

Four new species of the genus *Karschia* Walter, 1889 (Arachnida: Solifugae: Karschiidae) from Central Asia

Четыре новых вида сольпуг рода *Karschia* Walter, 1889 (Arachnida: Solifugae: Karschiidae) из Центральной Азии

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ABSTRACT. Four new species of *Karschia* are described: *K. (Karschia) kononenkoi* sp.n. (♀; Uzbekistan); *K. (K.) gurkoi* sp.n. (♀; Tajikistan); *K. (Rhinokarschia) tadhika* sp.n. (♀; Tajikistan) and *K. (R.) gobiensis* sp.n. (♂; Mongolia). *Karschia* species are diagnosed from the female genital segment for the first time.

РЕЗЮМЕ. Дано описание четырех новых вида рода *Karschia*: *K. (Karschia) kononenkoi* sp.n. (♀; Узбекистан); *K. (K.) gurkoi* sp.n. (♀; Таджикистан); *K. (Rhinokarschia) tadhika* sp.n. (♀; Таджикистан) и *K. (R.) gobiensis* sp.n. (♂; Монголия). Впервые виды *Karschia* были диагностированы по генитальному сегменту самок.

KEY WORDS: Solifugae (solpugids), new species, Uzbekistan, Tajikistan, Mongolia.
КЛЮЧЕВЫЕ СЛОВА: Solifugae (сольпуги), новые виды, Узбекистан, Таджикистан, Монголия.

Introduction

Central Asia is the center of species diversity for the genus *Karschia* [see Harvey, 2003], which consists of the following 22 valid species (described sexes and brief distribution data are given in parentheses): *K. (Karschia) badkhyzica* Gromov, 1998 (♂; south-east Turkmenistan); *K. (K.) birulae* Roewer, 1934 (♂♀; north-west China); *K. (K.) caucasica* (L. Koch), 1878 (♂♀; Armenia, Azerbaijan); *K. (K.) cornifera* Walter, 1889 (♂♀; west Turkmenistan); *K. (K.) kiritshenkoi* Birula, 1922 (♂; north Iran); *K. (K.) koenigi* Birula, 1922 (♂; south-west Turkmenistan); *K. (K.) kopetdaghica* Gromov, 1998 (♂♀; south Turkmenistan); *K. (K.) kurdistani-*

ca Birula, 1935 (♀; north-east Iraq or north-west Iran); *K. (K.) mangistauensis* Gromov, 1993 (♂♀; south-west Kazakhstan); *K. (K.) mastigofera* Birula, 1890 (♂♀; east Turkey, south-east Georgia, Armenia, Azerbaijan, north-west Iran); *K. (K.) mongolica* Roewer, 1933 (♀; north China or south Mongolia); *K. (K.) nubigena* Lawrence, 1954 (♂; west China: Tibet); *K. (K.) persica* Kraepelin, 1899 (♂♀; south-west Iran); *K. (K.) tarimina* Roewer, 1933 (♀; north-west China); *K. (K.) tibetana* Hirst, 1907 (♂♀; west China: Tibet); *K. (K.) tienschanica* Roewer, 1933 (♀; Kyrgyzstan or north-west China: southern Tian-Shan Mts); *K. (Rhinokarschia) borszczewskii* Birula, 1935 (♂♀; south Uzbekistan, west Tajikistan, north-west China); *K. (R.)*

kaznakovi Birula, 1922 (♂♀; south Uzbekistan, east Turkmenistan); *K. (R.) nasuta* Kraepelin, 1899 (♂; south-west Kyrgyzstan); *K. (R.) pedaschenkoi* Birula, 1922 (♂; north-east Kyrgyzstan); *K. (R.) rhinoceros* Birula, 1922 (♂♀; north Tajikistan, south Kyrgyzstan); *K. (R.) zarudnyi* Birula, 1922 (♂; south Kazakhstan, east Uzbekistan) [Birula, 1935, 1938; Gromov, 1993, 1998; Hirst, 1907; Koch L., 1878; Lawrence, 1954; Roewer, 1933, 1934; Zilch, 1946].

The systematics and zoogeography of the genus remain poorly understood, as its congeners are relatively local and rare species. Species diagnoses in this genus are mostly based on male characters. If a species was described from a female(s), only somatic characters, such as body size and colouration, armature of the chelicerae, and the shape and number of ctenidia on the fourth abdominal segment were considered. The ♀ genital segment has previously been considered of little, or no taxonomic significance and to be virtually useless for diagnosing species [see Roewer, 1933; Birula, 1938]. Although the ♀ genital segment has been described for a few species [Birula, 1938; Gromov, 1993, 1998], there is no comparative study of this character in a range of different species.

Having studied different taxonomic characters of the type and comparative specimens of all known *Karschia* species, the cheliceral armature is considered of poor taxonomic value, because the number, size and shape of teeth differ within a series of specimens belonging to the same species, and they also differ between the left and right chelicerae of the same individual. The number of ctenidia on the fourth abdominal segment (Figs 2, 4, 6, 8, 10), the body size and colouration also vary, but to a lesser extent, and hence these can be used as additional diagnostic characters. The shape and size of the ctenidia on the fourth abdominal segment, as well as the shape, size and relative arrangement of the sclerites of the ♀ genital segment are invariable, and thus are reliable taxonomic characters.

I have been able to (re)examine the female genital segments of all the described *Karschia* species known either from single females or from both sexes, as well as of those previously

known only from males and for which I have found females for the first time (e.g., *K. nasuta*, *K. pedaschenkoi*, *K. zarudnyi*, etc.). I conclude that (1) different authors have often identified immatures as females because they did not study the genital segments [e.g., Roewer, 1933; Birula, 1935]; (2) a number of species names will be synonymized, as their ♀ genital segments, as well as shape and size of the ctenidia on the fourth abdominal segment are identical; and (3) a female should only be considered conspecific with a male if they were collected together or from neighbouring localities, because most *Karschia* species have a very restricted distribution.

The types of a few species (i.e., *K. nasuta*, *K. nubigena* and *K. tibetana*) need re-examination, following which I will complete a revision of the genus. The aim of this paper is to describe four new *Karschia* species, three of which are known from females and are diagnosed on the basis of their genitalia. During this research I used my own unpublished comparative data, which will be published in the revision in preparation.

Material and methods

The solpugids treated here were collected: (1) during the night using either an ultra-violet lamp (Sylvania F6T5/BLB) or the headlights of an expedition car, and (2) during the day by hand collecting from under stones. The solpugids were preserved and studied in 70% alcohol using MBS-10 and Leica MZ16 stereoscopes.

In addition to the material collected during field trips by myself and colleagues to Uzbekistan and Tajikistan and kept in my private collection (AGC), I have been able to examine specimens from the following museums: AMNH = The American Museum of Natural History, New York, U.S.A. (L. Prendini); IASE = The Siberian Zoological Museum, Institute for Systematics and Ecology of Animal, Novosibirsk, Russia (G.N. Azarkina); SMF = Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt am Main, Germany (P. Jäger); ZISP = The Zoological Institute, The Russian Academy of Sciences, St. Petersburg, Russia (V.A. Krivokhatsky); ZMMU = Zoological Museum of the Moscow State University, Moscow, Russia (K.G. Mikhailov).

Descriptions follow the format of Birula [1938] with some modifications [Gromov, 1993, 1998]. All measurements are in mm.

Descriptions

Genus *Karschia* Walter, 1889

Type species: *Karschia cornifera* Walter, 1889; ♂ holotype (probably lost), Turkmenistan, Balkan (= Krasnovodsk) Distr., Bol'shoi Balkhan (= Uly Balkan Ger-shi) Mt. Range, (c. 39°38'N, 54°30'E), c. 915 m a.s.l., 12/24.05.1886, A. Walter.

REMARKS. The genus *Karschia* differs from other genera of the Karschiidae by possessing a flagellum in the form of a long, rolled seta. There are two short, thick spines on the inner dorsal surface of the unmovable finger of the chelicera, and ventrally, a group of long plumose bristles, which are sometimes modified (Fig. 19). Males of *Karschia* lack spines on the anterior edge of the propeltidium (on both sides of the ocular tubercle) [Gromov, 2000: figs 1, 13–15]; these spines are always present in other genera in this family. Females of this genus differ from those of other genera in having a more complicated genital segment, which is species-specific with regard to the structure of the genital sternites, the hole behind them, and the associated chitinized sclerites (Figs 1, 3, 5, 7, 9, 11, 13, 15, 17). The genital segments of females in other genera of Karschiidae are less complicated [see Gromov, 2000: figs 10, 32, 33].

In contrast to the genus *Eusimonia* Kraepelin, 1899, which occurs in Central Asia exclusively in clayey, stony or sandy loam deserts at low altitudes [see Birula, 1938; Gromov, 2000], most *Karschia* species prefer dry (foot)hills and mountains, reaching elevations up to 4 300 m a.s.l. (e.g., *K. gurkoi* sp.n.) and 4 570 m a.s.l. (15 000 ft.) (e.g., *K. tibetana* from Tibet, China).

The genus *Karschia* includes two subgenera: *Karschia* Walter, 1889 and *Rhinokarschia* Birula, 1935.

Subgenus *Karschia* (*Karschia*) Walter, 1889

REMARKS. This is a nominative subgenus, which differs from *Rhinokarschia* in lacking a dorsal horn on the unmovable finger of the chelicerae in males [Birula, 1938: figs 20, 21, 25, 27, 31; Gromov, 1993: figs 2, 3; 1998, fig. 1a; Roewer, 1933: figs 221a–i; 1934: fig. 362]; sometimes there is a low keel instead [Gromov, 1998: fig. 1j]. The females of the subgenus *Karschia* possess transverse oval or triangular genital sternites, which cover the genital hole behind them (Figs 1, 5, 9, 11, 13, 15); the latter is never situated between the sclerites as in *Rhinokarschia* (Fig. 17). The genital holes can be induced to open by injecting ethanol into the abdomen, as was done, for instance, in *K. kononenkoi*

(Figs 3, 7). Even after this treatment the structure of the hole did not change. It opened purely because the integument between the genital sclerites and the posterior edge of the segment stretched to remove the wrinkles; the chitinized parts did not alter their shape.

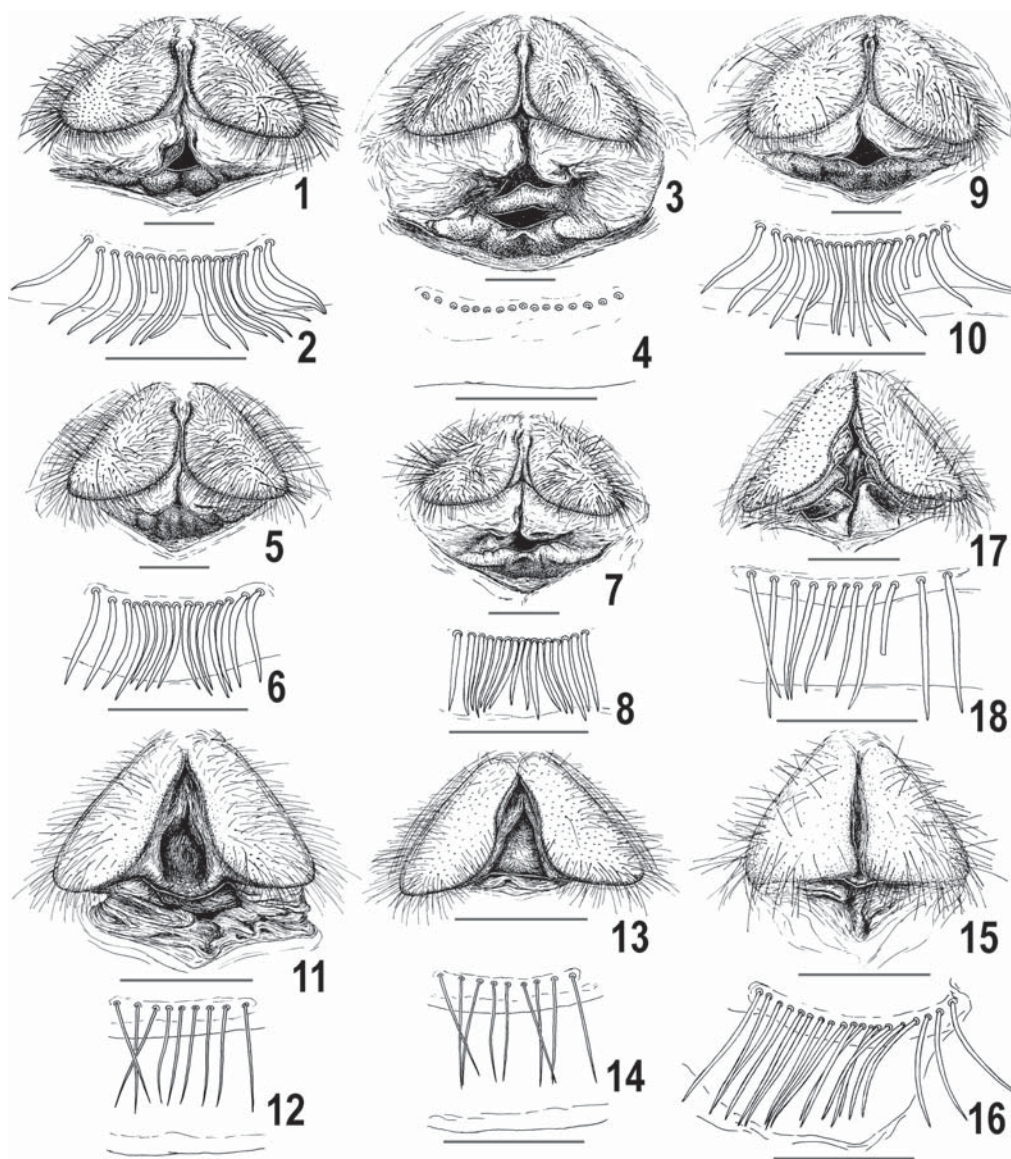
Karschia (*Karschia*) *kononenkoi* sp.n.

Figs 1–10, Map 1.

MATERIAL. Holotype: 1 ♀ (IASE), Uzbekistan, Navoiy Area, Uchkuduk Distr., Kyzylkum Desert, Bukantau (= Bokantov) Mt. Range, c. 5.5 km ENE of Kulkuduk, north-west slope of Urlir Mt., near Karakuduk Well, (42°34'N, 63°22'E), c. 500–510 m a.s.l., 9.05.1976, A.P. Kononenko.

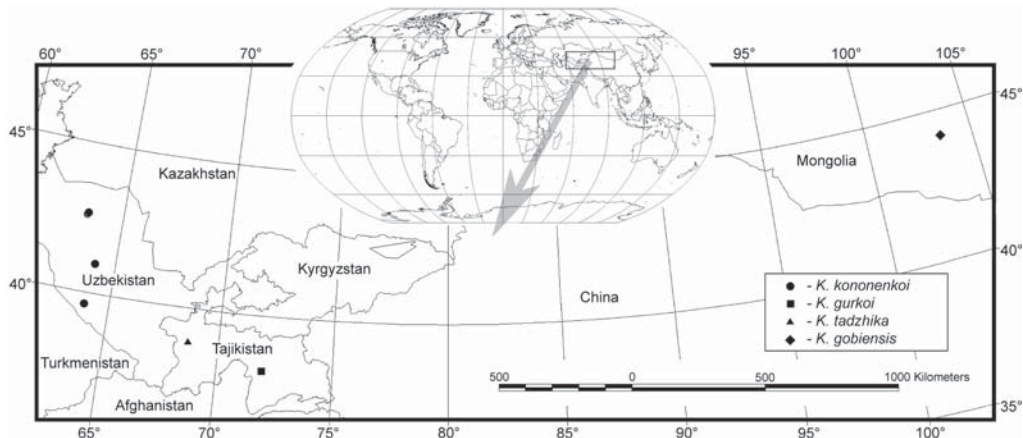
Paratypes: UZBEKISTAN: 1 ♀ (AMNH), Navoiy Area, Uchkuduk Distr., Kyzylkum Desert, Bukantau (= Bokantov) Mt. Range, c. 8 km ENE of Kulkuduk, near Dzhirakuduk Well, (42°34'44"N, 63°23'03"E–42°34'36"N, 63°23'36"E), c. 515 m a.s.l., 2.06.2003, A.V. Gromov & L. Prendini; 1 ♀ (AGC), Navoiy Area, Kanimekh (= Konimex) Distr., Kyzylkum Desert, c. 65 km S of Zarafshan, c. 18.5 km W of Chengel'dy, near Darvazatepa Mt., (40°57'26"N, 64°07'51"E), c. 210 m a.s.l., clayey hills, 22.05.1994, O.V. Lyakhov; 1 ♀ (AGC), same locality, 4.06.2003, A.V. Gromov & L. Prendini; 1 ♀ (SMF), Bukhara (= Bukhoro) Area, Karakul' (= Qorakol) Distr., c. 45 km SWW of Bukhara (= Bukhoro), near Sant (= Sayot) (c. 39°35'N, 63°57'E), c. 210–220 m a.s.l., 2.05.1976, A.P. Kononenko.

COMPARATIVE MATERIAL. *Karschia mangistauensis* Gromov, 1993: KAZAKHSTAN: Mangistau Area: 1 ♂ (AGC, paratype), Mangyshlak Plateau, Aktau (= Shevchenko), (43°11'N, 51°39'E), cemetery, 28.04.1991, K.U. Balmukanov; 1 ♂ (ZISP, holotype), Karakiyanskii (= Eraliev) Distr., c. 7 km S of Kuryk (= Eraliev), Zhylandy Cape, (43°07'N, 51°40'E), 2.05.1991, A.V. Gromov; 1 ♀ (ZISP, paratype) 2 ♂♂, 1 ♀ (AGC, paratypes), same locality, 2–4.05.1991, A.V. Gromov, K.U. Balmukanov & K.B. Dzhanurazov; 1 juv. (AGC), same locality, 4.05.1991, A.V. Gromov; 1 ♂ (AGC, paratype), Karakiyanskii (= Eraliev) Distr., Ustyurt Plateau, c. 58.5 km E of Akkuduk, near Kugusem Well, (43°10'N, 54°53'E), 2–5.05.1991, S.I. Ibraev; 1 ♀ (AGC, paratype), Mangistau Distr., Ustyurt Plateau, c. 69.5 km NE of Akkuduk, near Sulykkyzylsai Well, (43°28'N, 54°43'E), 12.05.1991, Ye.Ye. Kopydkbaev. — *Karschia mastigofera* Birula, 1890: TURKEY: 1 ♂ (ZISP-N883, syntype), Erzurum Prov., near Oltu (= Olty), (c. 40°33'N, 41°59'E), Sushchevsky; 1 ♀ (ZISP-N886), Igdir Prov., near Kazikoparan, (c. 40°01'N, 43°26'E), 07.1896, coll.? ARMENIA: 1 ♂ (ZISP-N882, syntype), Kotayk (= Kotaiq) Distr., Malyi Caucasus Mts., near Daragi-Chakh (= Darachichag, Tsaghkadzor), (40°32'N, 44°43'E), c. 1 840 m a.s.l., 1879, A. Brandt; 1 ♀ (IASE), 1 ♀ (AGC), Gegharkunik (= Gegharkounik) Distr., near Sevan, (c. 40°34'N, 44°57'E), c. 2 050 m a.s.l., 28.07.1983, D.V. Logunov & V.I. Ovtsharenko; 1 ♂, 4 ♀♀ (ZISP-N884), same distr., east bank of Sevan (= Gokcha) Lake, "Kushchu-Darasi", c. 2 000 m a.s.l., 23–27.06.1902, E.A. Elachich & Klimanovsky; 1 ♂, 1 ♀ (ZISP-N884), same locality, 23–27.06.1902, E.A. Elachich; 1 ♂, 1 ♀ (ZISP-N885), same locality, 23–27.06.1902, E.A. Elachich & Klimanovsky; 1 ♂ (ZISP, N888), Erevan (= Yerevan) Distr., near Erevan, (c.



Figs 1–18. *Karschia kononenkoi* sp.n. (1–10), female (holotype) (1, 2), female (Dzhirakuduk Well) (3, 4), female (Darvazatepa Mt., 1994) (5, 6), female (Darvazatepa Mt., 2003) (7, 8) and female (Sant) (9, 10); *K. gurkoi* sp.n. (11–14), female (holotype) (11, 12) and female (paratype) (13, 14); *K. birulae* Roewer, 1934, female (syntype) (15, 16), *K. tadzhika* sp.n., female (holotype) (17, 18): 1, 3, 5, 7, 9, 11, 13, 15, 17 — genital segment, ventral view; 2, 4, 6, 8, 10, 12, 14, 16, 18 — ctenidia on fourth abdominal segment, ventral view. Scale: 1 mm.

Рис. 1–18. *Karschia kononenkoi* sp.n. (1–10), самка (голотип) (1, 2), самка (кол. Джиракудук) (3, 4), самка (гора Дарвазатепа, 1994) (5, 6), самка (гора Дарвазатепа, 2003) (7, 8) и самка (Сант) (9, 10); *K. gurkoi* sp.n. (11–14), самка (голотип) (11, 12) и самка (паратип) (13, 14); *K. birulae* Roewer, 1934, самка (синтип) (15, 16), *K. tadzhika* sp.n., самка (голотип) (17, 18): 1, 3, 5, 7, 9, 11, 13, 15, 17 — генитальный сегмент, вентрально; 2, 4, 6, 8, 10, 12, 14, 16, 18 — ктенидии на четвертом сегменте abdomena, вентрально. Масштаб: 1 мм.



Map 1. Distribution of *Karschia kononenkoi* sp.n., *K. gurkoi* sp.n., *K. tadhika* sp.n. and *K. gobiensis* sp.n. in Central Asia.

Карта 1. Распространение *Karschia kononenkoi* sp.n., *K. gurkoi* sp.n., *K. tadhika* sp.n. и *K. gobiensis* sp.n. в Центральной Азии.

40°12'N, 44°31'E), 07.1924, A.B. Shelkovnikov; 1 ♂ (ZISP-N889), Erevan (= Yerevan) Distr., near Erevan, Nork, (40°11'30"N, 44°32'30"E), c. 1 270 m a.s.l., 20.05.1924, A.B. Shelkovnikov. AZERBAIJAN: 1 ♂, 1 ♀ (ZISP-N887), Naxcivan (= Nakhichevan) Distr., Nakhichevan complex expedition of Academy of Sciences USSR, 1933, D. Znoiko. IRAN: 1 ♀ (ZISP-N890), Āzarbāyjān-e Khāvarī Prov., near Khiov (= Meshgīn Shahr), (c. 38°24'N, 47°41'E), 23.06.1914, S.N. von Wick.

ETYMOLOGY. The species is dedicated to Dr A.P. Kononenko, who first collected it.

DIAGNOSIS. In genital structure and shape of the ctenidia, *K. kononenkoi* sp.n. belongs in the nominative subgenus *Karschia* and is close to *K. mangistauensis* Gromov, 1993 and *K. mastigofera* Birula, 1890, but can be distinguished from both by the heavily chitinized genital segment (Figs 1, 3, 5, 7, 9) [cf. Birula 1938: fig. 33 and Gromov, 1993: fig. 9], and also from the former by the absence of the dense coverage of long, orange hairs on the genital sternites.

DISTRIBUTION. Uzbekistan: Kyzylkum Desert (Map 1).

HABITAT. The new species prefers clay hills and dry mountains at 210–515 m a.s.l. Specimens were collected during May–June.

DESCRIPTION. FEMALE (male unknown).

Measurements (N = 5). Total body length 19.2–27.0; cheliceral length 4.9–6.7, width 1.6–2.6; propeltidium length 2.4–3.5, width 3.5–5.4.

Length of limbs (N = 5) of female:

Limb	Total	Femur	Tibia	Meta-tarsus	Tarsus	Claw
(with coxa)						
Palp	14.2–19.6	4.3–5.8	3.7–5.3	3.4–4.4	1.0–1.4	—
I	10.5–14.5	2.7–3.6	2.7–3.9	1.9–2.8	1.0–1.3	0.1
II	8.9–12.3	1.7–2.4	2.1–2.8	1.6–2.3	0.8–1.0	0.7–0.9
III	11.9–16.3	2.3–3.1	2.9–3.9	2.2–3.1	0.8–1.2	0.7–1.0
IV	18.3–25.0	4.4–5.8	4.7–6.2	3.3–4.3	1.2–1.7	1.0–1.2

Colour. The general background is light yellow. Abdomen grey-yellow, with yellow tergites. Propeltidium tinged with light brown anteriorly on each side of the black ocular tubercle. Legs III and IV tinged with light brown on distal regions of femora and proximal parts of tibiae. Proximal regions of palpal femur, tibia, metatarsus and tarsus tinged with brown. Cheliceral fingers, their setae, abdominal ctenidia, some setae and spines on propeltidium, chelicerae and limbs reddish. Maleolae yellow.

Propeltidium. Entire surface covered with a dense pubescence of thin, short anteriorly directed hairs. Anterior, posterior and lateral edges with several long curved spiniform setae, which are perpendicular to the surface of the propeltidium. Ocular tubercle with several long setae and numerous shorter, thinner ones.

Chelicerae. Dorsal finger with 12–20 teeth, ventral finger with two to six teeth. Surface of chelicerae with numerous short hairs and setae of different length.

Abdomen. Whole surface covered with almost adpressed hairs and numerous long, curved, bifurcate setae. Genital sternites not fused, the rear edge of the genital sternite heavily chitinized (Figs 1, 3, 5, 7, 9). Fourth abdominal segment of the holotype with 17 (paratypes with 15–18) short and pointed, orange ctenidia, only slightly overhanging the posterior margin of the segment (Figs 2, 4, 6, 8, 10).

Palps. Palp totally covered with short hairs and long, thick setae.

Legs. Leg I spineless. Tibiae II and III with one distal spine dorsally and a pair of distal spines ventrally. Metatarsi II and III with a series of three dorsal spines and a pair of distal spines ventrally.

Metatarsus IV with two distal spines ventrally. Legs totally covered with long, thick setae and short hairs. Distal part of claw short, occupying approximately 1/5 of the claw length.

Karschia (Karschia) gurkoi sp.n.
Figs 11–14, Map 1.

MATERIAL. Holotype: 1 ♀ (SMF), Tajikistan, Gorno-Badakhshan (=Kuhistoni Badakhshon) Region, Rushan Distr., Pamir Plateau, N slope of Rushan Mt. Range, c. 10 km NE of Bartang (38°07'N, 71°58'E), c. 4 300 m a.s.l., on light, 8.08.1996, V.O. Gurko.

Paratypes: 1 ♀ 4 juv. (AGC), 20.08.1998, same locality and collector.

COMPARATIVE MATERIAL. *Karschia (Karschia) birulae* Roewer, 1934 (Figs 15, 16): CHINA: 1 ♂ (SMF, RII/4734/358a, syntype), 1 ♀ (SMF, RII/4734/358b, syntype), Xinjiang Uygur Region, "O-Turkestan, Tankre".

ETYMOLOGY. The species is named after the collector, the entomologist, Mr V.O. Gurko (Ukraine, Chernovtsy).

DIAGNOSIS. In the presence of the dense and non-tensile membrane fusing the genital sternites, *K. gurkoi* sp.n. is close to *K. birulae* Roewer, 1934 from China (Xinjiang Uygur region). The membrane in the new species is wider, triangular and has a central depression (Figs 11, 13), whereas in *K. birulae* it is so narrow that the genital sternites join one another (Fig. 15). Both species can also be separated by the number, shape and length of the ctenidia on the fourth abdominal segment: *K. gurkoi* sp.n. has nine long and needle-shaped ctenidia, of length equal to the width of the fifth abdominal segment (Figs 12, 14), while *K. birulae* possesses 19 slightly wider, longer and more obtuse ctenidia, which are longer than the width of the fifth abdominal segment (Fig. 16).

DISTRIBUTION. Tajikistan: Pamir Plateau (Map 1).

HABITAT. The specimens studied were collected in August on dry mountains at 4 300 m a.s.l.

DESCRIPTION. FEMALE (male unknown).

Measurements (holotype/paratype). Total body length 16.0/13.2; cheliceral length 4.2/4.4, width 1.5/1.4; propeltidium length 2.3/2.1, width 3.2/3.2.

Length of limbs (holotype/paratype) of female:

Limb	Total (with coxa)	Femur	Tibia	Meta- tarsus	Tarsus	Claw
Palp	14.2/14.2	4.2/4.2	3.9/3.9	3.1/3.1	0.9/1.9	—
I	10.4/10.3	2.7/2.6	2.7/2.9	1.7/1.8	0.9/0.9	0.1/0.1
II	9.9/10.0	2.2/2.2	2.4/2.4	1.7/1.7	0.8/0.8	0.7/0.8
III	13.3/13.2	3.0/3.0	3.6/3.6	2.5/2.4	0.8/0.8	0.8/0.8
IV	20.6/20.2	4.7/4.5	5.1/5.2	3.4/3.4	1.4/1.4	1.2/1.2

Colour. General background light yellow. Abdomen grey-yellow, with yellow tergites. Propeltidium light brown anteriorly on each side of the black ocular tubercle. Other body parts tinged with brown

as follows: the palp, except for the proximal half of the femur; femora III and IV, except for their proximal regions, tibiae III and IV; and metatarsus IV, except in its distal region. Cheliceral fingers, their setae, abdominal ctenidia, some setae and spines on propeltidium, chelicerae and limbs reddish. Maleolae yellow.

Propeltidium. Entire surface covered with a dense pubescence of thin, short anteriorly directed hairs. Anterior, posterior and lateral edges with some long, curved, spiniform setae, which are perpendicular to the surface of the propeltidium. Ocular tubercle with several long, strong setae and numerous shorter, thinner ones.

Chelicerae. Dorsal finger with 18–20 teeth, ventral finger with six to eight teeth. Surface of chelicerae with numerous short hairs and setae of different length.

Abdomen. Entire surface covered with almost adpressed hairs, and numerous long, curved, bifurcate setae. Genital sternites fused by a wide, dense and non-tensile membrane; the rear margin of the genital sclerite is not chitinized (Figs 11, 13). Fourth abdominal segment with nine yellow, long (as long as the width of the fifth abdominal segment), needle-shaped ctenidia (Figs 12, 14).

Palps. Palp totally covered with short hairs, also densely covered with long, thin setae and sparsely with long, thick bristles. The latter only situated ventrally on tibiae, femora, metatarsi and tarsi, and on the three last segments are arranged in two longitudinal rows.

Legs. Leg I spineless. Tibiae II and III with one distal spine dorsally and a pair of distal spines ventrally. Metatarsi II and III with a series of three dorsal spines and a pair of distal spines ventrally. Metatarsus IV ventrally with two distal spines and three to five thick, spine-shaped bristles arranged in a prolateral row. Legs totally covered with long, thick setae and short hairs. Distal part of claw short, occupying approximately 1/5 of the claw length.

Immature specimens with nine to ten ctenidia on the fourth abdominal segment. Some immature specimens more darkly coloured: with brown infuscation also on the femora, tibiae and metatarsi of legs I and II.

Subgenus *Karschia (Rhinokarschia) Birula, 1935*

Type species: *Karschia kaznakovi* Birula, 1922; ♂ syntype (ZISP-N873), Uzbekistan, Kashkadarya Area, Dekhkanabad (= Dehqonobod) Distr., near Akrobat, (38°15'N, 66°50'E), 29.04.1897, A.N. Kaznakov; juv. syntype (ZISP-N874, mistakenly deter-

mined by A.A. Birula as ♀, Uzbekistan, Samarkand Area, N slope of Urgut Distr., Zeravshan Mt. Range, c. 35 km south of Samarkand, near Aman-Kutan, (c. 39°19'N, 66°59'E), 1.06.1897, L.S. Borszczewski.

REMARKS. This subgenus differs from the nominative one by having a dorsal horn on the unmovable finger of the chelicerae in males (Figs 19, 20), and in having narrow genital sternites, between which the genital hole is situated in females (Fig. 17).

Karschia (Rhinokarschia) tadhika sp.n.
Figs 17, 18, Map 1.

MATERIAL. Holotype ♀ (ZISP), Tajikistan, Varzob Distr., Hissar Mt. Range, Luchob River canyon, Kurukal-ma Boundary, near Gofil'abad (= Gafel'eobad), (38°51'30"N, 68°40'15"E), c. 2 150 m a.s.l., Nr. p-145, 29.07.1940, Zhogolov.

COMPARATIVE MATERIAL. *Karschia (Rhinokarschia) rhinoceros* Birula, 1922: TAJIKISTAN: 1 ♂, 1 ♀ (ZISP-N895, syntypes), 1 ♂, 1 ♀ (ZISP-N896, syntypes), 1 ♂ (SMF-R11/3457/299, syntype), Khodzhent (= Khujand, Leninabad) Area, Khodzhent Distr., Mogoltau Mt. Range, near Khodzhent (c. 40°18'N, 69°37'E), 10.04.1908, N.A. Zarudnyi.

ETYMOLOGY. The species is named after the type locality, sometimes spelt as Tadhikistan.

DIAGNOSIS. In the structure of the genitalia, *K. tadhika* sp.n. is closest to *K. (R.) rhinoceros*, from which it can be distinguished by having longer and wider genital sclerites and by the complex structure of the chitinized folds in the genital pore (Fig. 17) (in *K. rhinoceros* the genital pore is almost entirely covered by two round, chitinized structures [cf. Birula 1938: fig. 39]).

DISTRIBUTION. Tajikistan: Gissar Mt. Range (Map 1).

HABITAT. The holotype was collected during July in dry mountains at 2 150 m a.s.l.

DESCRIPTION. FEMALE (male unknown).

Measurements. Total body length 15.5; cheliceral length 4.5, width 1.6; propeltidium length 2.3, width 3.5.

Length of limbs of the female holotype:

Limb	Total (with coxa)	Femur	Tibia	Meta- tarsus	Tarsus	Claw
Palp	13.5	4.1	3.9	3.2	1.1	—
I	10.9	2.6	2.9	2.0	1.0	0.1
II	9.8	2.0	2.3	1.2	0.9	0.6
III	12.6	2.6	3.2	2.4	1.0	0.9
IV	20.1	4.4	5.2	3.5	1.5	1.1

Colour. General background light yellow. Parts of the body tinged with brown as follows: propeltidium anteriorly on each side of the black ocular tubercle; abdominal tergites; entire palps and legs I, III and IV except for the proximal part of the femora;

leg II distally on the femur and tibia. Chelicerae with three dorsal, longitudinal, brown stripes. Cheliceral fingers, their setae, abdominal ctenidia, some setae and spines on propeltidium, chelicerae and limbs reddish. Maleolae yellow.

Propeltidium. Entire surface covered with a dense pubescence of thin, short hairs directed anteriorly. Anterior, posterior and lateral edges with some long and curved, spiniform setae, which are perpendicular to the surface of the propeltidium. Ocular tubercle with some long setae and numerous shorter, thinner ones.

Chelicerae. Dorsal finger with 16–18 teeth, ventral finger with two to three teeth. Surface of chelicerae covered with numerous short hairs and setae of different length.

Abdomen. Entire surface covered with almost adpressed hairs and numerous long, curved, bifurcate setae. Genital sternites narrow, longitudinally elongated; with a large hole (with chitinized folds) between and behind them (Fig. 17). Fourth abdominal segment with 11 light orange, long and thick, acutely pointed ctenidia, the length of which are 1.5 times longer than the width of the fifth abdominal segment (Fig. 18).

Palps. Totally covered with short hairs and long, thick setae.

Legs. Leg I spineless. Tibiae II and III with a single distal spine dorsally and a pair of distal spines ventrally. Metatarsi II and III with a series of three dorsal spines and a pair of distal spines ventrally. Metatarsus IV with two distal spines ventrally. Legs totally covered with long, thick setae and short hairs. Distal part of claw is short occupying approximately 1/6–1/7 of its length.

Karschia (Rhinokarschia) gobiensis sp.n.
Figs 19–23, Map 1.

MATERIAL. Holotype ♂ (ZMMU), Mongolia, Ömnögovii (= South Gobi) Prov., Gobi Desert, near Bulgan, (c. 44°07'N, 103°32'E), plot Nr. 3, excavations, 22.06.1971, coll.?

Paratype: 1 juv. (ZMMU), 29.06.1971, together with the holotype.

COMPARATIVE MATERIAL. *Karschia (Rhinokarschia) pedaschenkoi* Birula, 1922: KYRGYZSTAN: Issyk-Kul (= Ysyk-Köl) Area: 1 ♂, 1 juv. (ZISP-N894, syntypes), Tong Distr., west shore of Issyk-Kul (= Ysyk-Köl) Lake, Kutymaldy Boundary (c. 42°28'N, 76°00'E), 1908, D.D. Pedaschenko; 1 juv. (AGC), Tong Distr., c. 5 km SW of Balykchy (= Rybach'e) (42°24'N, 76°06'E), 15.08.1998, A.V. Gromov & S.V. Ovchinnikov; 1 ♂ (ZISP-N893, syntype), Ak-Suu Distr., east shore of Issyk-Kul (= Ysyk-Köl) Lake, near Karakol (= Przhhevsk) (c. 42°30'N, 78°25'E), 1908, D.D. Pedaschenko.

ETYMOLOGY. The species is named after the type locality.

DIAGNOSIS. In the absence of the lateral apophysis on the flagellum and the palpal papillae, and in the presence of the short ctenidia on the fourth abdominal segment, *K. gobiensis* sp.n. is closest to *K. pedaschenkoi*, but differs from it by having longer spines situated in the middle region of the palpal metatarsus (Figs 22, 23) (distally in *K. pedaschenkoi*; cf. Roewer [1933: fig. 222K]). In addition, it has more spines on the palpal tarsus (nine; Figs 22, 23) (three to four in *K. pedaschenkoi*; cf. Birula [1938: p. 60]).

DISTRIBUTION. Mongolia: Gobi Desert (Map 1).

HABITAT. The new species prefers dry hills. Adult male was collected during June.

DESCRIPTION. MALE (female unknown).

Measurements. Total body length 16.5; cheliceral length 4.2, width 1.3; propeltidium length 2.1, width 3.1.

Length of limbs of the male holotype

Limb	Total (with coxa)	Femur	Tibia	Meta- tarsus	Tarsus	Claw
Palp	17.2	5.4	5.2	3.6	1.2	—
I	13.7	3.8	3.8	2.4	1.2	0.1
II	12.2	2.9	3.1	2.2	0.9	0.8
III	16.6	3.8	4.2	3.1	0.9	0.9
IV	24.2	5.5	5.5	4.1	1.6	1.4

Colour. General background light yellow. Parts of body tinged with brown as follows: propeltidium anteriorly on each side of the black ocular tubercle; abdominal tergites; palp except for the proximal half of femur; legs I and II in the distal region of the femora and tibiae; femora and tibiae II; femora (except the proximal region), tibiae and distal portions of the metatarsi of legs IV. Chelicerae with three dorsal, longitudinal, light brown stripes. Cheliceral fingers, their setae, abdominal ctenidia, some setae and spines on propeltidium, chelicerae and limbs reddish. Maleolae yellow.

Propeltidium. Entire surface covered with a dense pubescence of thin, short hairs directed anteriorly. Anterior, posterior and lateral edges with some long, curved, spiniform setae, which are perpendicular to the surface of the propeltidium. Ocular tubercle with some long setae and numerous shorter, thinner ones.

Chelicerae. Dorsal finger with 16–20 teeth, ventral one with three teeth. Horn sharp and long, its height almost equals the width of the finger bearing it; it is situated somewhat anteriorly of the first tooth of the dorsal cheliceral finger. Flagellum is represented by a long, rolled seta characteristic of *Karschia*, but without a lateral apophysis. There are two thick, short spines dorsal to the flagellum, the more distal of which has a twisted tip. Surface of chelicerae with numerous short hairs and setae of different

length. Retromargin of the dorsal cheliceral finger, behind and below the flagellum, with a row of long feather-shaped setae, which form a more compact group of longer bristles behind the flagellum (Figs 19, 20).

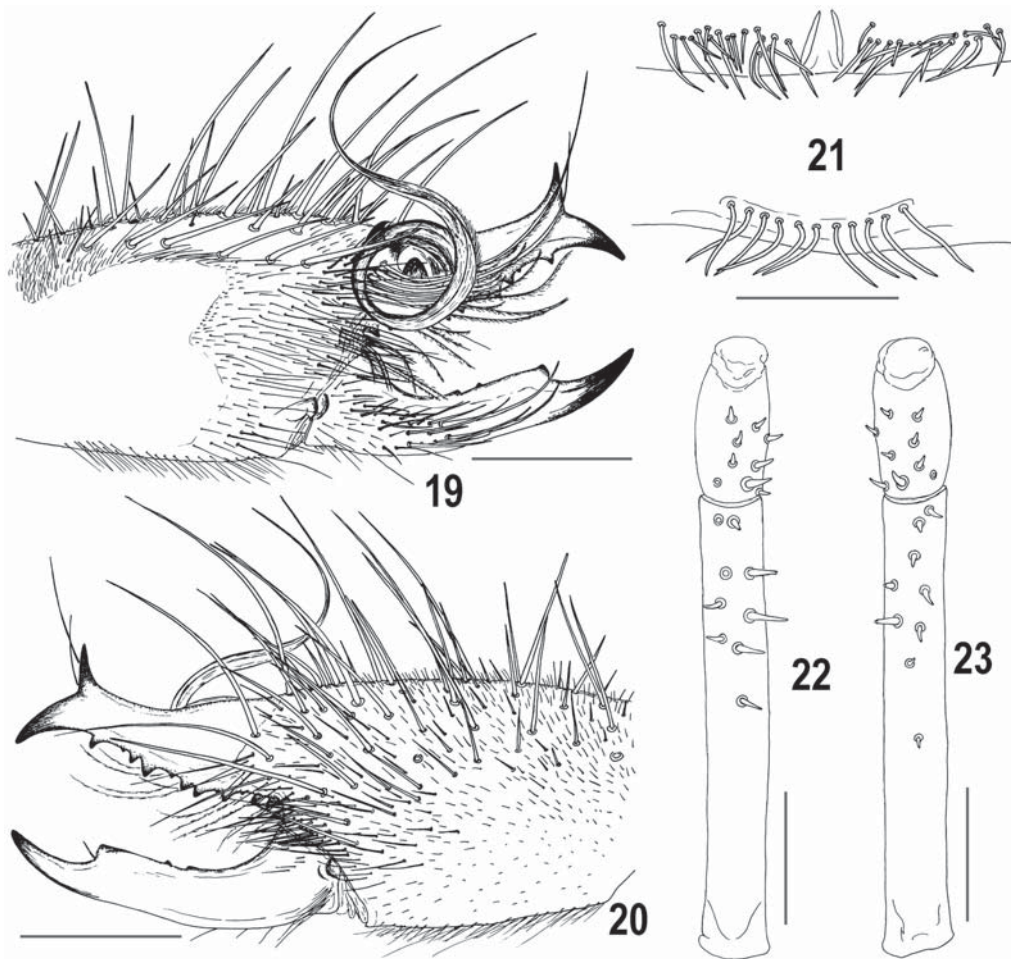
Abdomen. Entire surface covered with almost adpressed hairs, and numerous long, curved, bifurcate setae. Third abdominal segment with short, thin ctenidia: 17+16 (on the right and left side, respectively). Fourth abdominal segment with 11 short ctenidia, the length of which is almost equal to half the width of the segment (Fig. 21).

Palps. Palp tarsus not swollen. Spination: right palpal metatarsus and tarsus with 8+8+2 (Fig. 22), left ones with 9+7+2 (Fig. 23). Each tarsus with nine spines. The third spine of the inner row of the metatarsus (counting from the proximal to distal end) longer, almost equal to 2/3 of the width of the metatarsus bearing it. The rest of spines shorter. Palp totally covered with short hairs and long, thick setae, without papillae.

Legs. Leg I spineless. Tibiae II and III with one distal spine dorsally and a pair of distal spines ventrally. Tibia IV with a pair of distal spines ventrally. Metatarsi II and III with a series of three dorsal spines, a pair of distal spines ventrally and some paired short, thick, spine-shaped bristles over their entire ventral surface. Metatarsus IV also with these paired bristles over its entire ventral surface and with two distal spines ventrally. Legs totally covered with long, thick, setae and short hairs. Distal part of claw short, occupying approximately 1/5 of the claw length.

The immature paratype has the same body colouration and leg spination, including the bristle pattern, as the ♂ holotype, but has 12 ctenidia on the fourth abdominal segment.

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Figs 19–23. *Karschia gobiensis* sp.n., male (holotype): 19—left chelicera, internal view; 20—same, external view; 21—ctenidia on third and fourth abdominal segments, ventral view; 22—spination of right palp, ventral view; 23—spination of left palp, ventral view. Scale: 1 mm.

Рис. 19–23. *Karschia gobiensis* sp.n., самец (голотип): 19—левая хелицера, изнутри; 20—то же, снаружи; 21—ктенидии на третьем и четвертом сегментах abdomen, вентрально; 22—покрытие шипами правой пальпы, вентрально; 23—покрытие шипами левой пальпы, вентрально. Масштаб: 1 мм.

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