

SOLPUGIDS OF THE GENUS *EUSIMONIA* KRAEPELIN, 1899 (ARACHNIDA: SOLIFUGAE, KARSCHIIDAE) OF CENTRAL ASIA

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Abstract

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This paper presents a review of the genus *Eusimonia* in the fauna of Central Asia. Two valid species are found to occur in Central Asia: *E. divina* BIRULA, 1935 and *E. turkestanica* KRAEPELIN, 1899. The type specimens of *Eusimonia* kept in the Zoological Museum (Berlin) and the Zoological Institute of the Russian Academy of Sciences (St. Petersburg) were re-examined. Four species names are newly synonymized: *Karschia* (?) *demokidovi* BIRULA, 1935 with *Eusimonia divina* BIRULA, 1935 syn.nov.; *Karschia* (?) *grombcevszkii* BIRULA, 1935, *Barella birulae* ROEWER, 1933 and *Eusimonia celeripes* HIRST, 1908 with *Eusimonia turkestanica* KRAEPELIN, 1899 syn.nov. Lectotypes are designated for the first time for the following species: *Eusimonia divina* BIRULA, 1935; *Barella birulae* ROEWER, 1933 and *Karschia* (?) *grombcevszkii* BIRULA, 1935.

Introduction

To date, congeners of the genus *Eusimonia* KRAEPELIN, 1899 in Central Asia (Kazakhstan, Uzbekistan, Turkmenistan, N Iran, Afghanistan, W China and Mongolia) have been studied extensively and records of new species are hardly to be expected. KRAEPELIN (1899) described a new species, *E. turkestanica*, from "Turkestan" without giving the precise locality. Within a few years, HIRST (1908) described another species, *E. celeripes*, from W China. In his monograph on the solpugids of the world, ROEWER (1933) assigned *E. turkestanica* to the genus *Barella* HIRST, 1910 and also described *B. birulae* from China and Mongolia. Later, BIRULA (1935a) described a species *E. divina* from N Iran, as well as transferring both *Barella turkestanica* and *B. birulae* to the genus *Eusimonia*. ROEWER (1941) did not support this idea and moreover transferred *E. divina* to the genus *Barella*, and later ROEWER

(1960) first recorded it for Afghanistan. GROMOV, KOPYDKBAEV (1994) first recorded a representative of *Eusimonia* for SE Kazakhstan without its exact identification, and later (GROMOV, 1999) first reported *E. divina* from N Turkmenistan. Thus, four *Eusimonia* species have so far been reported from Central Asia: *E. turkestanica* KRAEPELIN, 1899, *E. celeripes* HIRST, 1908, *E. birulae* (ROEWER, 1933) and *E. divina* BIRULA, 1935.

Material and methods

In the course of the present work, collections from the following museums have been re-examined: Zoological Museum in Berlin (Germany), Zoological Institute (St. Petersburg, Russia) and Zoological Museum of the Moscow State University (Moscow, Russia), as well as newly collected material from Central Asia.

Solpugids were mainly collected by the author during the night using an ultra-violet lamp (Sylvania F6T5/BLB), and some solpugids were collected also during the daytime under stones. Solpugids were preserved and studied in 70% alcohol using a MBS-10 stereomicroscope.

Abbreviations: AGC- private collection of the author; IASE- the Siberian Zoological Museum, Institute of Animal Systematics and Ecology, Novosibirsk, Russia, D.V.Logunov; ZISP- the Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia, V.A.Krivokhatsky; ZMB- the Zoological Museum, Museum für Naturkunde, Berlin, Germany, J.A.Dunlop; ZMMU- the Zoological Museum of the Moscow State University, Moscow, Russia, K.G.Mikhailov.

All measurements are in mm.

Eusimonia KRAEPELIN, 1899

Type species: *Galeodes furcillatus* SIMON, 1872

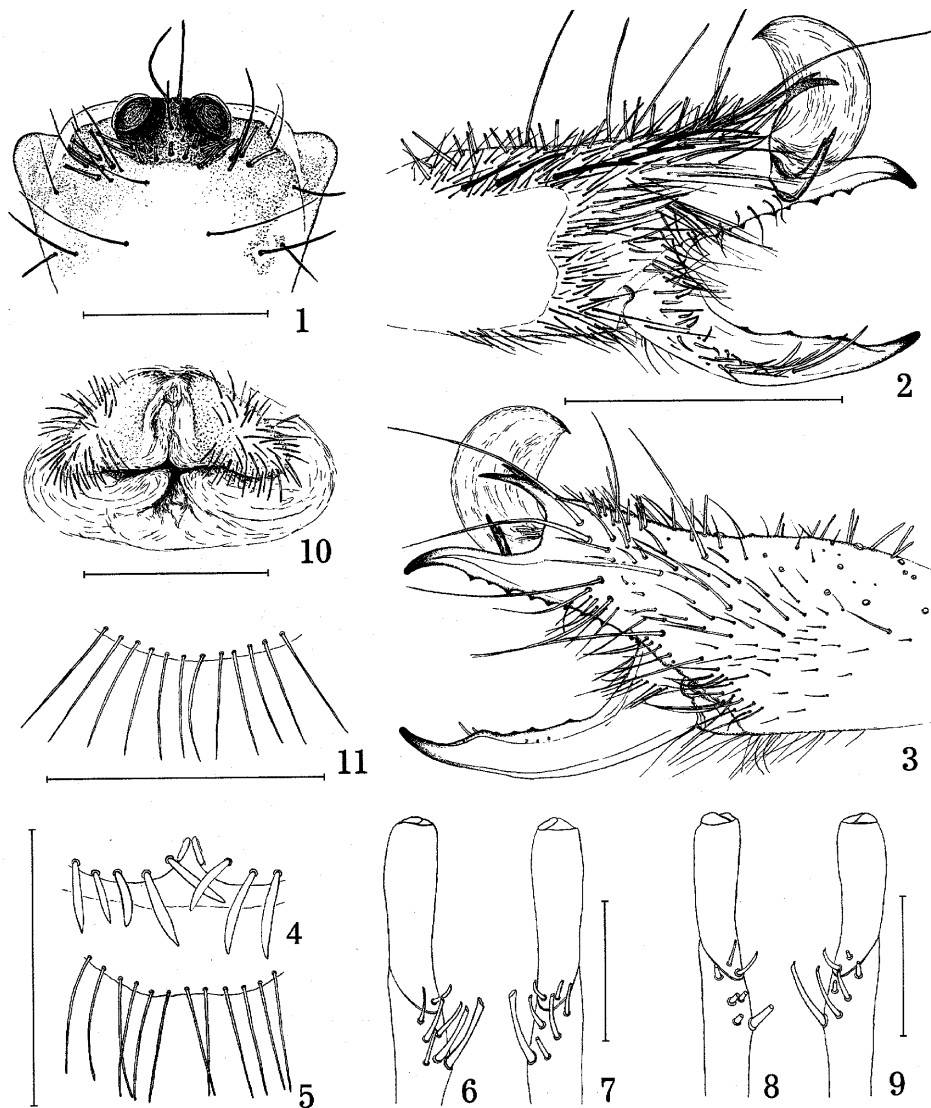
Eusimonia divina BIRULA, 1935 (Figs. 1-12)

Eusimonia divina BIRULA, 1935a: p. 1217, figs. 1, 2 (one male lectotype, designated here, and one female paralectotype from the ZISP; re-examined); BIRULA, 1938: p. 72, 76, figs. 49, 50; GROMOV, 1999: p. 184.

Karschia (?) demokidovi BIRULA, 1935b: p. 305, fig. 3B (female holotype from the ZISP; re-examined); BIRULA, 1938: p. 43, 66, fig. 42; ROEWER, 1941: p. 111, fig. 5; GROMOV, 1999: p. 184, syn.nov.

Barella divina (BIRULA) ROEWER, 1941: p. 112, figs. 69-73; ROEWER, 1960: p. 8, fig. 1.

Material examined: Kazakhstan: 1 ♂ (AGC), Mangistau Area, Eraliev Distr., ca. 43 km E of Aktau [Shevchenko], Karagie Hollow, near Prokhlada Well, (43°35'N, 51°43'E), 19.05.1991, leg. Ye.Ye.Kopydkbaev; Uzbekistan: 42 ♂♂, 64 ♀♀, 2 juv. (AGC), 1 ♂, 1 ♀ (IASE), 1 ♂, 1 ♀ (ZMB), Navoi Area, Tamdy Distr., Kyzylkum Desert, ca. 1 km NW of Zarafshan, (41°36'N, 64°09'E), on *Artemisia*, 26-29.04.1998, leg. A.V.Gromov; Turkmenistan: 1 ♀ (ZMMU Tc-64), Tashauz Area, Tel'mansk Distr., Kaplankyr Nature Reserve, (41°12'N, 57°29'E), 23.04.1985, leg. L.A.Mitroshina; 1 ♂ (ZMMU Tc-63), same locality and collector, 3.05.1985; 1 ♂ (ZMMU Tc-74), Tashauz Area, Kalinin Distr, Karakum Desert, Kangalyk Height, (41°22'N, 58°02'E), 12.05.1983, leg. O.S.Soyunov; 1 ♀ (ZISP 872, holotype of *K. demokidovi*), Mary Area, Bayram Ali Distr., near Bayram Ali, (37°37'N, 62°10'E), 8-10.04.1907, leg. K.Demokidov; Iran: 1 ♂ (ZISP 909, lectotype of *E. divina*), 1 ♀ (ZISP 909, paralectotype of *E. divina*), Semnan Ostan, E foothills of Elburz Mts., near Imamshehr [Shakhrud], (ca. 36°25'N, 54°57'E), 21.05.1914, leg. A.Kirichenko.



Figs 1-11. *Eusimonia divina*, male [Zarafshan] (1), male [Kangakyr] (2-5, 8, 9), male [holotype] (6, 7) and female [Zarafshan] (10, 11): 1- propeltidium, dorsal view; 2 - left chelicera, internal view; 3 - same, external view; 4 - ctenidia on III sternite of abdomen, ventral view; 5, 11 - ctenidia on IV sternite of abdomen, ventral view; 6, 8 - spinulation of right palp, ventral view; 7, 9 - spinulation of left palp, ventral view; 10 - genital sternite, ventral view. Scale line = 1 mm.

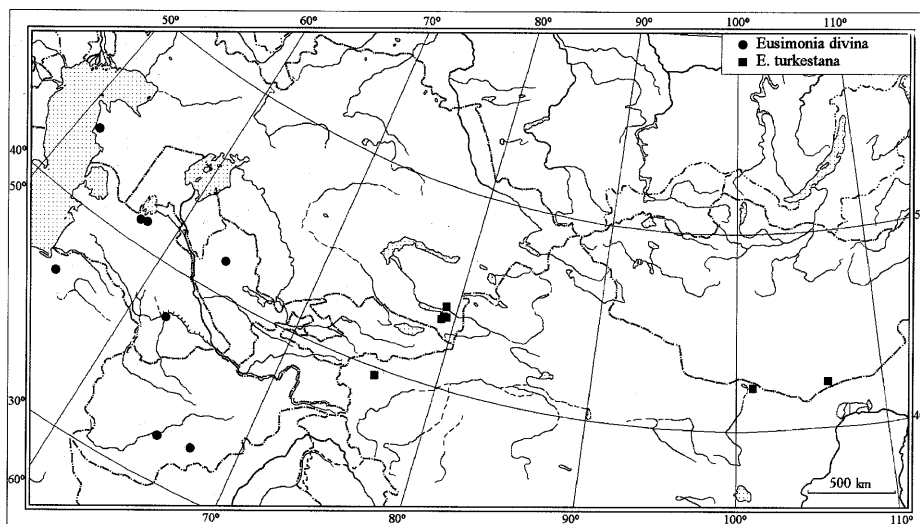


Fig. 12. Localities for *Eusimonia divina* and *E. turkestanica*.

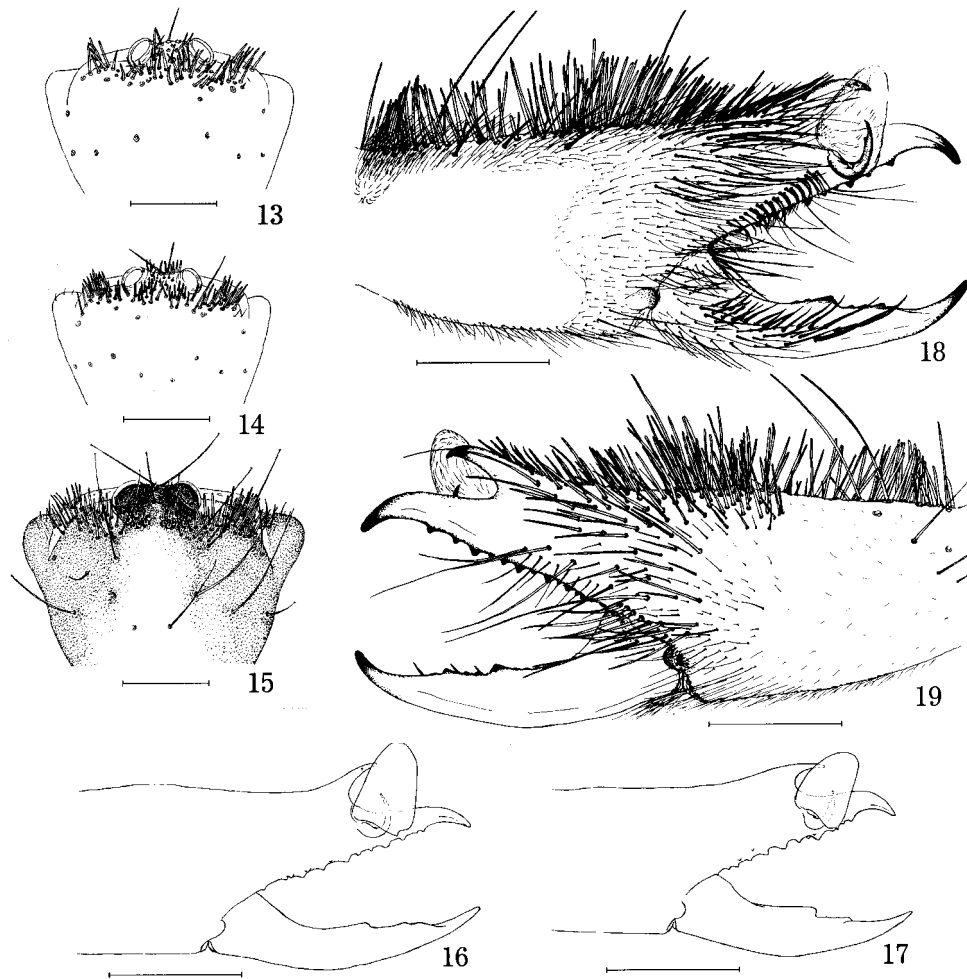
Material cited: Afghanistan: 1 ♂, 1 juv., Helmand Province, near Kadjahkai [Kajkai], (ca. 32°18'N, 65°05'E), stony slope, 29.04-1.05.1958, leg. K.Lindberg [Roewer 1960]; 1 juv., Zabol Province, near Gadzhoui [Gadzhoi], (32°27'N, 67°20'E), under stones in steppe, 10.09.1957, leg. K.Lindberg [Roewer 1960].

Description: See BIRULA (1935a, 1938) and ROEWER (1941).

Variability: Male. Total length 8.1-11.4. Body coloration light yellow to yellow with infusion of brown as follows: propeltidium anteriorly on each side of ocular tubercle; abdominal tergites; entire palp except for the basal half of femur; entire femur excluding its base, and entire tibia IV. Dorsal cheliceral finger with 9-12 teeth, ventral one with 1 or 2 teeth. The number of teeth on the forked appendix of dorsal cheliceral finger = 1-4. Third abdominal sternite with (3-5)+(3-6) ctenidia, fourth one with 11-13 ctenidia. Ctenidia on the III sternite of abdomen club-shaped or thin and long. Right palpal metatarsus of the holotype with 6, left one with 5 spines; right palpal tarsus of the holotype with 1, left one with 2 spines. In other specimens, right and left palpal metatarsus with 5 spines; right and left palpal tarsus with 2 spines. Female. Total length 8.0-11.7. Variability of body coloration as in males. Dorsal cheliceral finger with 9-17 teeth, ventral one with 8-15 teeth. Fourth abdominal sternite with 11-13 ctenidia.

Remarks: An examination of numerous specimens of *E. divina* from the vicinities of Zarafshan (Uzbekistan) has revealed that the number of cheliceral teeth is highly variable and cannot be considered a diagnostic character for the genus *Eusimonia*. Therefore, as the female holotype of *K. demokidovi* and female paratype of *E. divina* do not differ in the shape of the genital sternites, but in the number of cheliceral teeth only, these species names are to be treated as synonyms.

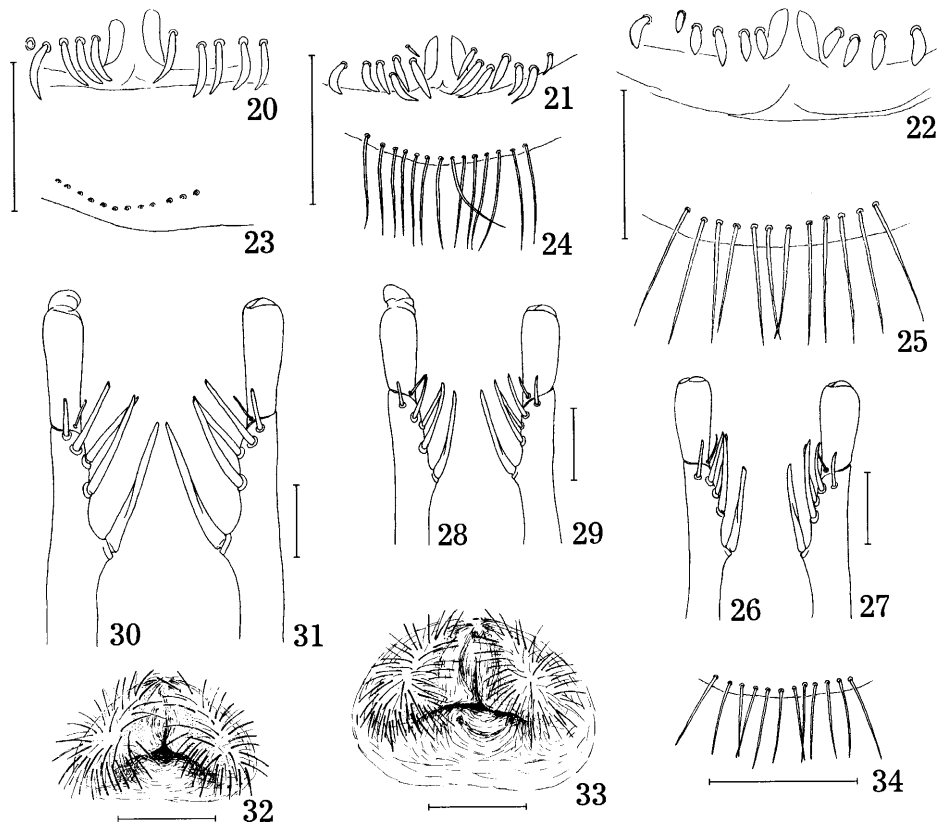
Distribution: From SW Kazakhstan (Karagie Hollow) and C Uzbekistan (Kyzylkum Desert) across Turkmenistan (Karakum Desert) to NE Iran (E foothills of Elburz Mts.) and



Figs 13-19. *Eusimonia turkeстана*, male [holotype] (13, 16), male [lectotype of *Barella birulae*] (14, 17) and male [12 km NWW of Chundzha] (15, 18, 19): 13-15 – propeltidium, dorsal view; 16-18 – left chelicerae, internal view; 19 – same, external view. Scale line = 1 mm.

to S Afghanistan (S foothills of Hindu-Kush Mts.) (Fig. 12). The record of *E. divina* in the basin of Ind River is quite doubtful, and hence the female from “grotto without name by Qal’ eh-Malik” (Afghanistan, Nangarkhar Province, Siakh-Kokh Mt. Range, Sorkhab River valley, near Barinah Vill., (ca. 34°23’N, 70°11’E), 6.01.1958, leg. K.Lindberg) was identified by ROEWER (1960) erroneously and does not actually belong to this species.

Ecology: This species prefers the clay deserts. Adults occur in April-May.



Figs 20-34. *Eusimonia turkestanana*, male [holotype] (20, 23, 26, 27), male [lectotype of *Barella birulae*] (21, 24, 28, 29), male [12 km NWW of Chundzha] (22, 25, 30, 31), female [12 km NWW of Chundzha] (32, 34) and female [lectotype of *Karschia grombchevskii*] (33): 20-22 – ctenidia on III sternite of abdomen, ventral view; 23-25, 34 – ctenidia on IV sternite of abdomen, ventral view; 26, 28, 30 – spinulation of right palp, ventral view; 27, 29, 31 – spinulation of left palp, ventral view; 32, 33 – genital sternites, ventral view. Scale line = 1 mm.

Eusimonia turkestanana KRAEPELIN, 1899 (Figs. 12-34)

Eusimonia turkestanana KRAEPELIN, 1899: p. 250, fig. 23 (male holotype from the ZMB; re-examined); KRAEPELIN, 1901: p. 142, fig. 107; BIRULA, 1927: p. 210; ROEWER, 1932: p. 132, figs. 117, 120, 141B; BIRULA, 1938: p. 72, 73; GROMOV, KOPYKBAEV, 1994: p. 21.

Eusimonia celeripes HIRST, 1908: p. 247 (three male syntypes from “Kashgar Steppe”, probably lost); ROEWER, 1933: p. 301, 302, fig. 224C; BIRULA, 1938: p. 72, 78; ZILCH, 1946: p. 123, syn.nov.

Barella turkestanana (KRAEPELIN) ROEWER, 1933: p. 303, 304, fig. 226d.

Barella birulae ROEWER, 1933: p. 303, 305, figs. 226b, c, e, h, i (male lectotype, designated here, from China and one juvenile paralectotype from Mongolia, from the ZISP; re-examined), syn.nov.

Eusimonia birulai (ROEWER) BIRULA, 1938: p. 72, 74, figs. 45B, 47, 48.

Karschia (?) *grombcevszkii* BIRULA, 1935b: p. 306, figs. 4B, 5A (female lectotype, designated here, and two female paralectotypes from the ZISP; re-examined); BIRULA, 1938: p. 44, 67, figs. 43, 44; ROEWER, 1941: p. 111, fig. 8, syn.nov.

Eusimonia sp. GROMOV, KOPDYKBAEV, 1994: p. 21.

Material examined: Kazakhstan: 1 juv. (AGC), Taldykorgan Area, Zharkent [Panfilov] Distr., Kumkala Desert, ca. 37 km SWW of Aidarly, (43°51'N, 79°10'E), 2.06.1991, leg. A.V.Gromov; 1 ♂ (AGC), Almaty Area, Uigursky Distr., ca. 11 km NW of Chundzha, left riverside of Charyn [Sharyn] River, (43°37'N, 79°21'E), *Haloxylon* on loam, 12.06.1993, leg. Ye.Ye.Kopdykbaev; 1 ♂, 3 juv. (AGC), same locality, 27.05.1998, leg. A.V.Gromov; 1 ♂, 1 ♀ (AGC), Almaty Area, Uigursky Distr., ca. 12 km NWW of Chundzha, left riverside of Charyn [Sharyn] River, (43°35'N, 79°19'E), *Haloxylon* on loam, 18.06.1994, leg. A.V.Gromov; 1 juv. (AGC), Almaty [Alma-Ata] Area, Uigursky Distr., ca. 20 km SWW of Chundzha, left riverside of Charyn [Sharyn] River, (43°30'N, 79°12'E), clayey canyons, 26.04.1999, leg. A.V.Gromov; 1 juv. (AGC), Almaty Area, Uigursky Distr., W vicinities of Chundzha, (43°32'N, 79°26'E), 4.07.1996, leg. A.V.Gromov; China: 1 ♂ (ZISP 906, lectotype of *B. birulae*), Inner Mongolia, lower reaches of Edzin-Gol [Etszin-Gol] River, near Sogo-Nur [Sogo-Nor] Lake, (42°17'N, 101°17'E), expedition of P.K.Kozlov, 4.05-1.06.1926, leg. N.M.Przhevalsky; Mongolia: 1 ♂, 1 juv. (ZISP), South-Gobi Aimak, Gobi Desert, ca. 25 km SW of Khailastyn-Khuduk, Khushu-Sair, (ca. 42°17'N, 106°16'E), *Haloxylon* on sands, 21.06.1971, leg. M.A.Kozlov; Uncertain localities: 1 ♂ (ZMB 7973, holotype of *E. turkestana*), "Turkestan", leg. Conradt; 1 ♀ (ZISP 871, lectotype of *K. grombcevszkii*), 2 ♀ (ZISP 870, paralectotypes of *K. grombcevszkii*), "E Bukhara", 1889-1890, leg. B.L.Grombchevsky.

Material cited: China: 3 ♂♂ (syntypes of *E. celeripes*), "Kashgar Steppe", leg. C.Aris (HIRST, 1908).

Description: See ROEWER (1933) and BIRULA (1938).

Variability: Male. Total length 13.2-18.7. Body coloration light yellow to yellow with infusion of brown as follows: dorsal surface of propeltidium; abdominal tergites; entire extremities except for the basal half of femur. Spines on the ocular tubercle short to long. Dorsal cheliceral finger with 10-13 teeth, ventral one with 1-5 teeth. The number of teeth on the forked appendix of dorsal cheliceral finger = 1-2. Third abdominal sternite with (5-7)+(4-7) ctenidia, fourth one with 10-14 ctenidia. Ctenidia on the III sternite of abdomen club-shaped, short or thin and long. Female. Total length 14.6-19.1. Variability of body coloration as in males. Dorsal cheliceral finger with 12-18 teeth, ventral one with 9-11 teeth.

Remarks: A comparison of the lectotype of *B. birulae*, as well as figure and description of the male syntypes of *E. celeripes* with the male holotype of *E. turkestana* and also its males collected from Kazakhstan and Mongolia has revealed that their diagnostic characters (i.e. the length of spines on the ocular tubercle, the number of spines on the anterior edge of propeltidium, the number of teeth on forked appendix of the dorsal cheliceral finger, the shape of flagellum, the shape of ctenidia on the III sternite of abdomen and the number of ctenidia on the IV sternite of abdomen) vary widely, and hence all the above species names are to be considered synonyms.

ROEWER (1933) and BIRULA (1938) assigned two juvenile specimens to *B. birulae*, of which one was reported by ROEWER as the female syntype: 1 juv. (ZISP 907), Mongolia, South-Gobi Aimak, Gobi Altai Mts., Noin-Bogdo [Noen-Bogdo] Mt. Range, (ca. 43°10'N, 101°45'E), expedition of P.K.Kozlov, 18-28.09.1925, leg. P.K.Kozlov; 1 juv. (ZISP 908, paralectotype of *B. birulae*), same locality, 29.09-13.10.1925, leg. N.M.Przhevalsky. An examination of these specimens has revealed them to be wrongly determined and to actually belong to the genus *Karschia*.

An adult female was simultaneously collected with a male of *E. turkestanica* in the vicinities of Chundzha (Kazakhstan). This female cannot be separated by the shape of the genital sternites from the female lectotype and two female paralectotypes of *K. grombaczewskii*, and therefore the latter name should be synonymized with *E. turkestanica*.

Distribution: SE Kazakhstan (Charyn River valley), NW China (“Kashgar Steppe” and the Gobi Desert) and S Mongolia (Gobi Desert) (Fig. 12). Roewer (1933) erroneously recorded this species for Beluchistan (in SE Iran or SW Pakistan).

Ecology: This species prefers the clay deserts. Adults occur in May-June.

Acknowledgements

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