

Stuttgarter Beiträge zur Naturkunde

Serie A (Biologie)

Herausgeber:

Staatliches Museum für Naturkunde, Rosenstein 1, D-7000 Stuttgart 1

Stuttgarter Beitr. Naturk.	Ser. A	Nr. 496	14 S.	Stuttgart, 15. 6. 1993
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Pseudoscorpions from Middle Asia, Part 2 (Arachnida: Pseudoscorpiones)

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With 39 figures and 1 table

Summary

This second contribution to the pseudoscorpion fauna of Middle Asia treats the families Olpiidae and Garypidae (7 species). New morphological, taxonomic and faunistic data are given.

Zusammenfassung

Dieser zweite Beitrag zur Pseudoskorpion-Fauna Mittelasiens behandelt die Familien Olpiidae und Garypidae (7 Arten). Neue morphologische, taxonomische und faunistische Daten werden mitgeteilt.

Резюме

Это очередная работа по ложноскоorpionам Средней Азии ограничена лишь представителями семейств *Olpiidae* и *Garypidae* (7 видов). Приводятся новые морфологические, таксономические и фаунистические данные.

1. Introduction

The present paper is a second contribution to a revision of the Middle Asian pseudoscorpion fauna, this time restricted to the families Olpiidae and Garypidae (first contribution: DASHDAMIROV & SCHAWALLER 1992). The fauna, particularly of the genera *Minniza*, *Calocheiridius*, *Olpium* and *Serianus*, shows great affinities to the fauna of Iran and Afghanistan. The genus *Serianus* Chamberlin 1930 is recorded for the first time from Middle Asia.

Some identifications are unsecure, revisions of some genera concerned are necessary in the future. Figures and morphological remarks on the type specimens of *Olpium afghanicum* Beier 1952 and *Calocheiridius centralis* (Beier 1952) are added. Besides, material previously determined by REDIKORZEV (1949) as *Olpium pallipes* Lucas 1845 has been restudied, both samples containing in reality three species: *Minniza*

babylonica Beier 1929, *Calocheiridius centralis* Beier 1952 and *Olpium* (?) *pusillulum* Beier 1959. As regards *Olpium pallipes*, its presence in the region involved is doubtful.

Material

The material serving as base of the present paper was collected in various parts of Middle Asia (see map fig. 39) in 1984–1990 by ALIEV, BARKALOV, DASHDAMIROV, KALABIN, OVTCHINNIKOV and TARABAEV. The samples have been shared, as indicated below, between the collections of the Institute of Zoology, Baku (IZB), and Staatliches Museum für Naturkunde, Stuttgart (SMNS). Besides, the REDIKORZEV collection of 1909–1937 housed at the Zoological Institute, St. Petersburg (ZIL), coming from Middle Asia, has been revised. In addition, part of the type and non-type materials from the collections of the Zoologisk Museum, København (ZMUC), and Naturhistorisches Museum, Wien (NHMW) have been restudied. In the text, each locality is followed by the respective number put in square brackets and referring to the numbers in the map (fig. 39).

Acknowledgements

We are very grateful to all the persons whose collections we used, particularly to Dr. V. OVTCHARENKO (ZIL), D. LOGUNOV of the Biological Institute Novosibirsk (BIN), Dr. J. GRUBER (NHMW), and Dr. H. ENGHOFF (ZMUC). We are also extremely indebted to Dr. Y. TARBINSKY and S. ZONSTEIN (Bishkek) for the organisation for one of us (S. D.) of an expedition to Middle Asia in spring of 1990. Dr. S. GOLOVATCH (Moscow) very kindly provided linguistic help. Mrs. S. LEIDENROTH (Stuttgart) helped with the SEM.

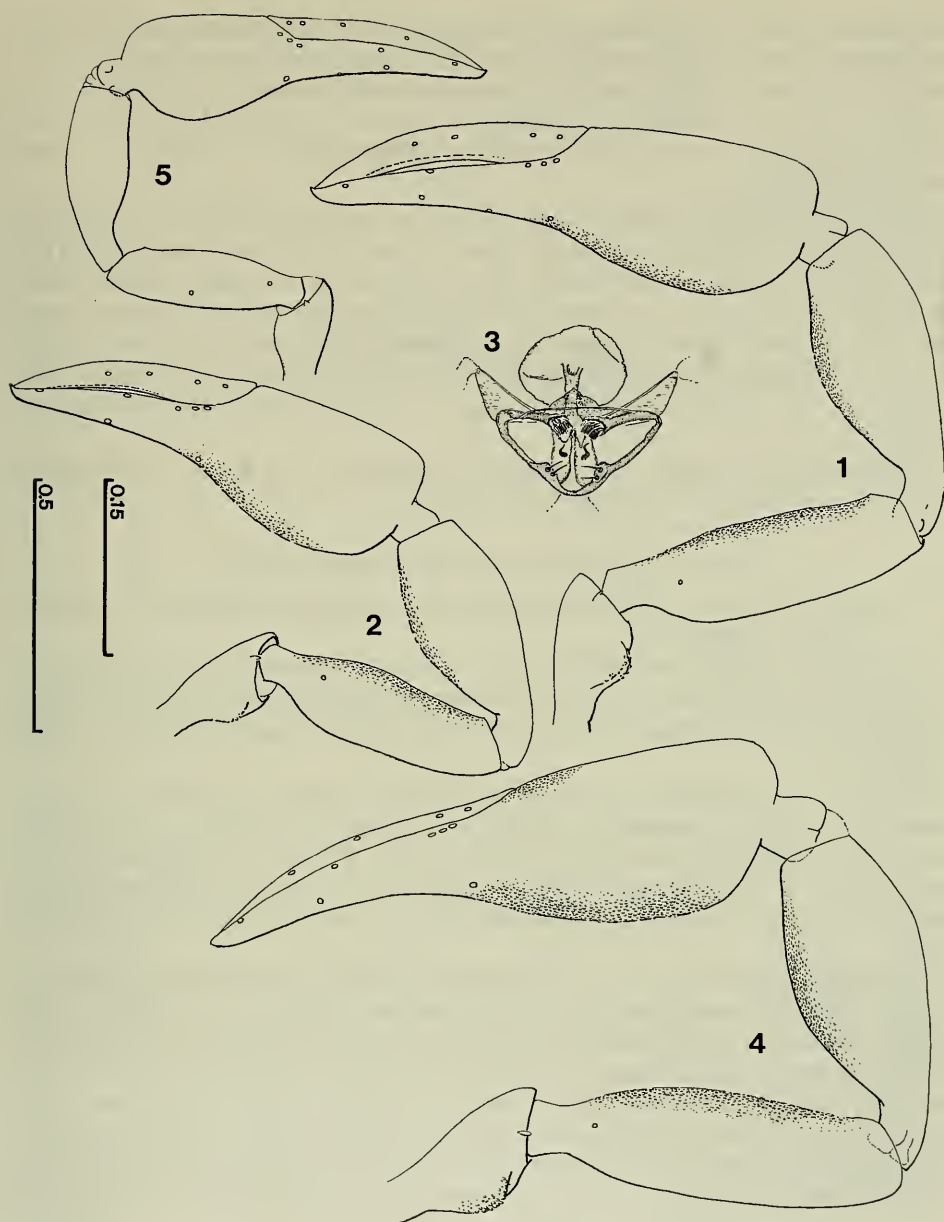
2. The species

2.1. *Minniza babylonica babylonica* Beier 1929 (figs. 1–4)

Material: Turkmenia, Krasnovodsk [1], steppe under stones, 17.–28. V. 1937 leg. VELTISCHEV, 1 ♂ (ZIL 1381a). — Sultan-Bentdam [2], in cracks of wall, 30. X. 1929 leg. PERELESCHINA, 29 ex. (ZIL 987). — Ashkhabad [5], in anthill, 31. V. 1929 leg. VLASOV, 1 ♀ 1 T (ZIL 923). — Ashkhabad [5], in the garden, 30. VI. 1929 leg. VLASOV, 1 ♂ (ZIL 924). — Ashkhabad [5], 28. V. 1931 leg. VLASOV, 1 ♀ (ZIL 1054). — Ashkhabad [5], in anthill of *Myrmococystos seripes*, 4. VI. 1931 leg. VLASOV, 1 T (ZIL 1055). — Ashkhabad [5], hedgehog hole, 23. VII. 1931 leg. VLASOV, 1 ♂ (ZIL 1056). — Old Ashkhabad [5], 14. IV. 1933 leg. PETRISCHEVA, 1 ♂ (ZIL 1207). — Ashkhabad [5], under stones, 30. IX. 1934 leg. VLASOV, 1 ♂ (ZIL 1279). — Bairam-Ali [7], 8.–10. IX. 1907 leg. DEMOKIDOV, 1 ♂ (ZIL 68, slide). — Iolotan [8], 1927 leg. KIZERITSKY, 1 ♀ (ZIL 765). — Iolotan [8], under stones, 1927 leg. KIZERITSKY, 1 ♂ 2 ♀♀ (ZIL 835). — Takhta-Bazar [9], hedgehog hole, 19. VIII. 1933 leg. PETRISCHEVA, 1 ♂ (ZIL 1210). — Takhta-Bazar [9], turtle hole, 21. VIII. 1933 leg. PETRISCHEVA, 1 ♀ (ZIL 1208). — Uzbekistan, Old Bukhara [11], under wall, 21. IV. 1925 leg. SOKOLOV, 1 ♀ (ZIL 496). — Near Bukhara [11], under stones, 25. IV. 1925 leg. DOGEL, 8 ex. (ZIL 491). — Kazakhstan, Poltoratsky [15], 14. IV. 1926 leg. KIZERITSKY, 1 ♂ (ZIL 836).

All this material was determined by REDIKORZEV (1949) as *Olpium pallipes* Lucas 1845. A restudy has revealed it to represent *Minniza babylonica*. The presence of a granulation on the pedipalps, the chelal palm together with the pedicel being shorter than the fingers, the distal position of *it* to *est* are clear enough indications for this species.

However, it is necessary to mention the variability of some morphological structures. The granulation differs strongly between both different populations and within the same population, ranging from slender, hardly visible (♀, near Ashkhabad, ZIL 1054) to clear and turning into tubercles on the outside of the trochanter



Figs. 1–4. *Minniza babylonica*. – 1. Palp, dorsal view, ♂, from Krasnovodsk (ZIL 1381a); – 2. Palp, dorsal view, ♂, from Takhta-Bazar (ZIL 1210); – 3. Genital area, ♂, from Bairam-Ali (ZIL 68); – 4. Palp, dorsal view, ♀, from Bukhara (ZIL 496).

Fig. 5. *Calocheiridius antushi*; palp, dorsal view, ♀, from Firyuza (IZB 183). – Scale line: 0.5 mm (1–2, 4–5); 0.15 mm (3).

(♀, Bukhara, ZIL 496). The size and proportions of the pedipalp joints also varies significantly: femur (length/width in mm) ♂♂ from 0.53/0.16 to 0.65/0.20, ♀♀ from 0.60/0.18 to 0.75/0.23; proportions of the pedipalp femur in ♂♂ 3.05–3.53 x, in ♀♀ 3.15–3.58 x respectively; length of fingers in ♂♂ 0.41–0.49, in ♀♀ 0.44–0.59; length of the chelal palm together with the pedicel in ♂♂ 0.47–0.59 and in ♀♀ 0.52–0.68.

All these data display quite a variation range of the above characters. Probably a lot of synonyms of *Minniza babylonica* Beier 1929 exist, the type material of the following taxa should be restudied in this respect: *M. babylonica lindbergi* Beier 1957, *M. babylonica afghanica* Beier 1959, *M. syriaca* Beier 1951, *M. persica persica* Beier 1951 and *M. persica deminuta* Beier 1951. Eventually, the structure of the ♂ genitalia is a good character for separating biospecies within the genus *Minniza* (fig. 3 for *babylonica*). As regards the material at hand we regard it all as the nominate form *babylonica*.

This species of a Middle East distribution pattern is new to the Middle Asian fauna, known to occur in very dry habitats.

2.2. *Calocheiridius antushi* Krumpal 1984 (fig. 5)

Material: Turkmenia, west Kopetdagh Mts., Firyuza [4], under stones, 27. IV. 1987 leg. KALABIN, 1 ♀ (IZB 183).

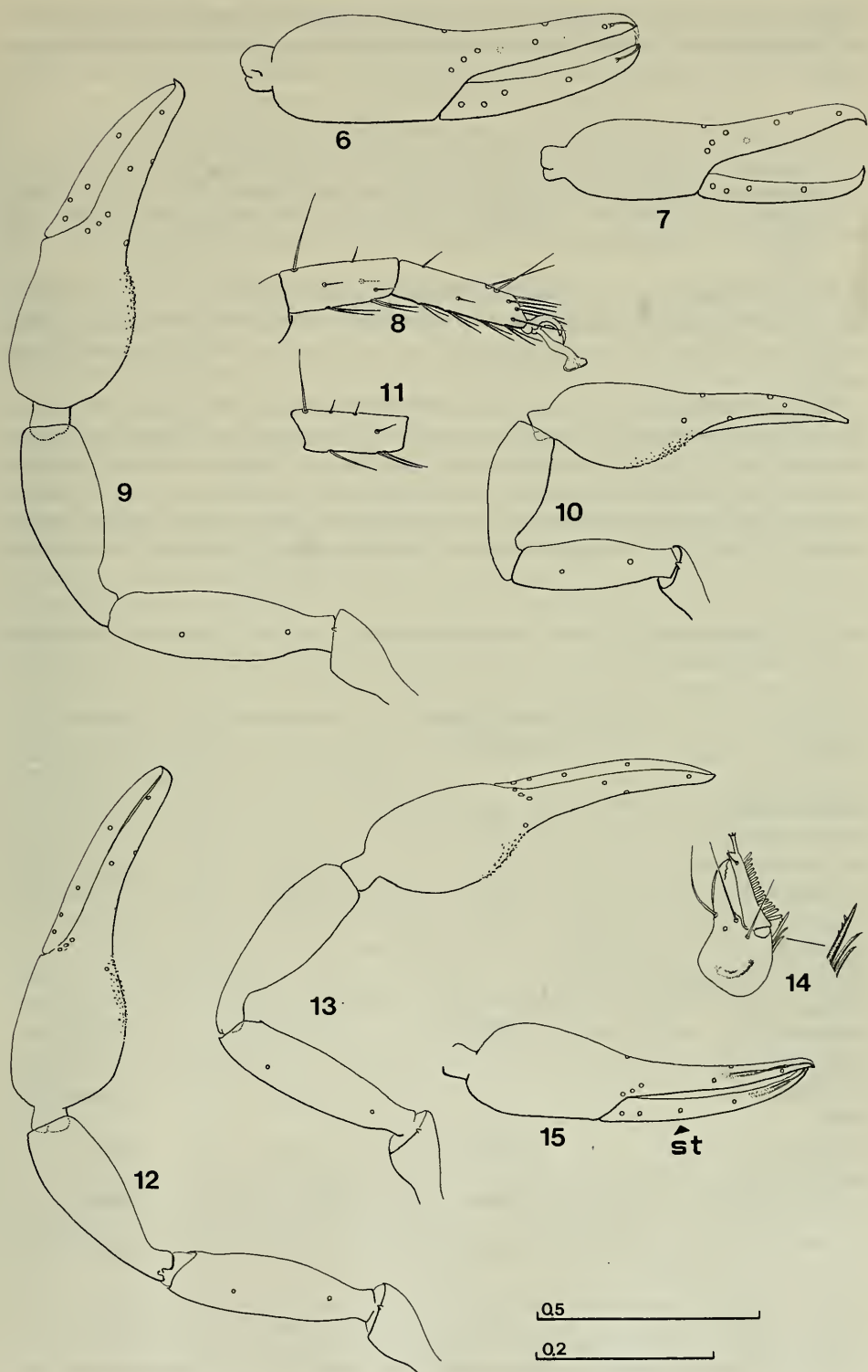
The single ♀ coming from the type locality Firyuza corresponds sufficiently well to the original description. *C. antushi* is distinguished by the slender palps, absence of granulation on the palpal chela, and somewhat distally situated *st* on the movable chelal finger.

However, some characters do not correspond to the genus diagnosis of *Calocheiridius* Beier 1952. For example, the posterior margin of the carapace and the first abdominal tergite bear 4 setae, while *antushi* has only 2 setae. The same concerns the presence of a transverse furrow on the carapace, in *antushi* it is absent. Furthermore, the position of *st* is different. All this broadens the generic diagnosis of *Calocheiridius*.

Material of *C. libanoticus* Beier 1955 examined from Turkey (NHMW) and Israel (SMNS) shows close affinities to the above species: the length of the femur of the palps in *libanoticus* ranges from 0.36 to 0.50 mm, in *antushi* 0.505 mm; the proportion of the femur in *libanoticus* varies from 3.10 to 3.76 x, in *antushi* 4.04 x. These features in the Firyuza ♀ are 0.42 mm and 3.5 x, respectively. As regards the size of the chela it is necessary to mention that the type of *antushi* seems to be mounted on a slide, which is distorting the measurements. In other words, the measurements of the chela were made subdorsally (KRUMPAL 1983: fig. 1). This requires re-examination

Figs. 6–10. *Calocheiridius centralis*. – 6. Chela, lateral view, ♀, from Iolotan (ZIL 1206); – 7. Chela, lateral view, ♂, from Kalininsky State Reserve (IZB 176); – 8. Tarsus of leg-IV, lateral view, ♀, from Takhta-Bazar (ZIL 1209); – 9. Palp, dorsal view, ♀, from Takhta-Bazar (ZIL 1209); – 10. Palp, dorsal view, ♂, from Kalininsky State Reserve (IZB 176).

Figs. 11–15. *Olpium* (?)*pusillum*, from Krasnovodsk (ZIL 1282). – 11. Basitarsus of leg-IV, lateral view, ♂; – 12. Palp, dorsal view, ♀; – 13. Palp, dorsal view, ♂; – 14. Chelicera, dorsal view, ♂; – 15. Chela, lateral view, ♂. – Scale line: 0.5 mm (6–7, 9–10, 12–13, 15); 0.2 mm (8, 11, 14).



of the *antushi* type. Taking into consideration the repeated discoveries of *libanoticus* in Turkey and the Caucasus, we may suppose a synonymy of these two species concerned. Further material of *antushi* in Middle Asia is listed by SCHAWALLER (1989).

2.3. *Calocheiridius centralis* (Beier 1952) (figs. 6–10)

Material: Turkmenia, Ashkhabad [5], in hole of *Rhombomys opimus*, 26. IV. 1929 leg. VLASOV, 1 ♀ (ZIL 920). — Takhta-Bazar [9], hedgehog hole, 20. VIII. 1933 leg. PETRISCHEVA, 1 ♀ (ZIL 1209). — Iolotan [8], turtle hole, 30. IV. 1933 leg. PETRISCHEVA, 1 ♀ (ZIL 1206). — Kalinin State Reserve [6], meadow, 23. V. 1988 leg. BARKALOV, 1 ♂ (IZB 176).

This species has been described from Afghanistan, afterwards found in Iran (BEIER 1971). Characterized by the presence of granulation on the chela, the fingers being longer than the chelal palm without pedicel, as well as by size and the proportions of the palp.

The present material has been compared with samples of that species from Iran and Afghanistan (NHMW) as well as with the type specimen ♀ (ZMUC). This has revealed that the Middle Asian discoveries are closer to Afghanian rather than Iranian materials, in particular to those from Maymenei. However, the Iranian sample possesses plumper palps (fingers shorter than chelal palm without pedicel), lesser number of teeth on the fingers of the chela, and a proximal position of *ist*. As in the

Tab. 1. Comparison of „*Olpium*“ species from Middle Asia with the genera *Olpium* and *Calocheiridius*.

Character	Middle Asian specimes	<i>Calocheiridius</i>	<i>Olpium</i>
Chaetotaxy of the posterior margin of the carapace	2	4	2
Transverse furrow on the carapace	absent	present	absent
Chaetotaxy of the first tergite	2	4	2
Correlation between telotarsus and basitarsus IV	telotarsus > basitarsus	telotarsus > basitarsus	basitarsus ≥ telotarsus
Trichobothria on the femur of the palps	present	present	present
Position of <i>ib</i>	subbasal	basal	distal
Position of <i>it</i> in relation to <i>est</i>	distal	same level	distal
Position of <i>st</i> on the movable finger	mostly proximal	proximal	distal
Position of the nodus ramosus in relation to <i>et</i>	distal	distal	proximal

preceding species *antushi*, both the posterior margin of the carapace and of the first tergite have only two setae, which differs from other members of the genus.

2.4. *Olpium* (?) *pusillulum* Beier 1959 (figs. 11–15)

Material: Turkmenia, Krasnovodsk [1], steppe under stones, 17.–28. V. 1937 leg. VELTISCHEV, 2 ♂♂, 2 ♀♀ 1 T 2 D (ZIL 1381b). — Krasnovodsk [1], under stones, 23.–31. V. 1937 leg. VELTISCHEV, 12 ♂♂, 8 ♀♀ (ZIL 1380). — Krasnovodsk [1], 7. VI. 1937 leg. VELTISCHEV, 5 ♂♂, 1 ♀ (ZIL 1382). — Uzbekistan, Bukhara Distr., Zafarabad [10], under stones, 10.–12. IV. 1990 leg. DASHDAMIROV, 2 ♂♂ (IZB 226), 1 ♂ (SMNS 3046).

Four species have hitherto been described from Afghanistan in *Olpium* L. Koch 1873: *afghanicum* Beier 1952, *intermedium* Beier 1959, *lindbergi* Beier 1959 and *pusillulum* Beier 1959.

The studied material from ZIL and our three ♂♂ from Zafarabad have revealed particularly close affinities with *pusillulum*, which could be easily distinguished from other congeners by the presence of only two setae on the posterior margin of the carapace and first tergite, by the slender femur and chela (femur 4.1 x, chela with pedicel 3.7–3.9 x as long as broad), small size and proximal position of *st* on the movable finger of the chela. At the same time, these findings show that the generic allocation is doubtful. The type material of *afghanicum* (1 ♂, 1 ♀ ZMUC) appears in reality to represent a genus different from *Olpium*. For example, in *afghanicum*, the nodus ramosus is distal of *et*, the telotarsus is longer than the basitarsus, the first tergite and posterior margin of the carapace has 4 setae, whereas in *Olpium* these characters are as follows: the nodus ramosus is proximal of *et*, the basitarsus is longer than the telotarsus, the first tergite and posterior margin of the carapace carry only 2 setae. Apparently, by a number of the features, these samples are closer to *Calocheiridius*, though differ from this genus by the distal position of *it* and by the absence of a transverse furrow on the carapace.

As mentioned above, upon a re-examination of quite a number of species of *Calocheiridius* (type and non-type material from NHMW, SMNS, ZMUC), the diagnosis of this genus is rather typological, almost all specific characters being more or less variable. Almost all our discoveries from Central Asia (with Afghanistan and Iran) fall somewhat between *Olpium* and *Calocheiridius*, this being obvious from tab. 1.

As regards the chaetotaxy of the basitarsus IV as given by HEURTAULT (1979, 1980) for differentiating the genera of Olpiidae we do not regard this as a reliable character. To sum up, it is apparently necessary to degrade *Calocheiridius* to a subgenus of *Olpium*. Otherwise, a new genus situated between *Olpium* and *Calocheiridius* might be created, which we refrain from doing in view of its very problematic diagnosis.

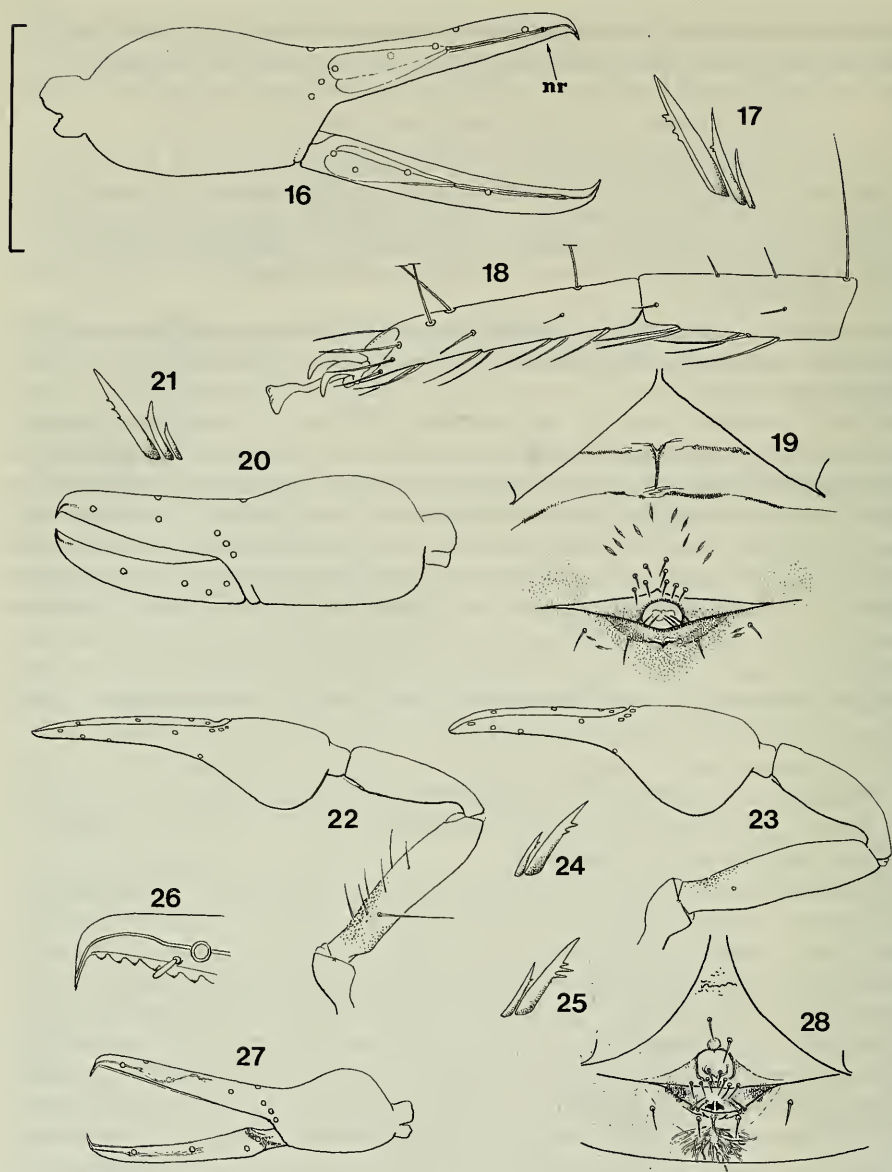
2.5. Olpiidae spec.

Material: Uzbekistan, Fergansky Valley, Shahrikhan [21] (formerly Stalino), 40 km E Tashkent, non-cultivated field, 29. VI. 1926 leg. KIKYANOVA, 1 T (ZIL 830).

By this single tritonymph, it is impossible to make a closer identification.

2.6. *Calocheirus asiaticus* Dashdamirov 1991 (figs. 22–28)

Material: Tadjikistan, Gandjina [14], 800 m, under stones, 19. IV. 1990 leg. DASHDAMIROV, 1 ♂, 1 ♀ (IZB 228), 1 ♂ (SMNS 3047). — Dangara Distr., Sibeston [22],



Figs. 16–19. *Olpium* (?) *afghanicum*, types from Kajkai (ZMUC). – 16. Chela, lateral view, ♀; – 17. Flagellum, ♀; – 18. Tarsus of leg-IV, ♂, lateral view; – 19. Genital area, ♂.

Figs. 20–21. *Calocheiridius centralis*; holotype, ♀, from Paghman (ZMUC); – 20. Chela, lateral view; – 21. Flagellum.

Figs. 22–28. *Calocheiridius asiaticus*. – 22. Palp, dorsal view, ♂, from Gandjina (SMNS 3047); – 23. Palp, dorsal view, ♀, from Sibeston (IZB 250); – 24. Flagellum, ♂, from Sibeston (IZB 250); – 25. Flagellum, ♀, from Gandjina (IZB 228); – 26. Tip of fixed finger of the chela, ♂, from Gandjina (SMNS 3047); – 27. Chela, lateral view, ♂, from Gandjina (SMNS 3047); – 28. Genital area, ♂, from Sibeston (IZB 250). – Scale line: 0.5 mm (16, 20, 22–23, 27); 0.09 mm (17, 21, 24–26); 0.18 mm (18–19, 28).

Kolkot, near Nurek water reserve, 1450 m, under stones, 2. V. 1990 leg. DASHDAMIROV, 1 ♂, 1 ♀ (IZB 250), 1 ♀ (SMNS 3048).

This new material is in complete accordance with the original description (♀ from Kazakhstan). In our collection, the first ♂♂ are put on record, therefore a short description of one ♂ from Gandjina is given.

Description ♂: Carapace yellowish-brown, 1.32 x as long as broad. Cucullus well-developed and having a median depression, surface of carapace smooth, both pairs of eyes well-developed. Tergal chaetotaxy: 2-4-4-4-4-4-4-6(4+2) tactile setae)-8(4+4)-6(2+4). Sternal chaetotaxy: x-2-4-5-4-4-4-4-6(4+2)-4(2+2). Pedipalp trochanter 1.8 x as long as broad. Pedipalp femur in basal part with granulation, on dorsal side with one tactile seta (TS = 0.54) and on internal side with two rows of long setae, 4.6 x as long as broad. Pedipalp tibia 3.2 x, chela with pedicel 3.79x and chelal palm with pedicel 1.53 x as long as broad. Fixed finger of the palpal chela with 34, movable finger with 21 teeth. Nodus ramosus distal of both *it* and *t*. Position of *est* proximal, close to *ib-isb-eb-esb* combined. Genital area fig. 28.

Measurements (in mm): Carapace 0.41/0.31. Pedipalp trochanter 0.18/0.10, pedipalp femur 0.46/0.10, pedipalp tibia 0.32/0.10, pedipalp chela with pedicel 0.72/0.19, length of chelal palm with pedicel 0.29, length of palpal finger 0.46.

Relationships: As seen from the original description and the above description of the ♂, this species is strongly isolated from *atopus* Chamberlin 1930 from Egypt and can be distinguished by the position of both seta *est* and the seta on the palpal femur, distal position of the nodus ramosus, structure of the flagellum, and absence of granulation on the anterior part of the carapace. Besides, in most of its characters, *asiaticus* might be related to the genus *Cardioliptium* Mahnert 1986, but in our samples, the flagellum consists of only 2 setae, whereas in *Cardioliptium* of 3 setae! This seem to us a very important character, but one may suppose, that either *stupidum* Beier 1963, generotype of *Cardioliptium*, bears an anomalous flagellum or the genus diagnosis is wrong. The taxon *asiaticus* is anyway different from both *stupidum* and *aeginense*, as judged from the presence of granulation on the palpal femur, size, and by some other characters.

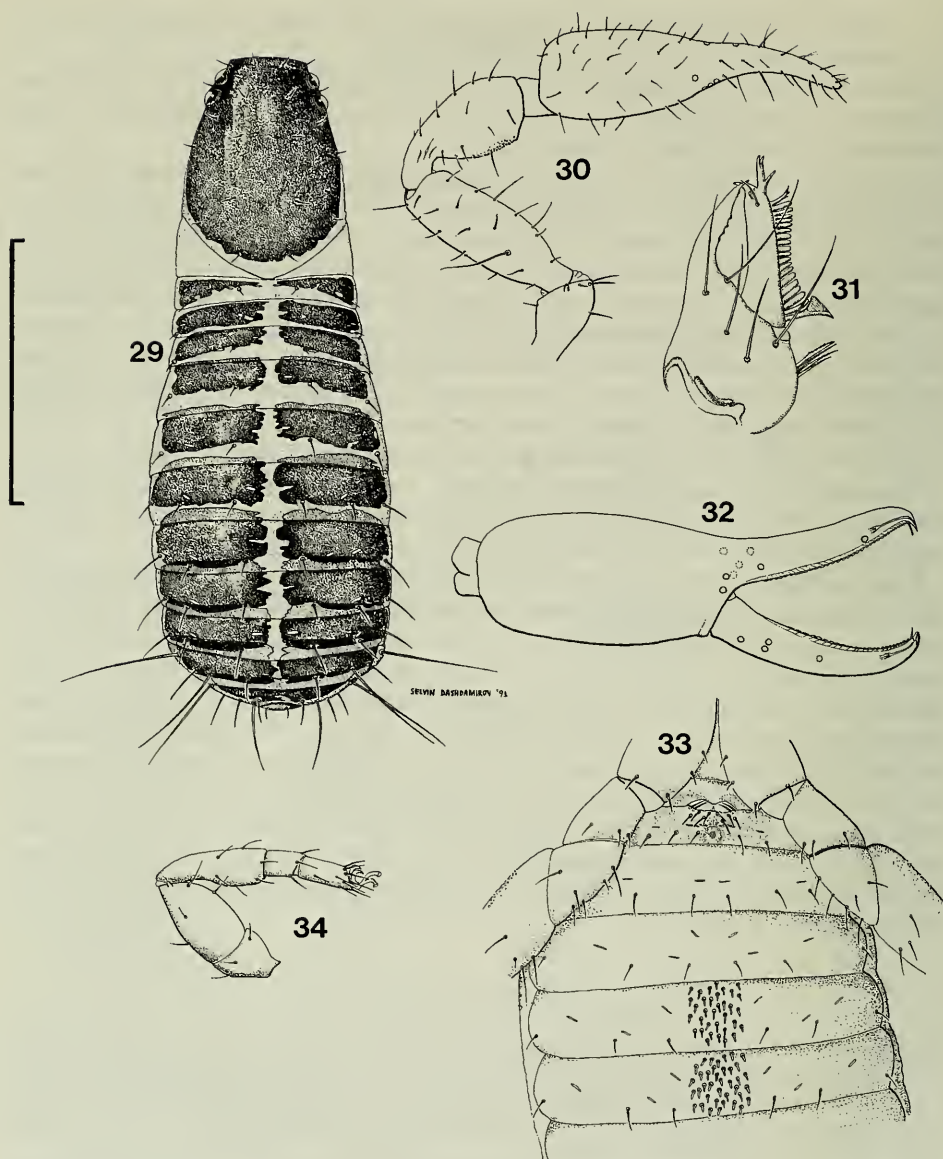
2.7. *Serianus validus* (Beier 1971) (figs. 29–37)

Material: Tadjikistan, Gandjina [14], 800 m, under bark of *Pistacia vera*, 19. IV. 1990 leg. ALIEV & DASHDAMIROV, 5 ♂♂, 13 ♀♀ 1 T 1 D (IZB 224), 3 ♂♂, 4 ♀♀ (SMNS 3049). — Uzbekistan, Surkhandarya Distr., Babatag Mts. [13], Kokbel Pass, 1430 m, under bark of *Pistacia vera*, 5. V. 1990 leg. DASHDAMIROV, 2 ♂♂, 3 ♀♀ 1 D (IZB 225), 1 ♂, 2 ♀♀ (SMNS 3050).

A study of both series has revealed an absolute identity with the species previously known as *Garypinus validus* Beier 1971, described from South Iran (Bender-Abbas). But the presence of special fields with shorter setae on the ♂ abdominal sternites VI–VII, characteristic position of *sb* and *st* on the same level as well as the presence of a bifurcated arolium of the tarsi and the flagellum consisting of 4 blades clearly indicate, that the species belongs to *Serianus*. The same opinion was recently published by MAHNERT (1991).

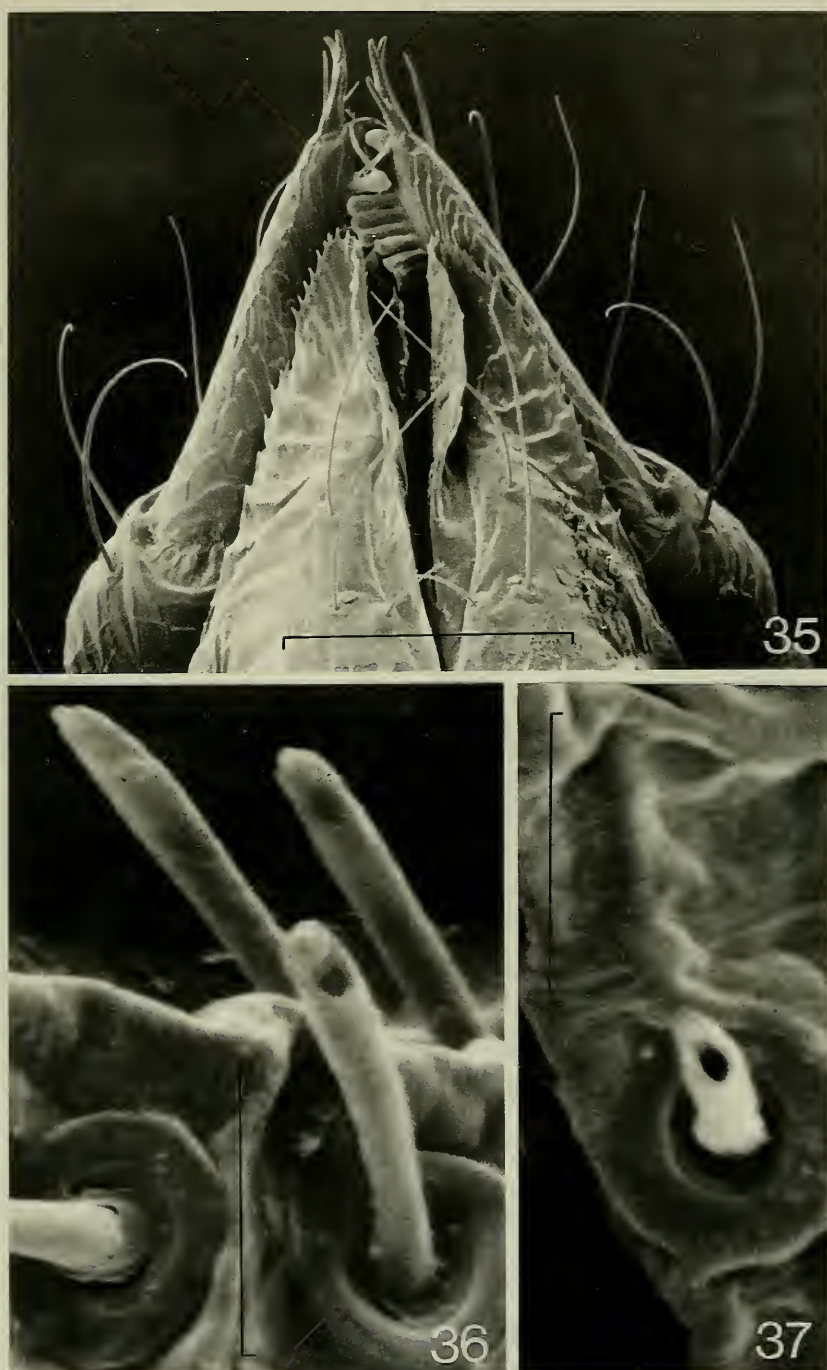
Among the new discoveries of this species, ♂♂ are present, thus we can give a description of the ♂♂ from Gandjina.

Description ♂: Carapace and tergites reddish-brown, pedipalps reddish, remaining parts lighter. Posterior margin of carapace and medial margins of half-tergites



Figs. 29–34. *Serianus validus*; ♂, from Gandjina (IZB 224). – 29. Body, dorsal view; – 30. Palp, dorsal view; – 31. Chelicera, dorsal view; – 32. Chela, lateral view; – 33. Abdomen, ventral view; – 34. Leg-I, lateral view. – Scale line: 1.0 mm (29–30); 0.36 mm (31); 0.74 mm (32–34).

uneven (zig-zag-like), posterior margin of carapace y-shaped. Sclerotized part of carapace 1.32 x as long as wide, cucullus short and broad. All four eyes well-developed, posterior pair a little larger. Carapace chaetotaxy: 4-6-4-2-4. Tergites I–X clearly divided, XI undivided, first pair of half-tergites triangular. Tergal chaetotaxy: 4-4-4-4-4-6-6-6-6-8(4+4 tactile setae)-8(4+4). Sternal chaetotaxy: x-x-6-6-6-6-6-6-6-10(6+4)-8(4+4). Sternite VI medial with 34 short setae, VII with 38, these



Figs. 35–37. *Serianus validus*; ♂, from Gandjina (SMNS 3049). – 35. Chelicerae, ventral view (scale: 0.1 mm); – 36–37. Setae of sternite VI/VII with distal openings (0.01 mm).

setae with distal opening (figs. 36–37). Anal cone with 2 dorsal and ventral setae. Pleural membrane smooth. Genital area fig. 33. Palm of chelicera with 5 setae, movable finger with 1 seta. Galea well-developed, with one subterminal and two short terminal branches. Serrula with 21 lamellae. Flagellum with 4 blades, distal blade serrate. Apex of pedipalp coxa with 3 long setae, palpal coxa with 6, coxa I with 4, coxa II with 5, coxa III with 4 and coxa IV with 4 setae. Pedipalp trochanter 1.67 x as long as wide. Pedipalp femur with a long seta dorsally ($TS = 0.45$), 2.8 x as long as wide. Chelal palm with pedicel 2.03 x, without pedicel 1.71 x as long as wide, pedipalp chela 3.59 x as long as wide. Fixed finger with 34 teeth, movable finger with about 25 teeth. Venomous tooth well-developed in both fingers, venom ducts short, nodus ramosus more distally than *et*. Position of the trichobothria characteristic of the genus, *ib-isb-ist-it-eb-esb-est* clustered at base of fixed finger, *et* solitary in position at tip of the finger, *sb* on the same level as *st*. Leg I: femur 2.69, tibia 3.2, basi-



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Fig. 38. *Geogarypus continentalis*; ♂, from Chon-Uryuktu (IZB 227). — Scale line: 1.0 mm.

tarsus 1.57, telotarsus 2.33 x as long as broad. Leg IV: femur (basifemur + telofemur) 2.69, tibia 2.73, basitarsus 1.44, telotarsus 2.25 x as long as broad.

Measurements (in mm): Carapace 0.78/0.59. Palps: femur 0.70/0.25, tibia 0.63/0.28, chelal palm with pedicel 0.69/0.34, length of chela (including pedicel) 1.22, length of finger 0.60. Leg I: femur (basi- + telo-) 0.43/0.16, tibia 0.32/0.10, basitarsus 0.11/0.07, telotarsus 0.14/0.06. Leg IV: femur (basi- + telo-) 0.70/0.26, tibia 0.41/0.15, basitarsus 0.13/0.09, telotarsus 0.18/0.08.

Relationships: This species is very closely related to *S. sahariensis* Mahnert 1988 from Algeria. *S. validus* can be distinguished from *sahariensis* only in the presence of both the hardly visible granulation on the ventral surface of the tibia and the lamella of serrula externa (21), while in *sahariensis* they are 17–20. All this considerably questions the status of *sahariensis*, probably we face only a single species.

Besides, *Garypinus biimpressus* (Simon 1890) seems to be very close to the above species. But its generic allocation is likewise doubtful. Most likely, *biimpressus* also belong to *Serianus*, judged from both the presence of fields with special setae on the ♂ sternites and probably the position of the trichobothria. The *Serianus*-*Garypinus* problem is discussed also by MAHNERT (1988).



Fig. 39.

Collecting localities of pseudoscorpions in Middle Asia. — 1. Krasnovodsk (*Minniza babylonica*, *Olpium* (?)*pusillulum*); — 2. Sultan-Bent (*M. babylonica*); — 3. Bakhardenä (*M. babylonica*); — 4. Firyuza (*Calocheiridius antushi*); — 5. Ashkhabad (*M. babylonica*, *Calocheiridius centralis*); — 6. Kalininsky State Reserve (*C. centralis*); — 7. Bairam-Ali (*M. babylonica*); — 8. Iolotan (*M. babylonica*); — 9. Takhta-Bazar (*M. babylonica*, *C. centralis*); — 10. Zafarabad (*O. (?)pusillulum*); — 11. Bukhara (*M. babylonica*); — 12. Termez (*M. babylonica*); — 13. Babatag (*Serianus validus*); — 14. Gandjina (*S. validus*, *Calocheirus asiaticus*); — 15. Poltoratsky (*M. babylonica*); — 16. Cholok (*Geogarypus continentalis*); — 17. Chon-Aryk (*G. continentalis*); — 18. Georgievka (*G. continentalis*); — 19. Kurtinsky Reservoir (*G. continentalis*); — 20. Chon-Uryukty (*G. continentalis*); — 21. Shahrikhan (*Olpiidae* spec.); — 22. Sibeston (*Calocheirus asiaticus*).

2.8. *Geogarypus continentalis* (Redikorzev 1934) (fig. 38)

Material: Kazakhstan, Djambul Distr., Georgievka [18], 25. X. 1984 leg. OVTCHINNIKOV, 3 ♂♂, 3 ♀♀ (IZB 169). — Alma-Ata Distr., Kurtinsky reservoir [19], under stones, 4. V. 1988 leg. TARABAEV, 1 ♂, 1 ♀ (IZB 171). — Kirghizia, Kirghizsky Mts., Cholok [16], 1000 m, 1. VII. 1985 leg. OVTCHINNIKOV, 1 ♂ (IZB 168). — Chuisky Valley, Chon-Aryk [17], 1. III. 1986 leg. OVTCHINNIKOV, 2 ♂♂, 1 ♀ (IZB 195). — Kungey-Alatau Mts., Chon-Uryukty [20], near Issyk-Kul Lake, 2500–3000 m, under stones, 22. V. 1990 leg. DASHDAMIROV, 1 ♂, 5 ♀♀ 2 T (IZB 227), 1 ♂, 3 ♀♀ (SMNS 3051).

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Zeitschrift/Journal: [Stuttgarter Beiträge Naturkunde Serie A \[Biologie\]](#)

Jahr/Year: 1993

Band/Volume: [496_A](#)

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Artikel/Article: [Pseudoscorpions from Middle Asia, Part 2 \(Arachnida: Pseudoscorpiones\) 1-14](#)