

To the systematic position of *Cymindis arnoldii* Kabak, 1999 from Uzbekistan (Coleoptera: Carabidae: Lebiini)

К систематическому положению *Cymindis arnoldii* Kabak, 1999 из Узбекистана (Coleoptera: Carabidae: Lebiini)

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КЛЮЧЕВЫЕ СЛОВА: Lebiini, Средняя Азия, Узбекистан.

ABSTRACT. A description of a rare species, *Cymindis arnoldii* Kabak, 1999 (previously known only on females), is amplified with the characters of a male specimen recently collected in the Baisuntau mountain range (Uzbekistan). Photographs of habitus and genitalia are provided. The systematic position of the species is clarified: *C. arnoldii* is attributed to the subgenus *Cymindis* Latreille, 1805.

РЕЗЮМЕ. Описание редкого вида *Cymindis arnoldii* Kabak, 1999, ранее известного только по самкам, дополнено признаками самца, недавно собранного на горном хребте Байсунтау (Узбекистан). Даны фотографии габитуса и гениталий. Уточнено систематическое положение вида: *C. arnoldii* отнесен к подроду *Cymindis* Latreille, 1805.

Introduction

Cymindis arnoldii Kabak, 1999 was described on three female specimens from the Nuratau Range and the western part of the Hisar Range (Uzbekistan). Since males were unknown at that time, some of the characters used for subgeneric assignment (e.g. shape of the apical labial palpomere) were not studied. For this reason, the determination of the species as the member of the subgenus *Eremocymindis* Emetz, 1974 was preliminary. Last year, one male specimen was collected in the Baisuntau Range. This finding allows to attribute *C. arnoldii* to the subgenus *Cymindis* Latreille, 1805, as well as complete the species description with features of the male genitalia.

Material and Methods

The study is based on the examination of one male specimen of *Cymindis arnoldii* Kabak, 1999 recently collected in the Baisuntau Mountain range (Uzbekistan), three type speci-

mens of this species and comprehensive *Cymindis* material comprising all species known from the Middle Asian Mountains for comparison.

Specimens were examined and measured with an MBS-10 stereomicroscope and an ocular micrometer. The male genitalia were extracted and prepared using a conventional technique.

Measurements were taken as follows: body length from anterior margin of labrum to elytral apex; head width (HW) across eyes; pronotal length (PL) along its median line; elytral length (EL) from tip of scutellum to apex of longest elytron; width of both pronotum (PW) and elytra (EW) at their widest part; pronotal base (PB) at the hind angles; length of antennae (AL) from base of scape to tip of ultimate segment; length of eye (YL) was measured in dorsal view.

The types of *Cymindis arnoldii* Kabak, 1999 are kept in the collection of the Zoological Institute of the Russian Academy of Sciences (ZIN, St. Petersburg, Boris Kataev), recently obtained specimen is housed in the working collection of Igor A. Belousov and Ilya I. Kabak, (CBK, St. Petersburg, Russia).

Taxonomy

Cymindis Latreille, 1805

Cymindis (s. str.) *arnoldii* Kabak, 1999,

transfer subgen.

Figs 1–7.

Cymindis arnoldii Kabak, 1999: 434, fig. 3, type locality: „Uzbekistan, Nuratau Mt. R., Yanghikishlak, 2800 m”.

Cymindis (*Eremocymindis*) *arnoldii*: Kabak, 2003: 414 (Uzbekistan); Kabak, 2017: 588 (Uzbekistan).

MATERIAL. Holotype ♀, “Uzbekistan, Nuratau Mt. R., Yanghikishlak, 2800 m, 15.X.1941 K. Arnoldi” [in Russian] [ca. N40°20'40" E67°06'45", 1100 m] (ZIN). Paratypes: 1 ♀, collected together with holotype (ZIN); 1 ♀, “Plateau SE of Yakkabagh, 15.IX.41, 2800 m, K. Arnoldi” [? N38°47'40" E67°02'50", 1450 m] (ZIN). The altitudes indicated in the labels seem to be incorrect.

OTHER MATERIAL. 1(1) ♂, Uzbekistan, NW slope of Baisuntau Mt. R., left bank of Matshaydarya Riv., ENE of Ky-

zylinaur Vill., 2662 m, 38°25'37"N / 67°14'55"E, 21.06.2025, I.I. Kabak, A.S. Sunnatullayev leg. (CBK).

REDESCRIPTION. Small-sized, apterous species, with ovate elytra and markedly constricted toward base pronotum (Figs 1–2). Body length of male specimen 7.3 mm and 7.8–8.5 (8.2) mm in females of the type series. Dorsum reddish-brown, slightly shining, appendages reddish- or yellowish-brown. Elytra blackish-brown to black with light epipleura and yellowish partly vaguely delimited longitudinal stripe occupying intervals 5 to 8 on the humeral area, intervals 7–8 in median part and intervals 6–8 in distal part; in the apical 1/5 of each elytra, there is an oval yellowish spot (vague and small to large, occupying interspaces 3–5); elytral apices and lateral margins darkened. Dark field on elytral disk sharply outlined in completely sclerotized specimens. In some specimens, elytral suture narrowly lightened.

Head rather large, PW/HW = 1.19 in male and 1.25–1.27 (1.26) in females of the type series. Eyes medium-sized, YL/L3 = 1.12 (vs. 1.05–1.13 (1.09) in females), tempora convex. Antero-lateral margins of frons moderately reflexed. Upper-side of head evenly convex, frontal foveae small and superficial, supraorbital furrow long and sharp. Frons and vertex densely and rather roughly punctate. Two pairs of long supraorbital setae. Antennae average in length, AL/EL = 1.02 in male and 1.1–1.15 in females. Scapus subcylindric, slightly constricted medially, its setae long. Scapus 1.35 times in male and 1.19–1.22 times in females longer than antennomere 3. Genae rather densely pubescent with long hairs. Labial tooth shorter than lateral lobes, broadly rounded at apex, border along its anterior margin bearing two setae. Two pairs of setae on submentum: one median and one — in anterolateral angles. Apical segment of labial palpi in male triangular in shape, with a few small hairs. Penultimate labial palpomere with four long setae on anterior margin. Apical maxillar palpomere fusiform, sparsely pubescent.

Pronotum cordiform, PW/PL = 1.23 in male and 1.25–1.30 (1.28) in females, PW/PB = 1.54–1.56 (1.55); broadest in anterior third. Sides sharply rounded anteriorly, markedly narrowed toward base, sinuate before posterior angles. The latter obtusangular, weakly or moderately projected laterally, pointed at apex. Anterior margin considerably wider than base, anterior angles rounded, usually slightly protruding. Pronotal base markedly and almost regularly lobed, its border entire. Marginal gutter vaguely delimited, dilated anteriorly, margins narrowly reflexed throughout. Basal foveae vague, usually superficial. Median line thin, shortened anteriorly and posteriorly. Disk convex, its punctures of the same size as on head, sparser on disk and denser toward margins. Pubescence of pronotal surface as that on head. Both basal surface and lateral portions of pronotum rugulose. Two usual lateral setae on each side: near widest point and in posterior angle. Prosternal processus not bordered, with several hairs.

Elytra ovate, slightly depressed on disc, broadest barely (male) or distinctly (females) behind mid-length, EL/EW = 1.31 in male (1.27–1.32 (1.30) in females), EL/PL = 2.53 in male (2.63–2.67 (2.65) in females), EW/PW = 1.57 in male (1.57–1.61 (1.59) in females). Basal border complete, markedly sinuate. Sides gradually rounded, each elytron separately and widely rounded on apex. Marginal gutter rather narrow, slightly dilated at middle. Elytral striae superficial to moderately deep, punctate; parascutellary striola variable, from very short and vague to long, parascutellary setiferous pore present. Inner intervals flat to subconvex, other flat, their punctures slightly larger than those in striae, arranged in 2–3 irregular rows. Interval 3 with 3–4 small discal setiferous pores, of which the anterior one set closer to stria 3. Umbilicate series of 11–14 pores; only one apical pore at level of interval 3.

Scutellum glabrous and smooth. Lower surface of body with dense punctuation and pubescence. Metepisterna moderately longer than wide. Metacoxae, in addition to short pubescence, with two long setae.

Visible abdominal sternites with a single pair of paramedian setae, anal sternite quadrisetose in both sexes.

Microsculpture isodiametric, hardly perceptible only on elytra. Pubescence of upper-side dense, suberect, moderately long, on elytra slightly shorter than on forebody.

Meso- and metatibiae distinctly longer than corresponding tarsi. Dorsal surface of tarsi with long hairs; inner margin of claws denticulate in basal half.

Median lobe of aedeagus rather thick, its ventral margin distinctly sinuate; apical lamella medium in length, straight, with hook on dorsal margin; copulatory piece saddle-shaped with distal lobes subequal in length (Figs 3–4). Paramerae: the left one ovate (Fig. 5), the right one with rather long distal part (Fig. 6).

Apical gonocoxite relatively wide, obliquely truncated apically (Fig. 7).

COMPARATIVE NOTES. Since this species was described on females, it was presumably attributed to the subgenus *Eremocymindis* [Emetz, 1974]. In the main external characters, *C. arnoldii* is most similar to *Cymindis* (*Eremocymindis*) *dubia* Ballion, 1878, their resemblance and differences were discussed in the original description of the first species [Kabak, 1999]. However, the securiform apical labial palpomere in male combined with some important characters (denticulate claws of tarsi, complete and markedly sinuate basal elytral border, presence of two pairs of supraorbital setae) indicates that *C. arnoldii* belongs to the complex of the two closely related subgenera *Cymindis* s.str. and *Arrhostus* Motschulsky, 1864. These two subgenera differ in several external characters: the chaetotaxy of both metacoxae and anal sternite (the latter only for males), ratio scapus length to antennomere 3 length, presence or absence of elytral microsculpture in male, size and shape of the pronotal posterior angles [Sundukov, 2005]. However, the separation of these two subgenera deserves more detailed study based on a greater number of characters, including those of the genitalia. The combination of the above-mentioned features does not allow for a reliable classification of some species into one of these subgenera. Thus, *C. arnoldii* is closer to the species of *Arrhostus* in its chaetotaxy, while it is similar to the members of *Cymindis* s.str. in the proportion of antennomeres and coarse punctuation of body. It seems more correct, before conducting a special study on the taxonomic status of the subgenera *Arrhostus* and *Cymindis*, to assign *C. arnoldii* to the latter, since it was described earlier. Within this complex of subgenera, *C. arnoldii* is easily recognizable by the unique combination of shape of the median lobe of the aedeagus (which is thick, with markedly sinuate ventral margin and hooked apical lamella) and external features (rounded lateral margins of the elytra and a peculiar shape of the pronotum). It should be noted, that the hooked apical lamella of the aedeagus is the character appearing independently in different groups of the genus *Cymindis*: *C. (s. str.) ornata* Fischer von Waldheim, 1823, *C. (s. str.) dolpoensis* Kabak et Schmidt, 2022, *C. (Eremocymindis) emetzi* Mikhailov, 1977, *C. (incertae sedis) tschikatunovi* Mikhailov, 1977, *C. (incertae sedis) nikolajevi* Kabak, 1997 and some others. Among these species, *C. arnoldii* is most similar to *C. nikolajevi*, sharing with it securiform apical labial palpomere in male, ovoid elytra with isodiametric microsculpture, stout median lobe of the aedeagus and similarly shaped copulatory piece [Kabak, 1997]. However, *C. nikolajevi* is distinct in having: more flattened habitus; light color dorsum (forebody reddish, elytra yellowish with suture narrowly obscured in basal part); less densely



Figs 1–7. *Cymindis* (s.str.) *arnoldii* Kabak, 1999: 1–2 — habitus: 1 — ♀ (holotype), 2 — ♂ from the Baisuntau Mt. R.; 3–6 — male genitalia of specimen from the Baisuntau Mt. R.: 3–4 — median lobe of aedeagus (3 — right lateral view, 4 — left lateral view), 5–6 — paramerae, lateral view (5 — left, 6 — right); 7 — left apical gonocoxite of holotype, ventral view.

Рис. 1–7. *Cymindis* (s.str.) *arnoldii* Kabak, 1999: 1–2 — общий вид: 1 — ♀ (голотип), 2 — ♂ из хр. Байсунтау; 3–6 — гениталии самца из хр. Байсунтау: 3–4 — медиальная доля эдегуса (3 — справа, 4 — слева), 5–6 — парамеры, сбоку (5 — левая, 6 — правая); 7 — левый апикальный гоноксит голотипа, снизу.



Fig. 8. Biotope of *Cymindis* (s.str.) *arnoldii* Kabak, 1999 on the Baisuntau Range.

Рис. 8. Биотоп *Cymindis* (s.str.) *arnoldii* Kabak, 1999 на хр. Байсунтау.

and not so roughly punctate teguments; pronotum moderately rounded on sides with wider base and blunt posterior angles; scapus cylindric, without median constriction; claws of tarsi almost smooth (only a few minute denticles are detectable just near base). Additionally, ventral margin of the aedeagus is less sinuate in *C. nikolajevi*.

DISTRIBUTION. *Cymindis arnoldii* is known from the Nuratau Mt. R., western spurs of the Hisar Mt. R. and the Baisuntau Mt. R. (Uzbekistan).

BIONOMICS. The male specimen was collected in the open xerophytous biotope at the elevation of about 2660 m a.s.l. (Fig. 8).

Compliance with ethical standards

Ethical approval: No ethical issues were raised during our research.

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References

- Emetz V.M. 1974. [The subgeneric system of the genus *Cymindis* Latr. (Coleoptera, Carabidae) in the fauna of the USSR] // Zoologicheskyy zhurnal. Vol.53. No.2. P.199–204 [in Russian, with English summary].
- Kabak I.I. 1997. Nouveaux *Cymindis* Latreille de l'Asie Centrale (Coleoptera, Carabidae) // Coléoptères. Vol.3. P.93–104.
- Kabak I.I. 1999. New species of the genus *Cymindis* Latreille from Asia (Coleoptera Carabidae Lebiini) // A. Zamotajlov, R. Sciaky (eds.). Advanced in Carabidology: Papers dedicated to the memory of professor Oleg L. Kryzhanovskij. Krasnodar: MUIO Publisher. P.429–448.
- Kabak I. 2003. Tribe Lebiini Bonelli, 1810 // I. Löbl, A. Smetana (eds.). Catalogue of Palaearctic Coleoptera. Vol.1. Archostemata-Myxophaga-Adephaga. Stenstrup: Apollo Books. P.408–439.
- Kabak I. 2017. Tribe Lebiini Bonelli, 1810 // I. Löbl, D. Löbl (eds.). Catalogue of Palaearctic Coleoptera. Vol.1. Archostemata-Myxophaga-Adephaga. Leiden-Boston: Brill. P.579–625.
- Sundukov Yu.N. 2005. [*Arrhostus* Motschulsky is a new subgenus of the genus *Cymindis* (Coleoptera, Carabidae)] // Zoologicheskyy zhurnal. Vol.84. No.3. P.395–396 [in Russian, with English summary].