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On two poorly-known species of the millipede family Polydesmidae (Diplopoda: Polydesmida) from Central Asia

О двух малоизвестных видах многоножек-диплопод семейства Polydesmidae (Diplopoda: Polydesmida) из Центральной Азии

Didier VandenSpiegel[1], Sergei I. Golovatch[2]
Д. ВанденШпигель[1], С.И. Головач[2]

[1] Royal Museum for Central Africa, B-3480 Tervuren, Belgium; E-mail: dvdspiegel@africamuseum.be
[2] Institute of Ecology and Evolution, Russian Academy of Sciences, Leninsky pr. 33, Moscow 119071 Russia; E-mail: sgolovatch@yandex.ru
[2] Институт проблем экологии и эволюции РАН, Ленинский проспект, 33, Москва 119071 Россия.

KEY WORDS: *Schizoturanius*, *Epanerchodus*, taxonomy, distribution, iconography, Uzbekistan, Tajikistan.

КЛЮЧЕВЫЕ СЛОВА: *Schizoturanius*, *Epanerchodus*, таксономия, распространение, иконография, Узбекистан, Таджикистан.

ABSTRACT. Brief redescriptions and sufficiently detailed iconographies and comments are given for two rather obscure polydesmid millipede species from Central Asia: *Schizoturanius kitabensis* (Gulička, 1963) and *Epanerchodus redikorzevi* (Lohmander, 1933).

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РЕЗЮМЕ. Приведены краткие переописания и достаточно детальные новые иллюстрации с заметками для двух малоизвестных видов диплопод-многосвязов из Центральной Азии: *Schizoturanius kitabensis* (Gulička, 1963) и *Epanerchodus redikorzevi* (Lohmander, 1933).

Introduction

Among the four new genera, one new subgenus and 14 new species or subspecies of Diplopoda that Ján Gulička (1925–2009), a renowned Slovak myriapodologist from Bratislava described from the former Soviet Union [Gulička, 1963, 1972], based on the samples the late Prof. M.S. Ghilarov (Moscow) had sent him for identification, most have since been revised and properly illustrated, and their identities fully clarified. However, one last species, *Turanodesmus kitabensis* Gulička, 1963, from Uzbekistan, Central Asia, still remains enigmatic and thus requires revision.

With the aim of revising *T. kitabensis* types, all presently kept in the collection of the Slovak Museum of Nature Protection and Speleology (SMNPS) at Liptovský Mikuláš, Slovakia, through the kind assistance of both Ján Lakota and Andrej Mock, we received on loan not only a few syntypes of *T. kitabensis*, but also a subsample from Tajikistan of what Gulička provisionally identified, but never published, as *Usbekodesmus* sp. The present note is devoted to clarifying the identities of these two Central Asian species of Polydesmidae.

Material and methods

The samples underlying the present contribution have been borrowed from, and returned back to, the SMNPS collection, Liptovský Mikuláš, Slovakia. All samples are stored in 75% ethanol. Photographs were taken with a Leica DFC 500 digital camera mounted on a Leica MZ16A stereo microscope. Images were processed with a Leica Application Suite programme. Specimens for scanning electron microscopy (SEM) were air-dried, mounted on aluminium stubs, coated with gold and studied using a JEOL JSM-6480LV scanning electron microscope. Dry SEM material was removed from stubs and returned to alcohol.

The terminology used in describing the gonopod conformations largely follows that of Nefediev [2022] as regards *Schizoturanius* Verhoeff, 1931, and of Golovatch [2021] for *Epanerchodus* Attems, 1901.

Taxonomic part

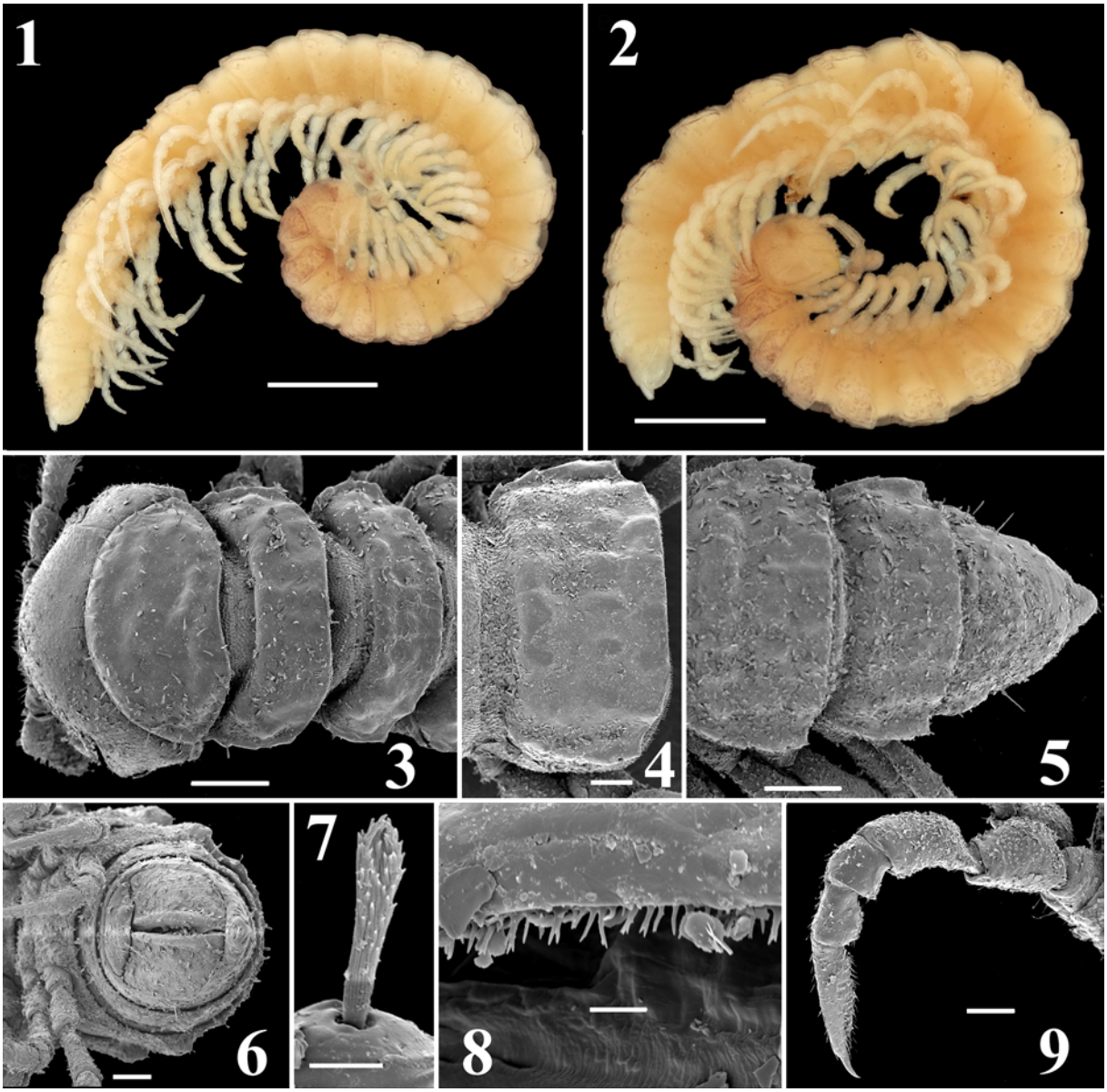
Schizoturanius kitabensis (Gulička, 1963)
Figs 1–14, 28, 29.

Turanodesmus kitabensis Gulička, 1963: 325 (original description).

Schizoturanius kitabensis — Lokšina, Golovatch, 1979: 384 (listing and an indirect transfer); Read, Golovatch, 1994: 65 (listing); Nefediev, 2022: 265 (listing and key).

MATERIAL EXAMINED. Syntypes: 2 ♂♂, 1 ♀ (SMNPS), [USSR], Uzbek SSR (now Uzbekistan), Kitab, near irrigation stream, 31.V.1962, L.M. Semenova leg.

According to Gulička [1963], the type series of *Turanodesmus kitabensis* consisted of the holotype ♂, the allotype ♀, and further 5 ♂♂ and 6 ♀♀ paratypes. According to A. Mock (in litt.), howev-



Figs 1–9. *Schizoturanius kitabensis* (Gulička, 1963), ♂ (1, 3–9) and ♀ (2) syntypes. 1, 2 — habitus, lateral views; 3 — anterior part of body, dorsal view; 4 — midbody ring, dorsal view; 5, 6 — posterior part of body, dorsal and caudoventral views, respectively; 7 — a tergal seta, lateral view; 8 — midbody caudal margin and limbus, dorsal view; 9 — midbody leg, lateral view. Scale bars: 1.0 mm (1, 2), 0.2 mm (3, 5), 0.1 mm (4, 6, 9), 0.01 mm (7, 8).

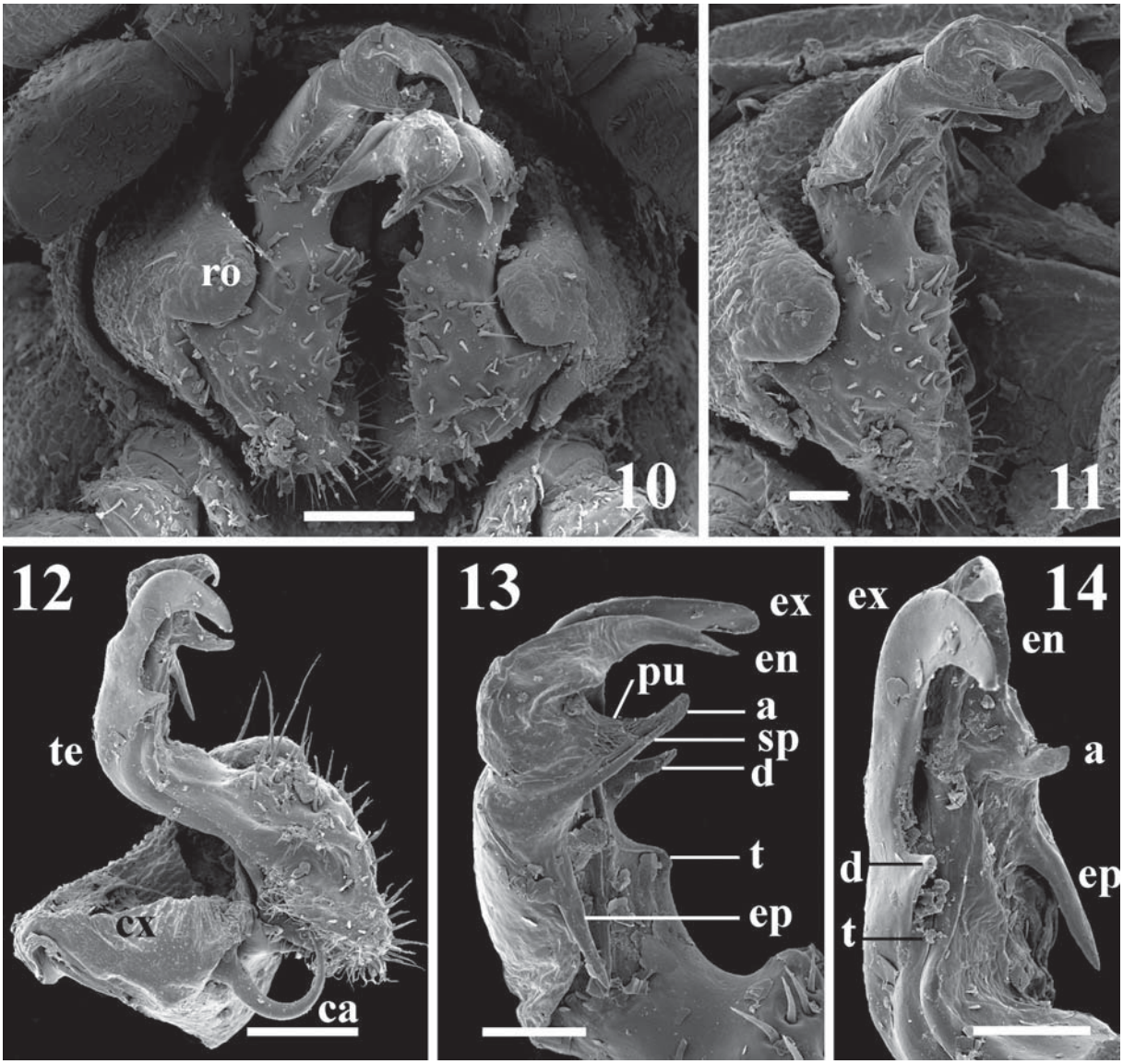
Рис. 1–9. *Schizoturanius kitabensis* (Gulička, 1963), синтипы ♂ (1, 3–9) и ♀ (2). 1, 2 — общий вид, сбоку; 3 — передняя часть тела, сверху; 4 — среднетуловищный сегмент, сверху; 5, 6 — задняя часть тела, соответственно сверху и одновременно снизу и сзади; 7 — тергальная щетинка, сбоку; 8 — задний край среднетуловищного сегмента и лимбус, сверху; 9 — среднетуловищная нога, сбоку. Масштаб: 1,0 мм (1, 2), 0,2 мм (3, 5), 0,1 мм (4, 6, 9), 0,01 мм (7, 8).

er, the SMNPS collection presently comprises 10 ♂♂, 8 ♀♀ and 1 juvenile, all contained in a single jar. Because Gulička seems to have failed to select, separate and properly label the holo- and allotype, for the time being it appears better to treat everything as syntypes. Lectotype designation thus remains to be formalized by other colleagues, if necessary.

DESCRIPTIVE NOTES. Because the original description [Gulička, 1963] was too succinct and accompanied by only a single crude sketch of a gonopod, we profit by providing here both a short redescription and, above all, a sufficiently detailed iconography (Figs 1–14, 28, 29).

Adult body ca 10 (♂) or 9 mm long (♀), and 0.8 mm wide (♂, ♀) (*vs* 8–9.5 mm long in the original description). Coloration in alcohol uniformly light yellow-pink (Figs 1, 2) (*vs* yellow-white with rusty tint in the original description). Body with 20 segments. Tegument dull, texture very delicately shagreened. Head pilose nearly throughout, with squarish genae and three distinct central teeth at anterior margin. Antennae long and only slightly clavate.

In width, collum < ring 2 < 3=4 < head = 5=15, thereafter body gradually tapering towards telson (Figs 3–5). Parater-



Figs 10–14. *Schizoturanius kitabensis* (Gulička, 1963), ♂ syntype. 10 — both gonopods in situ, ventral view; 11 — right gonopod *in situ*, ventral view; 12 — left gonopod, mesal view; 13, 14 — distal halves of right (13) and left (14) gonopod, lateral and submesal views, respectively. Scale bars: 0.1 mm (10–12), 0.05 mm (13, 14).

Рис. 10–14. *Schizoturanius kitabensis* (Gulička, 1963), синтип ♂. 10 — оба гонопода на месте, снизу; 11 — правый гонопод на месте, снизу; 12 — левый гонопод, изнутри; 13, 14 — дистальные половины правого (13) и левого (14) гонопода, соответственно сбоку и почти изнутри. Масштаб: 0,1 мм (10–12), 0,05 мм (13, 14).

ga poorly developed, but evident, set high (at about upper third of midbody height), starting with collum, mostly subhorizontal *vs* a clearly convex dorsum, usually with three or four small, lateral, setigerous indentations. Caudolateral corners of paraterga rounded in a few anterior rings, then increasingly angular and obtuse to finally subrectangular and nearly pointed in rings 17–19, not extended past rear tergal margin, devoid of calluses. Pore formula normal, ozopores small, lateral, located in posteriormost marginal indentation. Metatergal sculpture typical, poorly-developed, obliterate, with three transverse rows of typical (= polydesmid), setigerous, polygonal bosses (Figs 3–5). Tergal setae very short, slightly longer only on collum and a few caudalmost rings, subclavate and finely barbed (Fig. 7), often obliterate. Stricture between pro- and metazona wide, shallow and as finely microgranulate as prozona (Fig. 4). Limbus very thin, microtrichous, microtrichs often being bifid (Fig. 8). Pleurosternal carinae absent. Epiproct short, conical, carrying a group of four setiform spinnerets at tip, pre-apical lateral papillae very small (Fig. 6). Hypoproct semi-circular; caudal, paramedian, setigerous papillae small and well-separated (Fig. 6).

Sterna without modifications, densely setose; sternum between ♂ legs 9 unmodified as well. Legs generally rather long and slender (♂, ♀), only slightly incrassate (Figs 1, 2, 9), ca 1.3–1.4 times as long as midbody height, densely setose, microgranulate ventrally, but devoid of evident sphaerotrichomes (♂, ♀); prefemora devoid of lateral bulges (Fig. 9).

Gonopods (Figs 9–14) clearly curved ventrad, in situ crossing each other only distally, with large, subquadrate coxites (**cx**) strongly fused medially at base, each carrying only a few setae ventrolaterally and a large round lobe (**ro**) distoventrally; a long unciform cannula (**ca**) as usual. Telopodites (**te**) elongated, but rather stout, subfalcate, prefemorite (= densely setose part) strongly delimited, almost half as long as entire **te**; seminal groove running entirely mesally until distally squeezing neatly between similarly shaped and long endomere (**en**) and exomere (**ex**) branches to move onto **en** at a nearly right angle and to almost immediately empty into a small, but evident accessory seminal chamber (neither visible in SEM micrographs, but shown in Gulička [1963]), the latter structure opening through a distinct hairy pulvillus (**pu**) at base of an unusually prominent, tubiform, membranous process (**a**), **a** being apparently hollow at tip and supplied with a strong, mesal, distad oriented spine (**sp**) (apparently, homologue to minute spinous process, or **msp**, in Nefediev [2022]) at its base and, even more basally, with another, even stronger, endomere process (**ep**) directed basad. Apical halves of both **en** and **ex** subequal, subfalcate and rounded at tip, but basal half of **ex** mesally showing an evident tooth (**d**, obviously homologue to subtriangular inner plate, or **sip**, in Nefediev [2022]) and a small, more basal step (**t**, obviously homologue to oval inner plate, or **oip**, in Nefediev [2022]).

♀ epigynal ridge (**r**) behind vulvae very low and inconspicuous; vulvae simple, operculum (**op**) small, anterior, as usual, while bursa (**bu**) densely setose and with a rather low and rather simple axial ridge (Figs 28, 29).

REMARKS. There are several characters that make *S. kitabensis* clearly disjunct compared to all or most of the remaining eight species that Nefediev [2022] accepted in his recent review of the genus *Schizoturanius*: (1) *S. clavatipes* (Stuxberg, 1876), from both Western and Central Siberia, Russia; (2) *S. dmitriewi* (Timotheew, 1897), from central and eastern Ukraine, southwestern and central European Russia, and the Altai Mountains, southwestern Siberia, Russia; (3) *S. dshungaricus* Golovatch, 1979, from the Dzhungarsky Alatau Mountains, eastern Kazakhstan; (4) *S. krugovae* Nefediev, 2022, from the Altai Mountains, southwestern Siberia, Russia; (5) *S. levis* Mikhaljova, 2013, from the Zaysan District of eastern Kazakhstan; (6) *S. montivagus* Lohmander, 1933, from near Bishkek, Kyrgyzstan; (7) *S. strongylosomoides* (Attems, 1904), the type-species, from near Przhevalsk (now Karakol), Kyrgyzstan; and (8) *S. tabescens* (Stuxberg, 1876), from both Western and Central Siberia, Russia. Thus, sexual dimorphism in *S. kitabensis* is far from striking, the legs being subequally slender, only slightly incrassate and long in relation to body height in both sexes (Figs 1, 2), even though ♀♀ are as usual slightly larger and bulkier than ♂♂. In most Polydesmidae where the ♀ sex is known even superficially the ♂ legs are typically longer and considerably incrassate compared to the ♀ (e.g., Figs 15, 16). However, this trait is quite variable, including the laterally bulged *vs* non-bulged ♂ prefemora or the presence *vs* absence of sphaerotrichomes at least on some ♂ legs, and can therefore hardly be taken as a genus-level character, instead rather reflecting a trend. For example, the same trend concerns the very large Asian genus *Epanerchodus* (see also below) which includes >120 species, both epigean and cavernicolous (e.g., Liu, Golovatch [2018]).

Another distinct character of *Schizoturanius kitabensis* as opposed to all congeners but *S. tabescens* is the presence of laterally indentate paraterga. These are mostly smooth in *Schizoturanius* spp. Yet this character, as well as the metaterga being totally smooth to clearly tuberculate, appear to be highly variable within many genera of Polydesmidae, including the rather species-rich northern Asian *Jaxartes* Verhoeff, 1930 (e.g., Spelda *et al*. [1999], Antić *et al*. [2019]) and *Uniramidesmus* Golovatch, 1979 (e.g., Mikhaljova [2017]). Species of the former genus show smooth to tuberculate metaterga, and laterally smooth to indentate paraterga, *vs* smooth to tuberculate metaterga, but laterally always indentate paraterga in *Uniramidesmus*.

The tergal setae in *Schizoturanius kitabensis* seem to be quite particular, being short, clavate and finely barbed (Fig. 7), this obviously being characteristic of the species. However, we know too little yet about the fine structure of the metatergal setae of most of the other congeners. At least in *S. krugovae*, the tergal setae seem to be simple and nonclavate [Nefediev, 2022], same as in some *Jaxartes* [Antić *et al*., 2019] and *Epanerchodus* species (Fig. 17).

The same concerns the limbus which is microtrichous in *Schizoturanius kitabensis* (Fig. 8), *vs* nearly entire in *S. krugovae* [Nefediev, 2022], typically entire in *Jaxartes* [Antić *et al*., 2019] or densely microspiculate to microtrichous in *Epanerchodus* species (e.g., Figs 21, 22 and Liu, Golovatch [2018]).

What seems to be especially noteworthy, however, is that the gonopod structure of *Schizoturanius kitabensis* is also highly peculiar, being perhaps the most elaborate among congeners. Against the background of all main structural features characteristic of the genus [Nefediev, 2022], such as the biramous gonotelopodite branching into an exo- and an endomere (**ex** and **en**, in this case both similarly shaped and long), the course of the seminal groove, the presence of an accessory seminal chamber and a hairy pulvillus at the base of the endomere etc., a new, tubiform, membranous process (**a**) on **en** is not only developed, but it is unusually prominent and supplied with a strong, basal, mesal, distad oriented spine (**sp**), *vs* a relatively short and simple endomere process (**ep**), yet this as usual lying more basally and directed basad (Figs 10–14). In addition, the basal half of **ex** in *S. kitabensis* shows an evident mesal tooth (**d**) and, more basally, a step (**t**) (Figs 10–14), both easy to homologize with similar structures in other congeners. However, because these variations seem to be but species-specific, like is the unusually strongly shortened and dorsad expanded gonofemorite in *S. tabescens* [Mikhaljova, 2017], we are inclined to follow Nefediev [2022] in treating both *S. kitabensis* and *S. tabescens* as species, however disjunct, of *Schizoturanius*. Creating two monotypic genera to solely accommodate each of these two somewhat aberrant species seems superfluous, adding nothing to the understanding of their relationships and phylogeny.

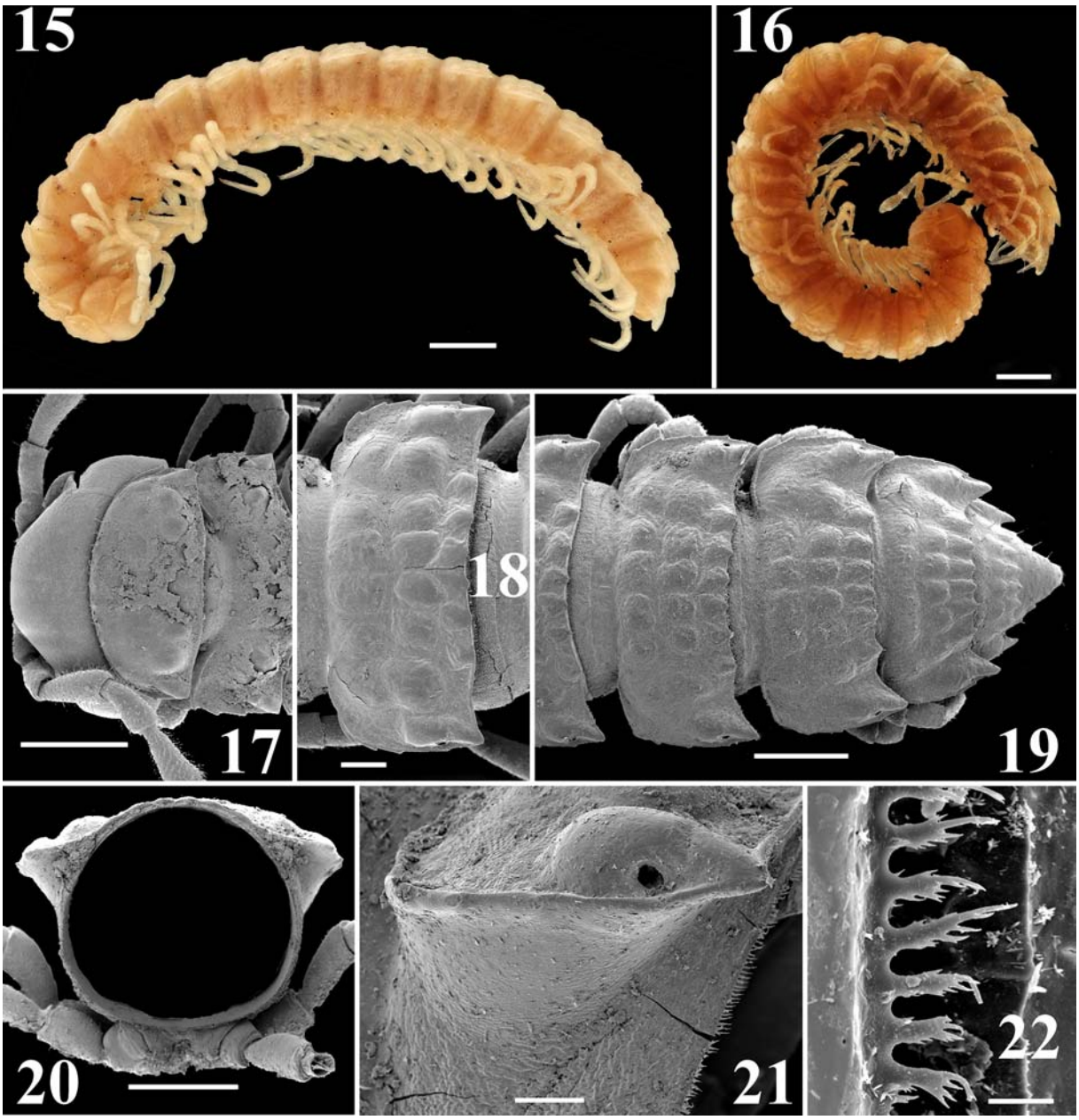
Epanerchodus redikorzevi (Lohmander, 1933)
Figs 15–27, 30, 31.

Usbekodesmus redikorzevi Lohmander, 1933: 17, figs 5, 13–15 (original description).

Usbekodesmus redikorzevi — Lokšina, Golovatch, 1979: 384 (listing); Golovatch, 1979: 1000 (new record, from Muminabad!), 1991: 157 (new records, from northern Afghanistan); Read, Golovatch, 1994: 65 (listing).

Epanerchodus redikorzevi — Golovatch *et al*., 2011: 20 (new formal transfer and synonymization of *Usbekodesmus* Lohmander, 1933 with *Epanerchodus* Attems, 1901); Antić *et al*., 2019: 480 (listing).

MATERIAL EXAMINED. 2 ♂♂, 1 ♀ (SMNPS), [USSR], Tajikistan, Muminabad, 25.V.1962, L.M. Semenova leg.



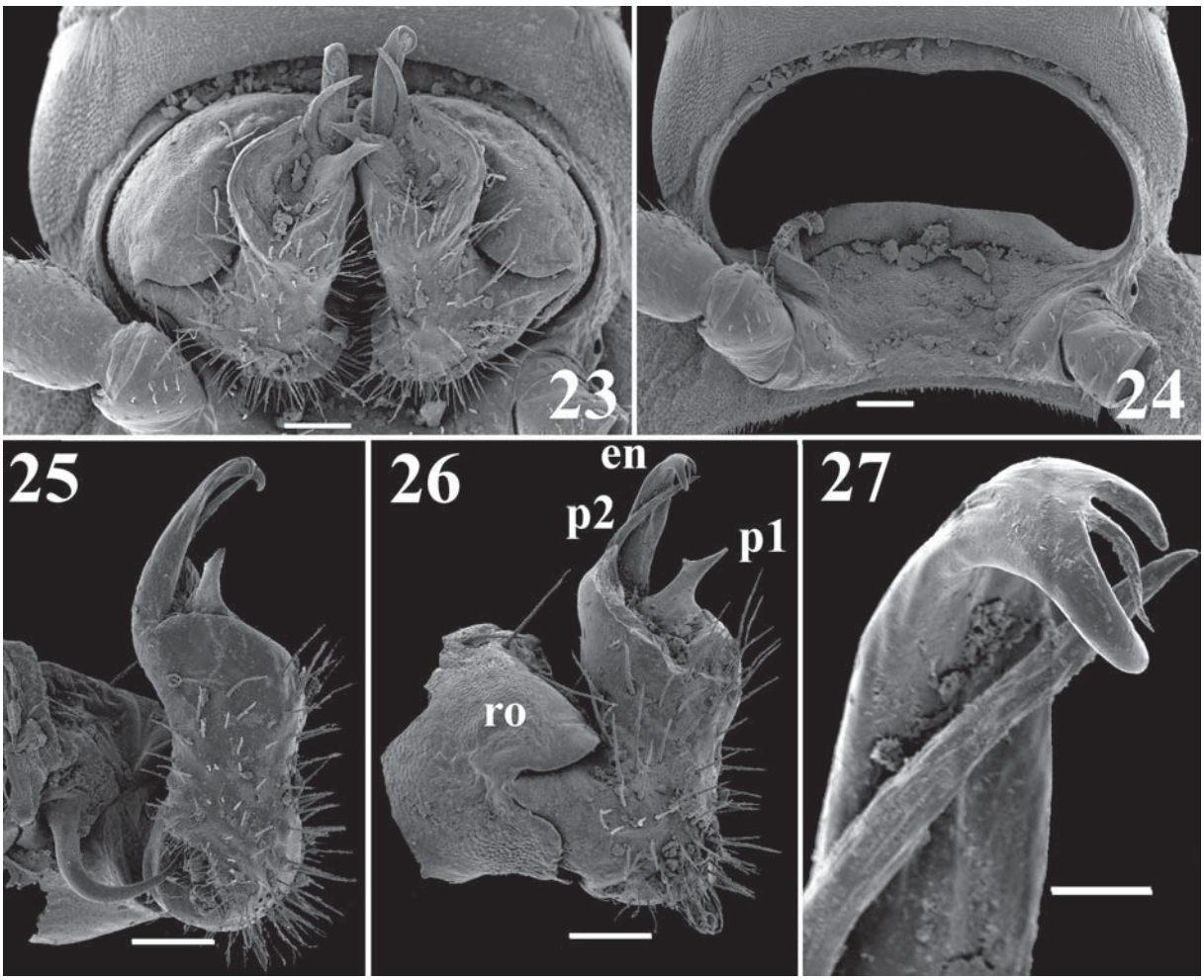
Figs 15–22. *Epanerchodus redikorzevi* (Lohmander, 1933), ♂ (15, 17–22) and ♀ (16) from Muminabad, Tajikistan. 15, 16 — habitus, lateral views; 17 — anterior part of body, dorsal view; 18 — midbody ring, dorsal view; 19 — posterior part of body, dorsal view; 20 — cross-section of a midbody ring, caudal view; 21 — midbody paratergite, lateral view; 22 — limbus of a midbody ring, dorsal view. Scale bars: 1.0 mm (15, 16), 0.5 mm (17, 19, 20), 0.2 mm (18), 0.1 mm (21), 0.01 mm (22).

Рис. 15–22. *Epanerchodus redikorzevi* (Lohmander, 1933), ♂ (15, 17–22) и ♀ (16) из Муминабада (Таджикистан). 15, 16 — общий вид, сбоку; 17 — передняя часть тела, сверху; 18 — среднетуловищный сегмент, сверху; 19 — задняя часть тела, сверху; 20 — поперечный срез среднетуловищного сегмента, сзади; 21 — среднетуловищный паратергит, сбоку; 22 — лимбус среднетуловищного сегмента, сверху. Масштаб: 1,0 мм (15, 16), 0,5 мм (17, 19, 20), 0,2 мм (18), 0,1 мм (21), 0,01 мм (22).

According to Andrej Mock (in litt.), the SMNPS collection presently comprises several ♂♂ and ♀♀, all contained in a single jar, of what Gulièka provisionally identified, but never published, as *Usbekodesmus* sp. It seems noteworthy that Golovatch [1979] determined and published the polydesmid material he had got from the very same Muminabad as *U. redikorzevi*.

DESCRIPTIVE NOTES. Because the original description [Lohmander, 1933], however detailed and complete, was only accompanied by line drawings of a single gonopod, a vulva, and a ♀ coxa 2, again however nice, we profit by providing here both a short redescription and, above all, a sufficiently detailed iconography (Figs 15–27, 30, 31).

Adult body ca 11 (♂) or 15 mm long (♀), and 1.4 (♂) or 1.9 mm wide (♀) (*vs* ca 12–13 mm long (♂, ♀) and 1.4 mm (♂) or 1.7–1.8 mm (♀) wide in the original description). Coloration in alcohol rather uniformly light yellow- to pink-brown (Figs 15, 16) (*vs* yellowish brown in the original



Figs 23–27. *Epanerchodus redikorzevi* (Lohmander, 1933), ♂ from Muminabad, Tajikistan. 23 — both gonopods *in situ*, ventral view; 24 — gonopodal aperture, ventral view; 25 — left gonopod, mesal view; 26 — right gonopod, lateral view; 27 — tip of right gonopod, lateral view. Scale bars: 0.1 mm (23–26), 0.02 mm (27).

Рис. 23–27. *Epanerchodus redikorzevi* (Lohmander, 1933), ♂ из Муминабада (Таджикистан). 23 — оба гонопода на месте, снизу; 24 — отверстие от гоноподов, снизу; 25 — левый гонопод, изнутри; 26 — правый гонопод, сбоку; 27 — вершина правого гонопода, сбоку. Масштаб: 0,1 мм (23–26), 0,02 мм (27).

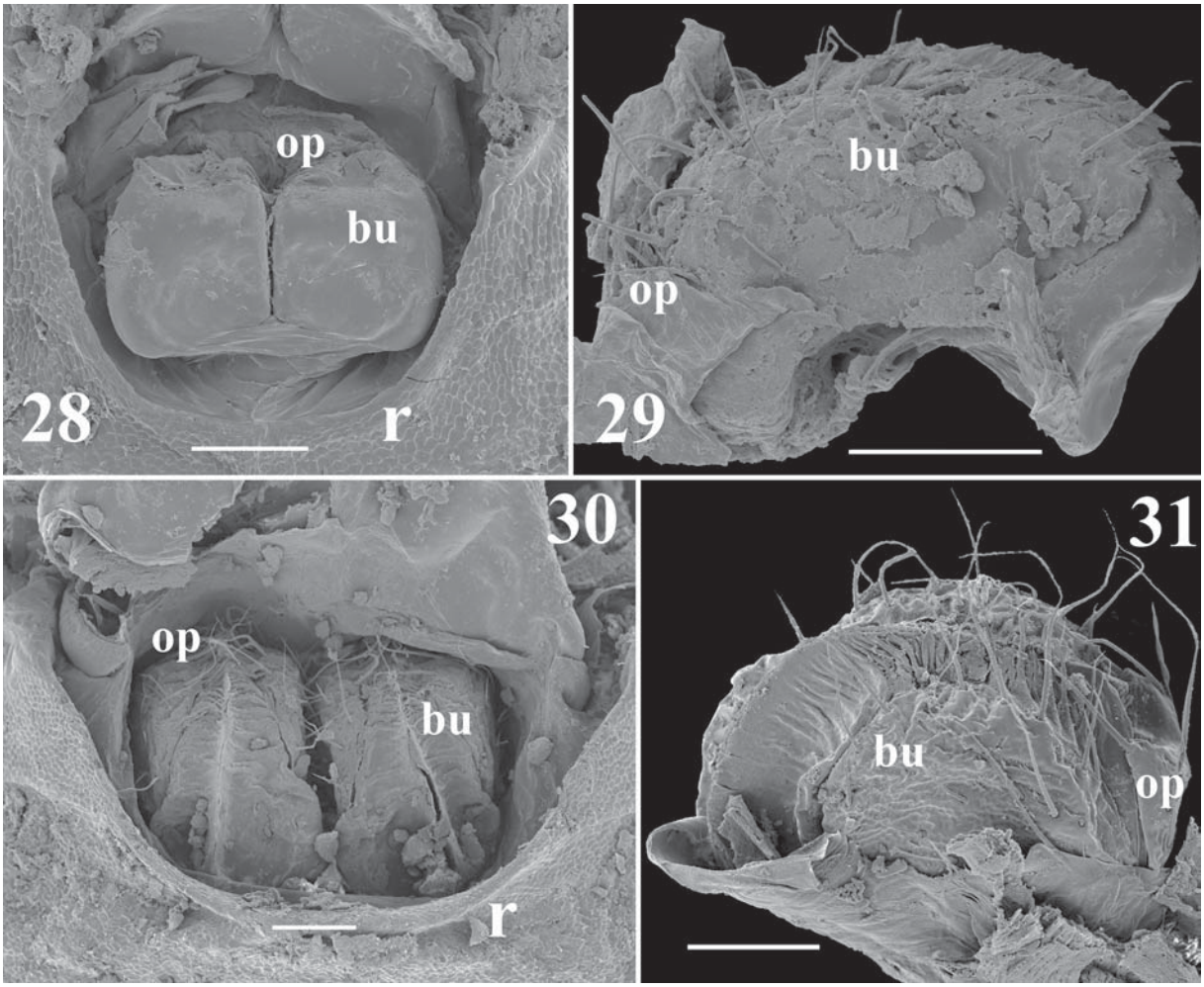
description). Body with 20 segments. Tegument shining, texture very delicately shagreened. Head moderately pilose in clypeolabral region, bare in vertigial and occipital regions, with squarish genae (Fig. 17). Antennae long and only slightly clavate (Figs 15–19).

In width, collum < ring 2 < head < 3=4 < 5=15, thereafter body gradually tapering towards telson (Figs 17–19). Paraterga strongly developed, set high (at about upper quarter of midbody height), starting with collum, dorsum and paraterga only slightly convex (Figs 15–21). Caudolateral corner of paraterga always acute, increasingly clearly extending past rear tergal margin in rings 13–19 (♂) or 15–19 (♀), devoid of calluses, but clearly bordered both anterolaterally and laterally, usually with three or four small, lateral, setigerous indentations. Pore formula normal, ozopores small, dorsolateral, located above posteriormost marginal indentation. Metatergal sculpture typical, poorly-developed, rather obliterate, with three transverse rows of typical (= polydesmid), setigerous, polygonal bosses (Figs 17–21). Tergal setae very short, slightly longer only on collum, subclavate to bacilliform (Figs 15, 18), mostly obliterate. Stricture between pro- and metazona wide, shallow and nearly smooth (Figs 18, 19). Limbus very thin and microtrichous, microtrichiae being conspicuously microplumose (Figs 21, 22). Pleurosternal carinae absent. Epiproct rather long, conical, preapical lateral papillae very small (Fig. 19). Hypoproct semicircular; caudal, paramedian, setigerous papillae small and well-separated.

Sterna without modifications, moderately setose. Legs generally long and slender, clearly incrassate in ♂, slender in ♀ (Figs 15, 16), ca 1.3–1.4 (♂) or 1.1–1.2 (♀) times as long as midbody height, densely setose, with sphaerotrichomes on ♂ tibiae and tarsi ventrally, prefemora devoid of lateral bulges (Fig. 15).

Gonopods (Figs 23–27) typical of the genus, coxite with a rounded distolateral lobe (**ro**), telopodite devoid of an exomere, but endomere (**en**) prominent, long and slender, finely and unevenly trifid at a laterad curved apex; both basal processes on femorite present, process 1 (**p1**) being stout and much shorter than a spiniform process 2 (**p2**).

♀ epigynal ridge (**r**) behind vulvae rather high and distinct; vulvae relatively complex, operculum (**op**) small, ante-



Figs 28–31. Vulvae of *Schizoturanius kitabensis* (Gulička, 1963), ♀ syntype (28, 29), and *Epanerchodus redikorzevi* (Lohmander, 1933), ♀ from Muminabad (30, 31). 28, 30 — both vulvae *in situ*, ventral view; 29 — right vulva, mesal view; 31 — left vulva, mesal view. Scale bars: 0.1 mm.

Рис. 28–31. Вульвы *Schizoturanius kitabensis* (Gulička, 1963), синтип ♀ (28, 29), и *Epanerchodus redikorzevi* (Lohmander, 1933), ♀ из Муминабада (30, 31). 28, 30 — обе вульвы на месте, снизу; 29 — правая вульва, изнутри; 31 — левая вульва, изнутри. Масштаб: 0,1 мм.

rior, as usual, while bursa (**bu**) densely setose and equipped with a high and elaborate axial ridge (Figs 30, 31).

REMARKS. Minor, definitely infraspecific variations concern only the shapes of the gonopodal processes **p1** and **p2** (Figs 23, 25–27), **p1** being slightly more slender and **p2** slightly shorter than depicted by Lohmander [1933].

The species was originally described from two places in Uzbekistan, one near Samarkand and the other at Guzar [Lohmander, 1933], later recorded from Muminabad, Tajikistan [Golovatch, 1979] and northern Afghanistan [Golovatch, 1991]. The syntypes are housed in the Zoological Institute of the Russian Academy of Sciences in St. Petersburg, not revised.

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References

Antić D.Ž., Golovatch S.I., Spelda J. 2019. Identity of the millipede genus *Jaxartes* Verhoeff, 1930 (Diplopoda: Polydesmida: Polydesmidae), with descriptions of two new species from Central Asia // Arthropoda Selecta. Vol.28. No.4. P.479–489.

Golovatch S.I. 1979. [The composition and zoogeographical connections of the fauna of Diplopoda of Middle Asia. Communication 1] // Zoologicheskii zhurnal. Vol.58. No.7. P.987–1001 [in Russian, English summary].

Golovatch S.I. 1991. The millipede family Polydesmidae in Southeast Asia, with notes on phylogeny (Diplopoda: Polydesmida) // Steenstrupia. Vol.17. No.4. P.141–159.

Golovatch S.I. 2021. Two new species and several new records of the millipede genus *Epanerchodus* Attems, 1901 from China

(Diplopoda: Polydesmida: Polydesmidae) // Arthropoda Selecta. Vol.30. No.2. P.143–152.
Golovatch S.I., Mikhaljova E.V., Chang H.W. 2011. The millipede family Polydesmidae in Taiwan, with descriptions of five new species (Polydesmida, Diplopoda) // ZooKeys. Vol.93. P.9–42.
Gulička J. 1963. [New millipedes (Diplopoda) from the USSR. Part 1] // Zoologicheskii zhurnal. Vol.42. No.4. P. 518–524 [in Russian, with English summary].
Gulička J. 1972. [New millipedes (Diplopoda) from the USSR. Part 2] // Zoologicheskii zhurnal. Vol.51. No.1. P. 36–45 [in Russian, with English summary].
Liu W.x., Golovatch S.I. 2018. The millipede genus *Epanerchodus* Attems, 1901 in continental China, with descriptions of seven new cavernicolous species (Diplopoda, Polydesmida, Polydesmidae) // Zootaxa. Vol.4459. No.1. P.053–084.
Lohmander H. 1933. Über Diplopoden aus Zentralasien // Arkiv för zoologi. Bd.25A, No.6. S.1–71.
Lokšina I.E., Golovatch S.I. 1979. Diplopoda of the USSR fauna // Pedobiologia. Vol.19. P.381–389.
Mikhaljova E.V. 2017. [The millipede fauna (Diplopoda) of the Asian part of Russia]. Vladivostok: Dalnauka. 336 pp. [In Russian, a summary in English]
Nefediev P.S. 2022. Review of the genus *Schizoturanius* Verhoeff, 1931, with the description of a new species from the Altais, Asian Russia (Diplopoda: Polydesmida: Polydesmidae) // Zootaxa. Vol.5174. No.3. P.262–276.
Read H.J., Golovatch S.I. 1994. A review of the Central Asian millipede fauna // Bulletin of the British Myriapod Group. No.10. P.59–70.
Spelda J., Golovatch S.I., Meidell B. 1999 (for 1998). Revision of the Central Asian millipede genus *Turanodesmus* Lohmander, 1932 (Diplopoda: Polydesmidae) // Arthropoda Selecta. Vol.7. No.3. P.163–174.

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