

Review of the genus *Dengitha* Reitter, 1887 (Coleoptera: Tenebrionidae: Tentyriini)

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ABSTRACT

The Central Asian genus *Dengitha* Reitter, 1887 is briefly reviewed. The following new synonymy is proposed: *Dengitha crystallina* Semenow, 1896 = *Dengitha symmetrica* G.S. Medvedev, 1964 **syn. nov.**; *Dengitha lutea* Reitter, 1887 = *Dengitha hyalina* Semenow, 1896 **resyn.** Lectotype is designated for *D. crystallina*. In total, two species of the genus are distributed in Central Asia, occurring on weakly fixed sands with *Haloxylon* or dunes without vegetation in the Karakum and Kyzylkum deserts. *Dengitha crystallina* is widely distributed in Turkmenistan (western, central and north Karakum), Uzbekistan (Ustyurt plateau, Kyzylkum) and Kazakhstan (Kyzylkum); *Dengitha lutea* is known only from the eastern Karakum (Turkmenistan) and Sundukli deserts near the Amudarya River (Turkmenistan, Uzbekistan).

KEYWORDS

taxonomy, synonymy, Tenebrionidae, sandy deserts, Middle Asia

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INTRODUCTION

The genus *Dengitha* Reitter, 1887 was erected for one species, *D. lutea* Reitter, 1887 which is described from Buchara (Uzbekistan) (Reitter 1887). Semenow (1896) revised this group and described two more species from Turkmenistan. Later, Reitter (1900) compiled a new key to species of *Dengitha*. Neither Andrey Semenow nor Edmund Reitter examined type specimens of the other author and indicated features not characteristic to the corresponding species. Medvedev (1964) added one species from Kazakhstan (eastern Kyzylkum). Medvedev and Nepesova (1985) compiled a key to the Turkmen species of the genus.

We found very limited information about this ultrapsammophilous genus except for the publications mentioned above. Faunistic notes are also available from Kryzhanovskij (1965), Bogatchev (1965), Skopin (1968) and Bekchanov et al. (2023). The first publication mentioned three species: *D. lutea* from eastern Turkmenistan, *D. crystallina* Semenov, 1896 from western Turkmenistan and Karakalpakstan (western Uzbekistan) and *D. symmetrica* Medvedev, 1964 from central Kyzylkum. Kryzhanovskij (1965) noted that species of the genera *Dengitha* and *Argyrophana* Semenow, 1889 (Pimeliini Latreille, 1802) are distinguished among other representatives of the subfamily Pimeliinae by an extreme degree of adaptation to life in sands, especially the structure of the legs for moving on sandy soil and the depigmentation of the integument. Adults of *Dengitha* are apterous as well as other soil-dwelling species of Tentyriini. Bogatchev (1965), Kaplin (2019) and Bekchanov et al. (2023) added brief information on bionomics of *Dengitha* spp.

We revised type specimens of all known taxa of *Dengitha* and here present a new synonymy and data on the distribution and bionomics of this genus. Species of *Dengitha* do not differ in the structure of the male genitalia, but have distinctive and stable external characters.

MATERIAL AND METHODS

Beetles were collected manually at nights. Specimens were studied using binocular microscopes Micromed MC-4 Zoom Led and Micromed MC-5 Zoom Led. Photos were taken using a Canon EOS 5D Mark IV Body, a Canon MP-E65MM F2.8 Macro lens and a Canon Macro Twin Lite MT-26X-RT flash bulb, stacking was done using a Stack-shot 3X with enlarged macro rails s/n 3734; the photosystem is installed on a Kaiser Copy Stand RS 1 reproduction machine. Stacked images were combined using a Helicon Focus 7.7.4 Pro software.

Images of beetles and their structures are not scaled. Measurements of type specimens are given in the section “Type material”.

Abbreviations of museums and collections, where the materials are deposited:

HNHM – Hungarian Natural History Museum (Budapest, Hungary);

PCMN – private collection of Maxim Nabozhenko (Rostov-on-Don, Russia);

PCNB – private collection of Norbek Bekchanov (Xonqa, Khorezm Region, Uzbekistan);

ZIN – Zoological Institute of the Russian Academy of Science (St Petersburg, Russia).



TAXONOMY

Family Tenebrionidae Latreille, 1802

Subfamily Pimeliinae Latreille, 1802

Tribe Tentyriini Eschscholtz, 1831

Genus *Dengitha* Reitter, 1887

Dengitha Reitter, 1887: 516

Type species: *Dengitha lutea* Reitter, 1887 by monotypy.

Dengitha crystallina Semenow, 1896

(Figs 1 and 2)

Dengitha crystallina Semenow, 1896: 48, 49; Reitter, 1900: 185; Medvedev, 1964: 161, fig. 2; Kryzhanovskij, 1965: 168; Medvedev & Nepesova, 1985: 70; Bekchanov et al., 2023: 175.

Dengitha symmetrica G.S. Medvedev, 1964: 160; Skopin, 1968: 110, **syn. nov.**

Type material (ZIN). *Dengitha crystallina*. Lectotype (♂) designated here (Fig. 1): bronze circle, “Uzun Ada 21.VI.[18]95 Varentsov” (Turkmenistan, Balkan Region, 39°38′59″N, 53°44′40″E), “*Dengitha crystallina* m. Typ A. Semenov det.” (handwritten by A.P. Semenow and partly printed), “Coll. Semenov-Tian-Shansky”, “*Dengitha crystallina* Sem. typ.” (handwritten by A.V. Bogatchev). Measurements of the lectotype: length 8.8 mm, width 3.9 mm. Paralectotypes 2♂♂, 1♀: “Uzun Ada 21.VI.[18]95 Varentsov”, “*Dengitha crystallina* Sem. typ.” (handwritten by A.V. Bogatchev; one paralectotype with label “*Dengitha crystallina* Sem. typ. Bogačev det.”); “St. Mikhaylovskaya 26.VI.[18]95 Varentsov (koff.)” (Turkmenistan, Balkan Region, 39°35′38″N, 53°58′37″E); 1 specimen: “Paratypus”.

Dengitha symmetrica. Holotype, ♂, and paratypes, 1♂, 2♀♀ (Fig. 2): “Baimen-Kuduk 21.V.912. Zarudny” (Cyrillic label, handwritten by Nikolay Zarudny) [Uzbekistan, Navoiy Region, Tamdy district, Baimen well]. Measurements of the holotype: length 7.2 mm, width 3.1 mm. Paratypes: 3 specimens: “Molla Ali 4.IV.912 Zarudny” (Cyrillic label, handwritten by Nikolay Zarudny) [Uzbekistan, Navoiy Region, Tamdy district, Mulallykuduk well, 41°55′49.54″N, 64°35′18″E]; 4 specimens: “Sykutty-Kuduk 6.VI.912 Zarudny” (Cyrillic label, handwritten by Nikolay Zarudny) [Uzbekistan, Navoiy Region, Tamdy district, Sukuti, 41°58′52.00″N, 65°00′11.47″E]; 4 specimens: “Taldy-Kuduk 23.V.912 Zarudny” (Cyrillic label, handwritten by Nikolay Zarudny) [Kazakhstan, Turkestan Region, Taldykuduk, 42°22′15″N, 68°50′21″E]; 6 specimens: “Aksur-Kuduk 25.V.912 Zarudny” (Cyrillic label, handwritten by Nikolay Zarudny); 3 specimens: “Nil-Kuduk 11.VI.1912 Zarudny”; 3 specimens: “Tokhta-Kuduk 9–10.VI.912 Zarudny” (Cyrillic label, handwritten by Nikolay Zarudny); 1 specimen: “Burylybay-Kuduk 21.VI.1912”; 2 specimens: “Nurchatay-Kuduk 23.IV.912 Zarudny” (Cyrillic label, handwritten by Nikolay Zarudny); “Baygakum bliz Zhuleka 14.VI.1907 D. Glazunov” [Kazakhstan, Qyzylorda Region, Shieli District, Baygekum, 44°18′46″N, 66°28′43″E].

Material. Turkmenistan. 1 specimen (ZIN), Yolotan, Transcasp. (now Ýolöten, Turkmenistan), “Sammlung Reisinger”; 1 specimen (ZIN), Uzun-Ada, 3.vi.1895 (Varentsov); 1 specimen (ZIN), Annau, 21–22.vii.1896 (Varentsov); 1 specimen (ZIN), “Transcasprien”, 19.vi.1902 (C. Ahnger); 1 specimen (ZIN), Annau, 9.vii.1902 (K.O. Angher); 1 specimen (ZIN), Ashgabad, 5.vi.1903 (G. Jakobson); 7 specimens (ZIN), Transcaspian region, Yolotan, 16.vi.1921, 16.vii.1921, on soil under plants (P.P. Arkhangel’sky); 1 specimen (ZIN), Yolotan, 16.vi.1926 (V. Kizeritsky);



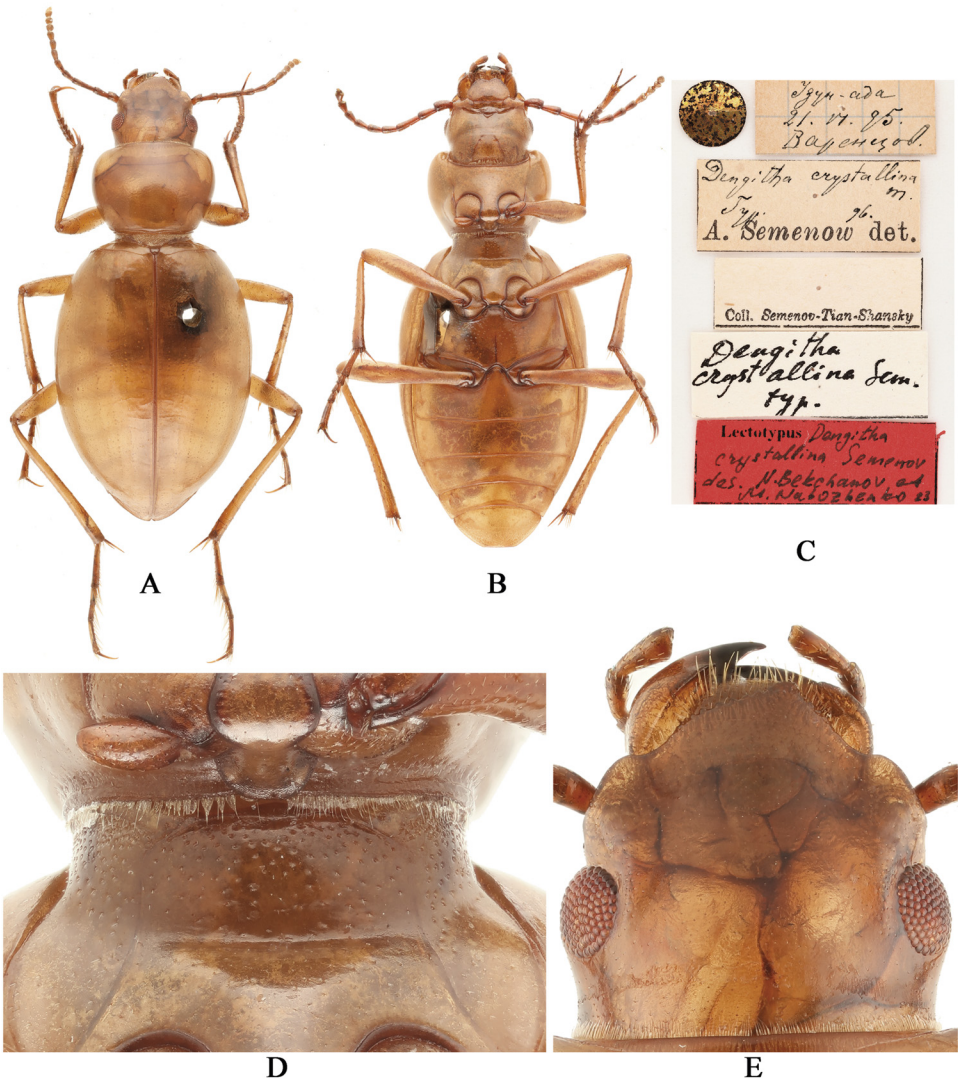


Fig. 1. *Dengitha crystallina*, habitus, labels and morphological details. A: male, lectotype, habitus dorsally; B: male, paralectotype, habitus ventrally; C: labels of the lectotype; D: mesoventrite; E: head dorsally, lectotype

1 specimen (ZIN), Karakum desert, 2.vi.1930 (unknown collector); 1 specimen (ZIN), Jebel, 9.vii.1934 (V. Popov); 1 specimen (ZIN), Yolotan, 15.vi.1952 (Bogun’); 1 specimen (ZIN), Ashgabad, sands, 12.vii.1953 (Potapol’sky); 1 specimen (ZIN), Ashgabad, sands, 28.vii.1965 (L. Frayberg); 2 specimens (ZIN), Ashgabad env., 23.vi.1966, 20.vi.1967 (L. Frayberg). Uzbekistan. 3 specimens (ZIN), “Petro-Alek[sandrovsk]” (now Turtkul, Karakalpakstan), 2.06.1910 (G. Sumakov); 1 specimen (ZIN), Khiva, Karakum, 1.04.1927 (V. Gussakovskiy); 1 specimen



Fig. 2. *Dengitha symmetrica*, syn. n. and *D. crystallina*, type- and non-type specimens. A: holotype *D. symmetrica*, male, habitus dorsally; B: paratype *D. symmetrica*, female, habitus dorsally; C: labels of the holotype of *D. symmetrica*; D: head (dorsally) of the holotype of *D. symmetrica*; E: head dorsally, paratype of *D. symmetrica* (Taldy-Kuduk, Kazakhstan); F: head dorsally, paralectotype of *D. crystallina* (Uzun-Ada, western Turkmenistan); G: head dorsally, non-type (Khiva, Uzbekistan)

(ZIN), Khiva, 24.07.1927, at night, on light (L. Zimin); 1 dry specimen (ZIN), Uzbekistan, Khorezm Region, Khiva District, Karakum desert, 41°19'47"N/60°27'08"E, Haloxylyon, 18.04.2023 (M.V. and S.V. Nabozhenko, N.Kh. and Kh.U. Bekchanov, U. Duschanov); 1 dry specimen (ZIN), Uzbekistan, Karakalpakstan, Kungrad District, Ustyurt plateau, near Elabad, sands, 43°05'13"N/58°19'55"E, 23.04.2023 (M.V. and S.V. Nabozhenko, N.Kh. and Kh.U. Bekchanov, U.E. Duschanov, D.A. Yavkachev); 3 specimens (PCNB), Uzbekistan, Khorezm Region,



Hazorasp (Tuprokkala) District, Kyzylkum desert, 41°04′29.5″N/61°58′12.2″E, 3.06.2023 (N.Kh. Bekchanov, O.N. Jumaniyozov); 3 specimens (PCNB), Uzbekistan, Khorezm Region, Hazorasp (Tuprokkala) District, Kyzylkum desert, 41°04′29.5″N/61°58′12.2″E, 3.06.2023 (U.E. Duschonov). Kazakhstan. 1 specimen (ZIN), Kazakhstan “Syr-Daria, v. Bodemeyer”; 1 specimen (ZIN), Kazakhstan, Baygakum, 3.viii.1907 (unknown collector); 1 specimen (ZIN), Aksur-Kuduk, 25.v.1912 (N. Zarudny); 1 specimen (ZIN), Sukuzhty-Kuduk, 6.vi.1891 (N. Zarudny); 1 specimen (ZIN), “Syr-Dar. obl. Per. u Baygakum bl. Dzhuleka D. Glazunov” (Fort Perovsky, now Kyzylorda, Kazakhstan); 1 specimen (ZIN) “Perovski, Sir-Darya” (now Kyzylorda, Kazakhstan). Notes. [Medvedev \(1964\)](#) described *D. symmetrica* based on the symmetrically positioned tooth of the epistoma. However, the holotype and some studied specimens from the central Kyzylkum have the tooth asymmetrical and shifted to the right ([Fig. 2D](#)), while the majority of paratypes have the tooth symmetrical ([Fig. 2E](#)). We checked this structure in *D. crystallina* and found that specimens even within one population, such as specimens from the type series and the type locality Uzun-Ada, western Turkmenistan, can have symmetrical ([Fig. 2F](#)) or slightly to strongly ([Fig. 2G](#)) asymmetrical tooth. Thus, this character cannot be considered diagnostic. The remaining distinctive features (fine sparse punctures on the mesoventrite, large eyes and temples narrowed towards head base) are corresponding to those in the type specimens of *D. crystallina*. The character state of margined elytral base (complete or not) also has wide intra- and inter-population variability and cannot be used for diagnosis. Thus, the following new synonymy is proposed: *Dengitha crystallina* [Semenow, 1896](#) = *Dengitha symmetrica* [G.S. Medvedev, 1964](#) **syn. nov.**

Bionomics. This is likely one of the fastest moving beetles (observations of the authors *in vivo*) in Middle Asia, which is possibly an anti-predatory behavior. Adults are nocturnal and often visit light traps. The species inhabits weakly fixed sands with *Haloxylon* or dunes without vegetation. Distribution. Turkmenistan: from the Caspian Sea to Murgab (Marghab) delta; Uzbekistan: eastern Ustyurt, northern Karakum (Khiva District), Kyzylkum. [Medvedev and Nepesova \(1985\)](#) listed this species for Termez (southern Uzbekistan), but this record is not confirmed by existing material; Kazakhstan: Kyzylkum.

Dengitha lutea [Reitter, 1887](#)

(Figs 3 and 4)

Dengitha lutea [Reitter, 1887](#): 517; [Semenow, 1896](#): 49, 53; [Reitter, 1900](#): 186; [Medvedev, 1964](#): 161 (synonymy *D. lutea* and *D. hyalina*); [Kryzhanovskij, 1965](#): 168.

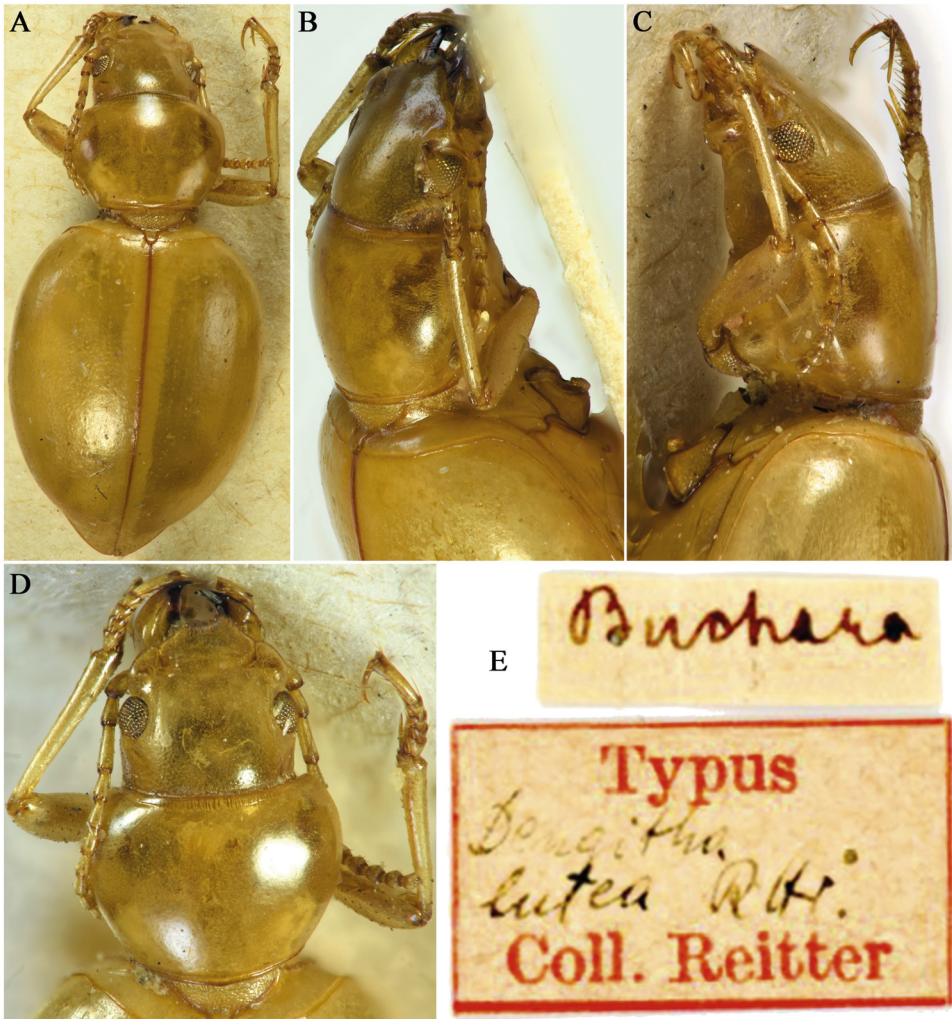
Dengitha hyalina [Semenow, 1896](#): 49, 52; [Reitter, 1900](#): 185; [Kryzhanovskij, 1965](#): 168; [Medvedev & Nepesova, 1985](#): 70, **resyn.**

Type material. *Dengitha lutea*. Holotype, ♀ (HNHM) ([Fig. 3](#)): “Buchara” (Uzbekistan, Bukhara), “Typus *Dengitha lutea* Rtt. Coll. Reitter”. Measurements: length 7.9 mm, width 3.5 mm

Dengitha hyalina. Holotype, ♂ (ZIN) ([Fig. 4](#)): goldish circle, “Repetek, 3.VI.89. A. Semenov” (Cyrillic, handwritten by A. Semenow), “*Dengitha hyalina* m. Typ. un. v.96 A. Semenov det.” (handwritten by A. Semenow with printed last line), “coll. Semenov-Tian-Shansky”. Measurements: length 7.7 mm, width 3.5 mm.

Material (ZIN, except for one specimen). Turkmenistan. 1 specimen, Repetek, 8.ix.1891 (Vorontsov); 1 specimen, 1896 (K.O. Angher); 1 specimen, Repetek, iv. (Rukavitsyn); 148 specimens, Farab (or Middle-Asian railway, Farab), 1.vi.1905, 5.vi.1905, 5–6.vi.1905, 6.vii.1905, 6–7.vi.1905,





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Fig. 3. *Dengitha lutea*, female, holotype. A: habitus; B: pronotum and head, antero-laterally, right side; C: ditto, laterally, left side; D: ditto, dorsally; E: labels. Photos by Aranka Grabant (HNHM)

6.iv.1905, 7.iv.1905, 8.vi.1905, 9.vi.1905, 10.vi.1905, 24.vi.1905, 1907, 13.vi.1907, 6–7.vi.1909 (G. Sumakow); 5 specimens, vi.1905, 5.vi.1905 (Fisher); 3 specimens, “Farab, Bukhara” [now Farab, Turkmenistan], 16–17.vi.1905 (Oshanin); 2 specimens, Farab, 9.vi.1926 (unknown collector); 3 specimens, Chardzhou (now Turkmenabad), 2.vi.1905 (G. Sumakow); 1 specimen, “Zakaspiysk. obl. K. Anger, 95.” [Transcaspien region, 1895, leg. K.O. Angher]; 1 specimen, Repetek, 7.vi.1912 (Dudinsky); 1 specimen (PCMN), Repetek, 12.vi.1936 (D. Kolachek); 1 specimen, Amu-Darya [Amu-Dar’ya town, 37°53’13”N, 65°14’52”E], 2.03.1989 (unknown collector).



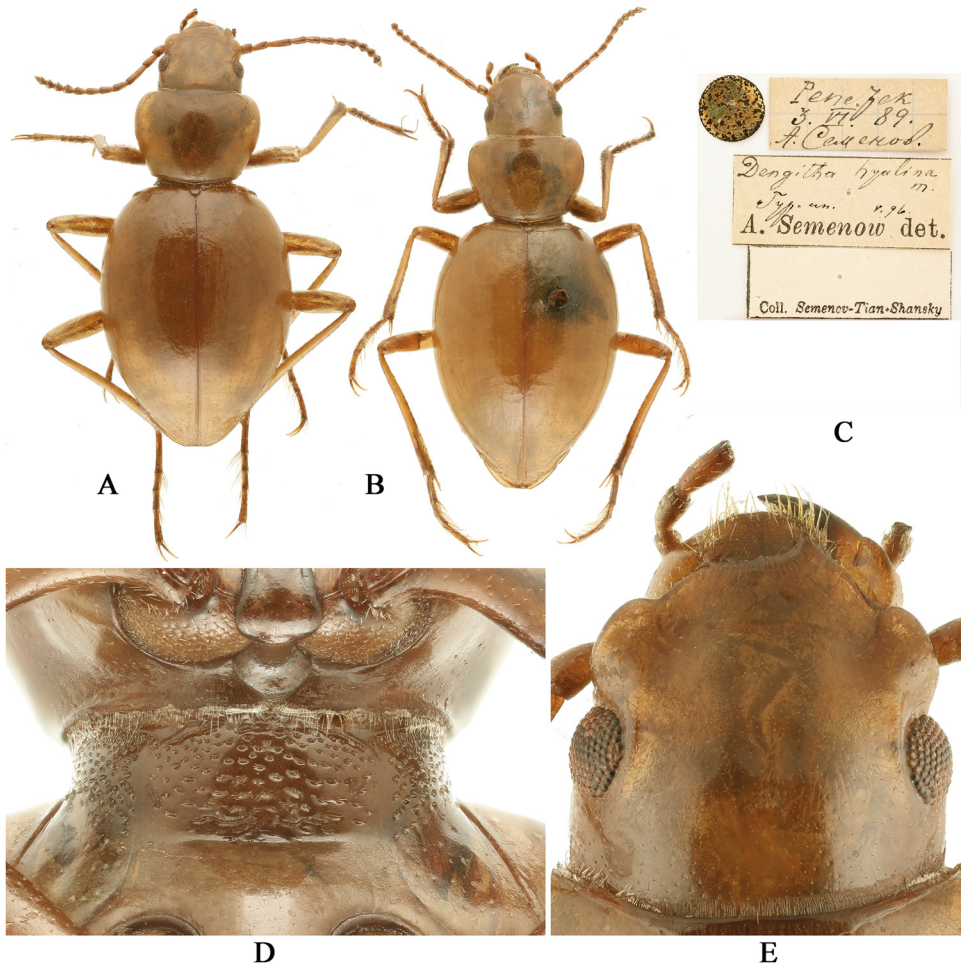


Fig. 4. *Dengitha hyalina*, junior synonym of *D. lutea*, habitus, labels and morphological details. A: male, holotype, habitus dorsally; B: female, habitus dorsally; C: labels of holotype; D: mesoventrite, ventrally; E: head dorsally, holotype

Notes. Medvedev (1964) had already established the synonymy proposed above, but later (Medvedev & Nepesova 1985) abandoned it. The holotypes of *D. lutea* and *D. hyalina* are conspecific, so we reinstate the following synonymy: *Dengitha lutea* Reitter, 1887 = *Dengitha hyalina* Semenow, 1896, **resyn.**

The specimen with the Cyrillic text “Zakaspiysk. obl. K. Anger, 95.” bears also two additional labels, “*Dengitha hyalina* m. vii.96 A. Semenow det.” and an unmarked red label added subsequently by curators. The primary type status is fixed by Semenow (1896) mentioning only one specimen in the original description: “specimen unicum (1♂?)”.

Bionomics. The species inhabits dunes and barchans without vegetation, nocturnal activity (Kaplin 2019).





Fig. 5. Map of distribution of *Dengitha* spp. black circle: *D. crystallina*; white circle: *D. lutea*

Distribution. Turkmenistan: known only from three localities in the eastern Karakum and Sundukli deserts near Amudarya River. Uzbekistan: Bukhara. Some parts of modern Turkmenistan (in particular, the Amudarya River) were territories of the Bukhara Emirate in the 19th century. Thus, the holotype of *D. lutea* could have been found in the territory of Turkmenistan. On the other hand, the Turkmen Farab city, where a large series of *D. lutea* was collected, is located only 8 km from the Uzbek boundary and we do not exclude records of this species in the Bukhara Region of Uzbekistan.

A KEY TO SPECIES OF THE GENUS *DENGITHA*

- 1(2). Temples straight or slightly divergent behind eyes (Fig. 4E). Mesoventrite with coarse transverse foveae which sometimes merge into transverse grooves (Fig. 4D) *D. lutea*
 2(1). Temples converging behind eyes (Figs 1E, 2D–G). Mesoventrite with fine and sparse circular punctures (Fig. 1D) *D. crystallina*

Distribution of two mentioned species is presented at Fig. 5.

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in ZIN in 2022–2023, but the photos of the labels were lost), Aranka Grabant (HNHM) for the image of the holotype of *D. lutea*, Umar Duschanov, Davronbek Yavkachev (Urgench State University, Urgench, Uzbekistan) and Svetlana Nabozhenko (Russian Entomological Society, Rostov-on-Don, Russia) for their help in expeditions. The authors are also grateful to the reviewers for their valuable comments and corrections. This work was supported by the state project AAAA-A17-117081640018-5 awarded to M.V. Nabozhenko.

REFERENCES

- Bekchanov NKh, Nabozhenko MV, Bekchanov KhU (2023) Remarkable additions to the fauna of darkling beetles (Coleoptera: Tenebrionidae) of western Uzbekistan. *Caucasian Entomological Bulletin* 19(1): 155–191. <https://doi.org/10.5281/zenodo.8199930>
- Bogatchev AV (1965) Zhuki-chernotelki (Tenebrionidae) Sredney Azii i Kazakhstana [Darkling beetles (Tenebrionidae) of the Middle Asia and Kazakhstan]. *SciD Abstract*. Dushanbe, Academy of Sciences of Tajik SSR, 38 pp. [in Russian]
- Kaplin VG (2019) Distribution, life forms and ecological peculiarities of darkling beetles (Coleoptera, Tenebrionidae) of the Eastern Kara Kum. *Entomological Review* 99(7): 987–1004. <https://doi.org/10.1134/S0013873819070091>
- Kryzhanovskij OL (1965) Composition and origin of terrestrial fauna of Middle Asia (Based on material of beetles). *Nauka, Moscow – Leningrad*, 419 pp. [in Russian]
- Medvedev GS (1964) New forms of darkling beetles (Coleoptera, Tenebrionidae) from Kazakhstan. pp. 159–163. In: *Arnoldi LV (ed): Proceedings of the Zoological Institute of the Academy of Sciences of the USSR. Vol. 34. New species of insects of the fauna of Kazakhstan – Zoological Institute of the Academy of Sciences of the USSR, Leningrad*. [in Russian]
- Medvedev GS, Nepesova MG (1985) Key to darkling beetles of Turkmenistan. *Ylym, Ashkhabad*, 180 pp. [in Russian]
- Reitter E (1887) *Insecta in itinere Cl. N. Przewalskii in Asia Centrali novissime lecta. ix. Tenebrionidae. Horae Societatis Entomologicae Rossicae* 21: 355–389.
- Reitter E (1900) *Bestimmungs-Tabelle der Tenebrioniden-Abtheilungen: Tentyrini und Adelostomini aus Europa und den angrenzenden Ländern*. Edmund Reitter, Paskau, [1] + 82–197 pp.
- Semenow AP (1896) *Coleopterorum genera faunae turanicae endemica vel praecipue peculiariora eorumque species*. *Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St.-Petersburg* 1: 42–61.
- Skopin NG (1968) Darkling beetles (Coleoptera, Tenebrionidae) of Southern Kazakhstan and their economic significance. *Trudy Kazakhskogo nauchno-issledovatel'skogo instituta zashchity rasteniy* 10: 74–114. [in Russian]

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