

## Notes on the distribution of *Oculicosa supermirabilis* (Araneae, Lycosidae)

Dmitri V. Logunov & Alexander V. Gromov

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**Abstract:** The distribution of the poorly known Central Asian wolf-spider *Oculicosa supermirabilis* Zyuzin, 1993 is clarified, discussed and mapped on the basis of both original and literature-derived data. The species is currently known from the Turan Lowland between the 41st and 43rd degrees of latitude north; its distribution coincides with that of the grey-brown desert soil and lies within the geobotanical sub-zone of southern deserts. Both sexes are also illustrated and diagnosed.

**Key words:** burrowing wolf-spiders, Central Asia, distributional pattern, new records

*Oculicosa supermirabilis* is the type species of the monotypic genus *Oculicosa* Zyuzin, 1993. Both the genus and type species were described in detail by ZYUZIN (1993), who also discussed the detailed palpal morphology of a number of lycosids and the provisional tribal classification of the Lycosinae. The genus *Oculicosa* can be easily distinguished from all other Central Asian genera of burrowing Lycosidae by the following characters: the distinctly elevated cephalic region, the presence of two retromarginal teeth, the absence of tarsal scopulae, and leg II the shortest (see LOGUNOV 2010, for further details). The latter author also provided two additional records for *O. supermirabilis* from the SE part of Kazakhstan. Nevertheless, the distribution of this species in Central Asia and its biology remains virtually unknown. Recently, a large unsorted collection of Central Asian Lycosidae became available to the first author (courtesy of Alexei Zyuzin; Almaty, Kazakhstan). This collection contains an extensive series of *O. supermirabilis* collected from a few localities of Central Asia, allowing us to clarify the species' distribution. Thus, the aim of this short note is to consolidate all known records of *O. supermirabilis* from Central Asia available to date and to outline its range within the studied area.

### Methods

In order to clarify both published (ZYUZIN 1993, LOGUNOV 2010) and unpublished records of *O. supermirabilis* we drew upon the field notebook of A. A. Zyuzin – who collected the majority of the studied material – topographic maps 1:100000, soil maps, maps of the modern administrative subdivision of Kazakhstan, Uzbekistan and Turkmenistan, and satellite images available at the website maps.google.com. The map presented hereinafter has been prepared using the computer programmes GPSMapEdit 1.0.57.3, ESRI ArcGIS 9.3 and Blue Marble Geographic Calculator 6.3. For each geographic name given under 'Material examined' we have provided several variants which are available on various maps; of which the first given name is the one currently used.

The (re)examined material is deposited in the Siberian Zoological Museum, Novosibirsk, Russia (SZMN; curator: Dr G.N. Azarkina) and the Manchester Museum, University of Manchester, UK (MMUM; curator: D.V. Logunov).

*Oculicosa supermirabilis* Zyuzin, 1993 (Figs. 1–6)

### Material examined

**Kazakhstan:** 16 ♂ 12 ♀ (SZMN, 001.4352), South Kazakhstan [=Chimkent, Shymkent] Area, Arys' Distr., Kyzylkum Desert, S foothills of Karaktau [=Kairaktau] Hills, c. 41.1 km W of Bairkum, nr. Zhautkan Well (41°11'58.4"N, 57°29'08.0"E), clayey soil, c. 209 m a.s.l., 11.–12.05.1995, A. A. Zyuzin leg.; 45 ♂ 35 ♀ (SZMN, 001.4350–4351), 3 ♂ 3 ♀ (MMUM, G7511.9), same area and district, Kyzylkum Desert, S foothills of Karaktau [=Kairaktau] Hills, c. 36.1 km WSW of Bairkum, nr. Baimakhan Well (42°03'52.6"N, 67°42'10.4"E), clayey soil, c. 209 m a.s.l., 21.–23.05.1993, A. A. Zyuzin leg.; 10 ♀ (SZMN, 001.4187), 9 ♀ (SZMN, 001.4368), same area and district, Kyzylkum Desert, S foothills of Karaktau [=Kairaktau] Hills, c. 35.8 km WSW of

Dmitri V. LOGUNOV, Manchester Museum, University of Manchester, Oxford Road, Manchester M13 9PL, UK  
E-Mail: dmitri.v.logunov@manchester.ac.uk

Alexander V. GROMOV, Kazakhstan Entomological Society, Laboratory of Entomology, Institute of Zoology, Al-Farabi 93, Akademgorodok, 050060 Almaty, Kazakhstan  
E-Mail: alexander\_gromov@yahoo.com

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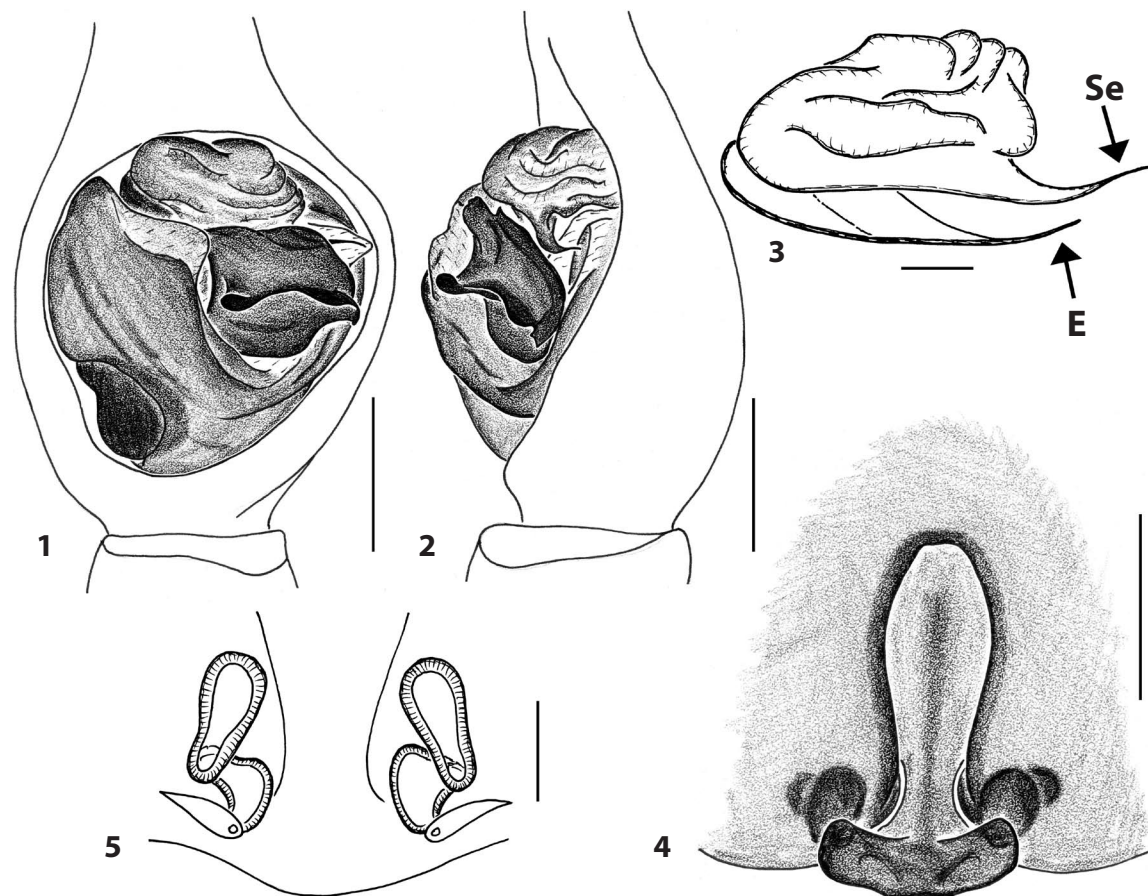
Bairkum, c. 0.9 km SE of Baimakhan Well (42°03'28.1"N, 67°42'31.9"E), clayey soil, c. 211 m a.s.l., 13.-14.04.1990, A. A. Zyuzin, A. A. Feodorov leg. – **Uzbekistan:** 3 ♀ (SZMN, 001.4369), Karakalpakstan [=Qoraqalpog'iston], Kungrad [=Qon'g'iro't] Distr., Ustyurt Plateau, c. 56.1 km WNW of Kungrad [=Qon'g'iro't], c. 3 km W of Aksholak [=Akchulak, Aqsho'laq] (43°10'15.1"N, 58°09'28.2"E), clayey desert, c. 125 m a.s.l., 23.-24.04.1990, S. I. Ibraev leg. – **Turkmenistan:** 1 ♂ 1 ♀ (SZMN, 001.4248), Dashoguz [=Dashkhovuz, Tashauz] Area, Boldumsaz [=Kalinin] Distr., Ustyurt Plateau, N border of Kaplankyr [=Gaplaňgyr] Nature Reserve, c. 232.2 km WSW of Dashoguz [=Dashkhovuz, Tashauz], Burchliburun [=Burchlyburun] Boundary, nr. Burchliburun [=Burchlyburun] Cordon (41°23'45.8"N, 57°11'58.6"E), c. 53 m a.s.l., 1988, L. A. Mitroshina leg.; 1 ♂ (SZMN, 001.4232), same locality, 06.05.1986, L. A. Mitroshina leg.; 2 ♀ (SZMN, 001.4232), same locality, 05.1988, L. A. Mitroshina leg.

### Published records

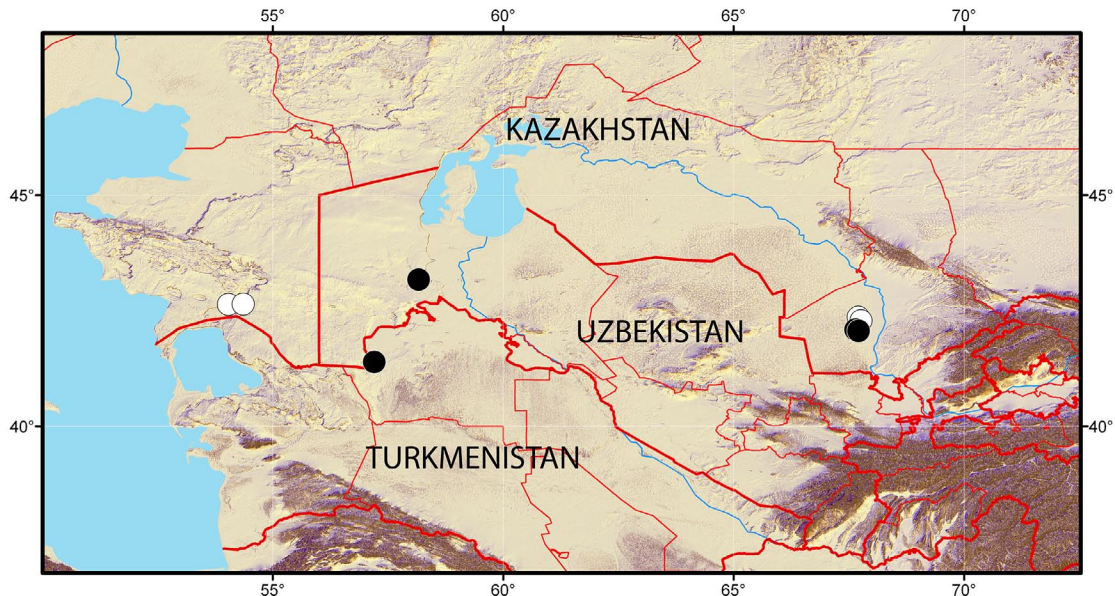
Although two earlier authors (ZYUZIN 1993, LOGUNOV 2010) provided rather detailed locality information for their records, this was not enough to correctly map the corresponding localities. Therefore, here we provide the clarified and more detailed information on all the earlier published localities.

The type locality (ZYUZIN 1993): Kazakhstan, Mangistau Area, Karakiya [=Eraliev] Distr., Karynzhar'yk Sands, c. 37.4 km S of Akkuduk, nr. Kandybai Winterhouse (c. 42°37'55.0"N, 54°02'05.7"E), clayey soil, c. 47 m. a.s.l., 14-15.05.1989, S. I. Ibraev, A. A. Zyuzin leg.

Three localities published by LOGUNOV (2010: Table 1): (1) Kazakhstan, Mangistau Area, Karakiya [=Eraliev] Distr., Ustyurt Plateau, c. 42 km SSE of Akkuduk, Ustyurt State Reserve, nr. El'shibek Well (42°38'19.1"N, 54°21'16.4"E), canyon, c. 172 m. a.s.l., 19.05.1989, A. A. Zyuzin leg. – (2) Kazakhstan, South Kazakhstan [=Chim-



**Figs 1-5:** The copulatory organs of *Oculicosa supermirabilis* Zyuzin, 1993 from South Kazakhstan (S foothills of Karaktau Hills, nr. Baimakhan Well). 1. Left male palp, ventral view. 2. Ditto, retrolateral view. 3. Embolar division of the male palp, ventral view. 4. Epigyne, ventral view. 5. Spermathecae, dorsal view. Abbreviations: Se – synembolus, E – embolus. Scales: (1-2, 4) 0.5 mm, (3) 0.1 mm, (5) 0.1 mm.



**Fig. 6:** Collection localities of *Oculicosa supermirabilis* Zyuzin, 1993. Closed dots – original data, open dots – literature-derived data.

kent, Shymkent] Area, Otrar Distr., Kyzylkum Desert, N foothills of Karaktau [=Kairakta] Hills, c. 43.8 km NW of Bairkum, nr. Tabakbulak (42°21'26.7"N, 67°41'56.3"E), clayey soil, c. 225 m. a.s.l., 23-25.05.1993, A. A. Zyuzin leg. – (3) Kazakhstan, South Kazakhstan [=Chimkent, Shymkent] Area, Arys' Distr., Kyzylkum Desert, c. 35.2 km NW of Bairkum, Karaktau [=Kairakta] Hills, Karamola Mt., top part (42°16'48.4"N, 67°45'28.7"E), c. 376 m. a.s.l., 29-31.05.1993, A. A. Zyuzin leg.

### Diagnosis

*O. supermirabilis* is easily distinguished from all the burrowing wolf-spiders of Central Asia by the wide and plate-shaped median apophysis with a transverse ridge (Figs 1-2) in males and by the narrow, long epigynal atrium (Fig. 4) and the very short, ovoid spermathecae in females (Fig. 5). Both sexes can also be easily distinguished by the pronounced slope of the thoracic region of the carapace and the unusually large PME and PLEs, compared to the eyes of the first row (see LOGUNOV 2010: figs 4-5). It is worth mentioning that the conformation of the synembolus and the embolus of *O. supermirabilis* is almost identical to that of *Lycosa tarantula* (Linnaeus, 1758), the type species of the genus *Lycosa* Latreille, 1804: in both species these structures are of the same shape and size (cf. Fig. 3 and fig. 1 in LOGUNOV 2010). Yet, both genera are clearly distinct (see LOGUNOV 2010, for further details).

While diagnosing *O. supermirabilis*, ZYUZIN (1993) mentioned *Lycosa alticeps* (Kroneberg, 1875) from Central Asia and *L. medica* (Pocock, 1889) from Iran as closely related species. However, he did not mention whether they should be included in *Oculicosa* or not. Although both species were placed in the genus *Hogna* Simon, 1885 by ROEWER (1955), their actual taxonomic assignment and status are in need of urgent revision. This problem is outside the scope of the current study and will be dealt with by one of us (DL) in the future.

### Description

See ZYUZIN (1993) for a detailed description both of the genus *Oculicosa* and of the type species *O. supermirabilis*.

### Distribution

To date, the species has been recorded from Kazakhstan (ZYUZIN 1993, LOGUNOV 2010; present data), Uzbekistan (present data) and Turkmenistan (present data). All the records came from the Turan Lowland between the 41st and 43rd degrees of latitude north: Ustyurt Plateau and Kyzylkum Desert (Karaktau Hills and their vicinities) (see Fig. 6).

### Notes on ecology

Adult specimens are active in April–May; females make permanent vertical silk-lined burrows with

self-closing trapdoors (A. Zyuzin pers. comm.). The species prefers gypsiferous, vegetation-less plots on grey-brown desert soil of pelitophytic mechanical composition (= 'white clay' sensu A. Zyuzin pers. comm.), and occurs at elevations between 47 and 376 m a.s.l. This soil type is only common on several plateaus and along erratic mountains and hills of the Turan Lowland (see MINASHINA et al. 1968, ZHIKHAREVA et al. 1969, FAIZOV 1970). The currently known distribution of *O. supermirabilis* coincides well with the distribution of this soil type, and lies within the geobotanical sub-zone of southern (warm-temperate) deserts (AKZHYGITOVA et al. 2003). The area of this species' distribution is characterized by an annual solar radiation of 140–150 kcal/sm<sup>2</sup> and by very low values of annual precipitation of 75–100 mm (KUVSHINOVA 1968).

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### References

- AKZHYGITOVA N.I., S.-W. BRECKLE, G. WINKLER, E.A. VOLKOVA, W. WUCHERER, L.J. KUROCHKINA, G.B. MAKULBEKOVA, N.P. OGAR, E.I. RACHKOVSKAYA, I.N. SAFRONOVA & V.N. KHRAMTSOV (2003): Botanical geography of Kazakhstan and Middle Asia (desert region). Komarov Botanical Institute & Institute of Botany, Saint-Petersburg. 424 p. (in Russian and English)
- FAIZOV K.S. (1970): [Soils of Kazakh SSR, issue 13. Soils of Gur'ev Region]. Institute of Soil Sciences, Academy of Sciences of Kazakh SSR, Alma-Ata. 352 p. (in Russian)
- KUVSHINOVA K.V. (1968): [Climate], p. 75–105. In: GERASIMOV I.P. (ed.): [Environmental conditions and natural resources of the USSR. Middle Asia]. Institute of Geography, Academy of Sciences of the USSR, Moscow. 484 p. (in Russian)
- LOGUNOV D.V. (2010): On new central Asian genus and species of wolf spiders (Araneae: Lycosidae) exhibiting a pronounced sexual size dimorphism. – Proceedings of the Zoological Institutes, Russian Academy of Sciences 314: 233–263
- MINASHINA N.G., A.N. ROZANOV & S.A. SHCHUVALOV (1968): [Soils], p. 183–223. In: I.P. GERASIMOV (ed.). [Environmental conditions and natural resources of the USSR. Middle Asia]. Institute of Geography, Academy of Sciences of the USSR, Moscow. 484 p. (in Russian)
- ROEWER C.F. (1955): Katalog der Araneae von 1758 bis 1940, bzw. 1954. Bruxelles. Vol. 2: 1–1751
- ZHIKHAREVA G.A., A.B. KURMANGALIEV & A.A. SOKOLOV (1969): [Soils of Kazakh SSR, issue 12. Soils of Chimkent Area]. Institute of Soil Sciences, Academy of Sciences of Kazakh SSR, Alma-Ata. 411 p. (in Russian)
- ZYUZIN A.A. (1993): Studies on the wolf spiders (Araneae: Lycosidae). I. A new genus and new species from Kazakhstan, with comments on the Lycosinae. – Memoirs of the Queensland Museum 33: 693–700