccus lopatini* sp. n. A.Tishechkin des. 2004" (ZIN).

Diagnosis. In the key to the Palearctic *Hypocaccus* (Kryzhanovskij & Reichardt 1976), *H. lopatini* runs to the *H. metallicus* (Herbst) – *H. dauricus* (Reichardt) couplet. From both these two species it could be easily distinguished by its pale piceous-brown color with only traces of metallic tinge, smaller size, structure of protibia (especially arrangement of setae on dorsal surfaces), presence of setae on metathorax and abdomen and shape of the aedeagus.

Etymology. I dedicate this species to my mentor in systematic entomology, Dr. Igor K. Lopatin, in appreciation of our long-term friendship and his outstanding contribution to the studies of the Palearctic beetle fauna.

## ACKNOWLEDGEMENTS

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