

Stuttgarter Beiträge zur Naturkunde

Serie A (Biologie)

Herausgeber:

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

Stuttgarter Beitr. Naturk.	Ser. A	Nr. 474	18 S.	Stuttgart, 30. 6. 1992
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Pseudoscorpions from Middle Asia, Part 1 (Arachnida: Pseudoscorpiones)

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With 66 figures

Summary

New collections containing 12 species of pseudoscorpions (Chthoniidae and Neobisiidae) from different regions of Middle Asia are dealt with. **New species:** *Chthonius* (S.) *tadzhikistanicus* n. sp. (Tadjikistan), – *Bisetocreagris nuratiensis* n. sp. (Uzbekistan). **New synonyms and combination:** *Neobisium improvisum* Redikorzev 1949 = *Neobisium carcinoides* (Hermann 1804), – *Neobisium zhiltzovae* Čurčić 1984 = *Neobisium validum* (L. Koch 1873), – *Bisetocreagris phoebe* Čurčić 1985 = *Bisetocreagris kaznakovi* (Redikorzev 1918), – *Bisetocreagris latona* (Čurčić 1985) n. comb.

Zusammenfassung

Neue Aufsammlungen von 12 Pseudoskorpion-Arten (Chthoniidae und Neobisiidae) aus verschiedenen Gebieten Mittelasiens werden behandelt. Hinsichtlich neuer Arten, neuer Synonyme und neuer Kombination siehe „Summary“.

Резюме

В статье представлены результаты обработки новых сборов ложноскопционов из Средней Азии. Большая часть материала приурочена, в основном, к горным районам исследуемого региона. Помимо данного материала в ходе работы над статьей использованы результаты исследований ряда музейных коллекций для уточнения систематического положения отдельных видов. Ряд видов идентифицировать не удалось из-за ограниченного количества материала, поэтому необходимы новые сборы, желательно половозрелых особей.

1. Introduction

The present study provides new systematic and faunistic data on 12 Middle Asian, mainly mountain-dwelling pseudoscorpion species and is restricted to the families Chthoniidae and Neobisiidae. Other families will be treated later. Besides, type material previously described from this area and adjacent regions was restudied.

Some identifications remain insecure or impossible before revisions of the genera concerned are made or newly collected specimens are available.

We provide many drawings for this study (all made by S. D.) to make both the necessary verbal comments as short as possible and the future work on Middle Asian pseudoscorpions easier.

Material

The material for this study is collected in various parts of Middle Asia (see map fig. 66) in 1982–1990 by ALIEV, BARKALOV, DASHDAMIROV, KALABIN, MURATOV, OVTCHINNIKOV, TARABAEV, ZONSTEIN and ZORKIN and has been shared between the collections of the Biological Institute Novosibirsk (BIN), Institute of Zoology Baku (IZB) and Staatliches Museum für Naturkunde Stuttgart (SMNS). Besides this, some Middle Asian materials from the collections of the Zoological Institute St. Petersburg (ZIL) and the Zoological Museum Moscow (ZMMU) have been revised. In the text, each locality is followed by the respective number put in square brackets and referring to the numbers in the map (fig. 66).

Acknowledgements

We are very grateful to all the persons whose collections we used, particularly to Mr. D. LOGUNOV (BIN), Mr. K. MIKHAILOV (ZMMU) and Dr. V. OVTSHARENKO (ZIL). Besides, we are indebted to Dr. Y. TARBINSKY and Mr. S. ZONSTEIN for the organization for one of us (S. D.) of an expedition to some parts of Middle Asia in spring 1990.

2. The species

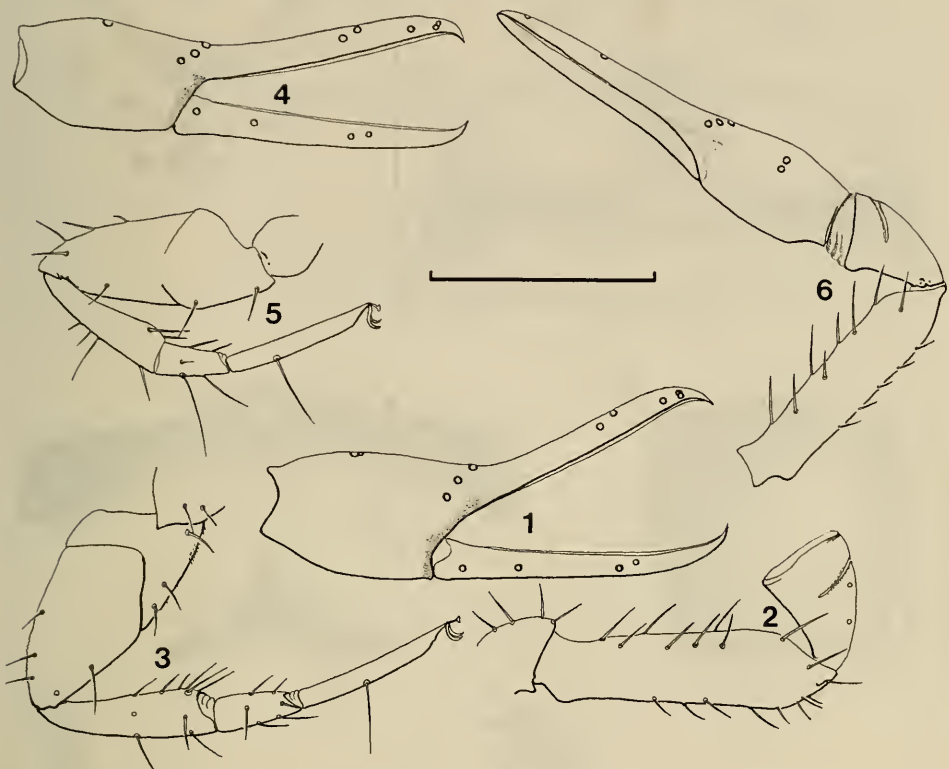
2.1. *Chthonius* (C.) *shelkovnikovi* Redikorzev 1931 (figs. 1–3, 22–24, 26–28)

Material: Turkmenia, Central Kopetdagh Mts., Firyuza [1], forest-strip along the road (*Platanus orientalis*), 26. IV. 1987 leg. KALABIN, 2 ex. (IZB 174). – Turkmenia, Kopetdagh Mts., Kalininsky reserve [5], meadow, 23. V. 1988 leg. BARKALOV, 1 ♂ 1 T (IZB 177). – Turkmenia, Central Kopetdagh Mts., Firyuza [1], forest-strip along road (*Pinus, Rubus*), 27. IV. 1987 leg. KALABIN, 2 ♂♂ 1 D (IZB 182), 1 ♂ 1 D (BIN), 1 ♂ (SMNS 2850).

This small series is the first record within Turkmenia. Until now this species has been known only from Asia Minor, the Caucasus reaching in the east to the Talysh mountains in Azerbaijan (SCHAWALLER & DASHDAMIROV 1988), and from Iran (MAHNERT 1974 sub *tauricus* Beier 1963).

We have compared material from Kopetdagh with that from the Caucasus. In particular, it has been established that the epistome in the individuals from both populations is different. In the Caucasian populations only the epistome is dentated, whereas in Kopetdagh specimens not only the epistome but also the adjoining parts of the anterior margin of the carapace are dentate. Differences have also been established in the structure of the male genital area. In representatives of the Kopetdagh population, the number of setae on the sternites adjoining the genital area is less than in ♂♂ from the Caucasus. In the latter, the number of setae along each side of the notch is fixed (6) and they form two groups, whilst in specimens from Kopetdagh the setae range from 4–7 and are irregularly arranged. It seems to be premature to say how far the above mentioned characters are specific or not. As to the other characters (the sizes and proportions of the pedipalp segments, the number of teeth on the chela, chaetotaxie of both carapace and tergites, and others) no particular differences have been found.

As a rule, *C. shelkovnikovi* occurs in comparatively dry habitats, under stones, in the litter in the upper soil horizon. As regards the altitudinal distribution, records from an altitude of up to 2200 m are known.



Figs. 1–3. *Chthonius shelkovnikovi*, IZB 174, from Firyuza. — 1. Chela, lateral view; — 2. Pedipalpal trochanter, femur and tibia, dorsal view; — 3. Leg IV. — Scale line: 0.3 mm.

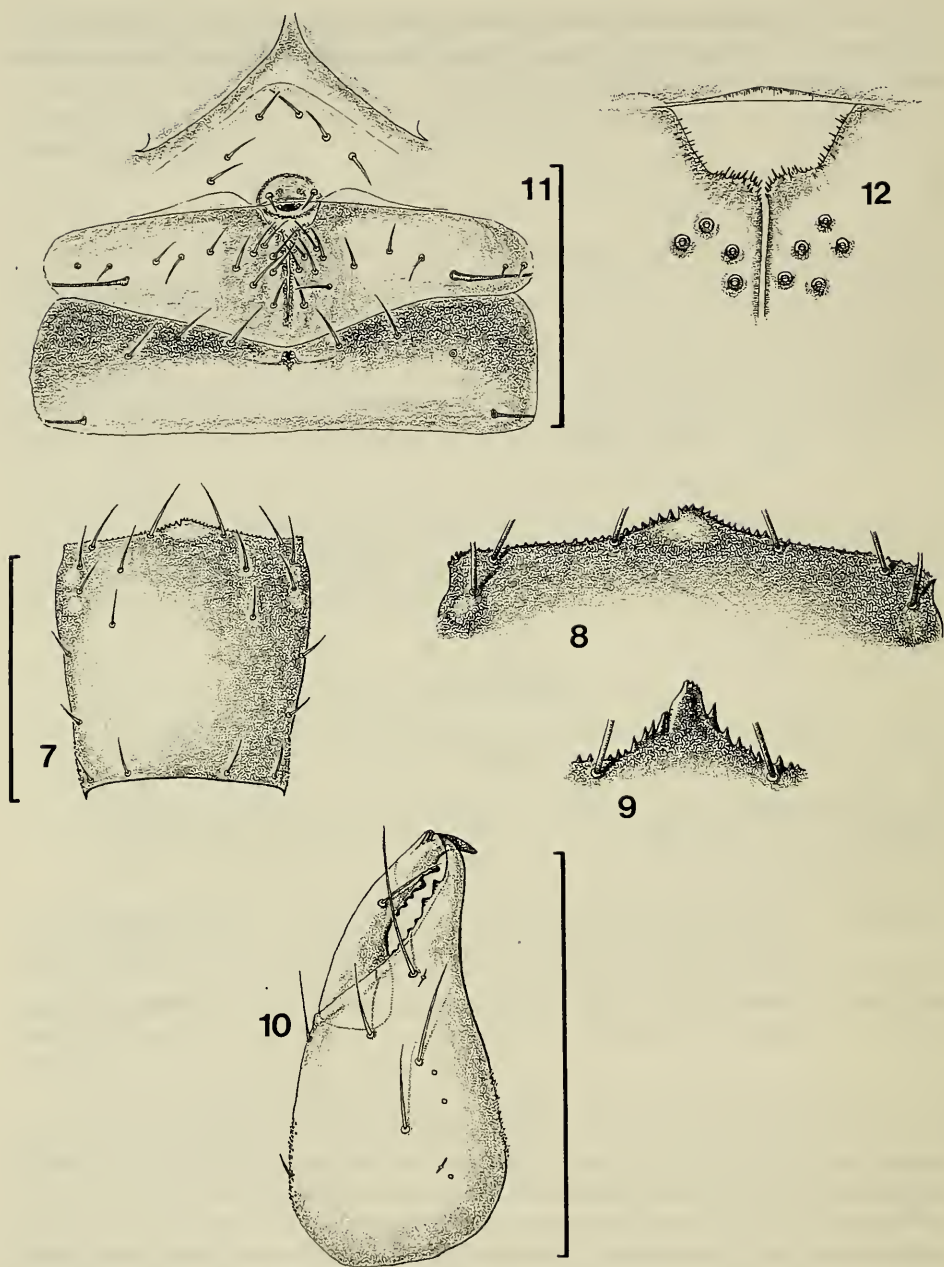
Figs. 4–6. *Chthonius* spec., IZB 210, from Nuratinsky Reserve. — 4. Chela, ♀, lateral view; — 5. Leg IV, ♂; — 6. Pedipalp, ♂, dorsal view. — Scale line: 0.3 mm.

2.2. *Chthonius* (*C.*) *tadzhikistanicus* n. sp. (figs. 7–19)

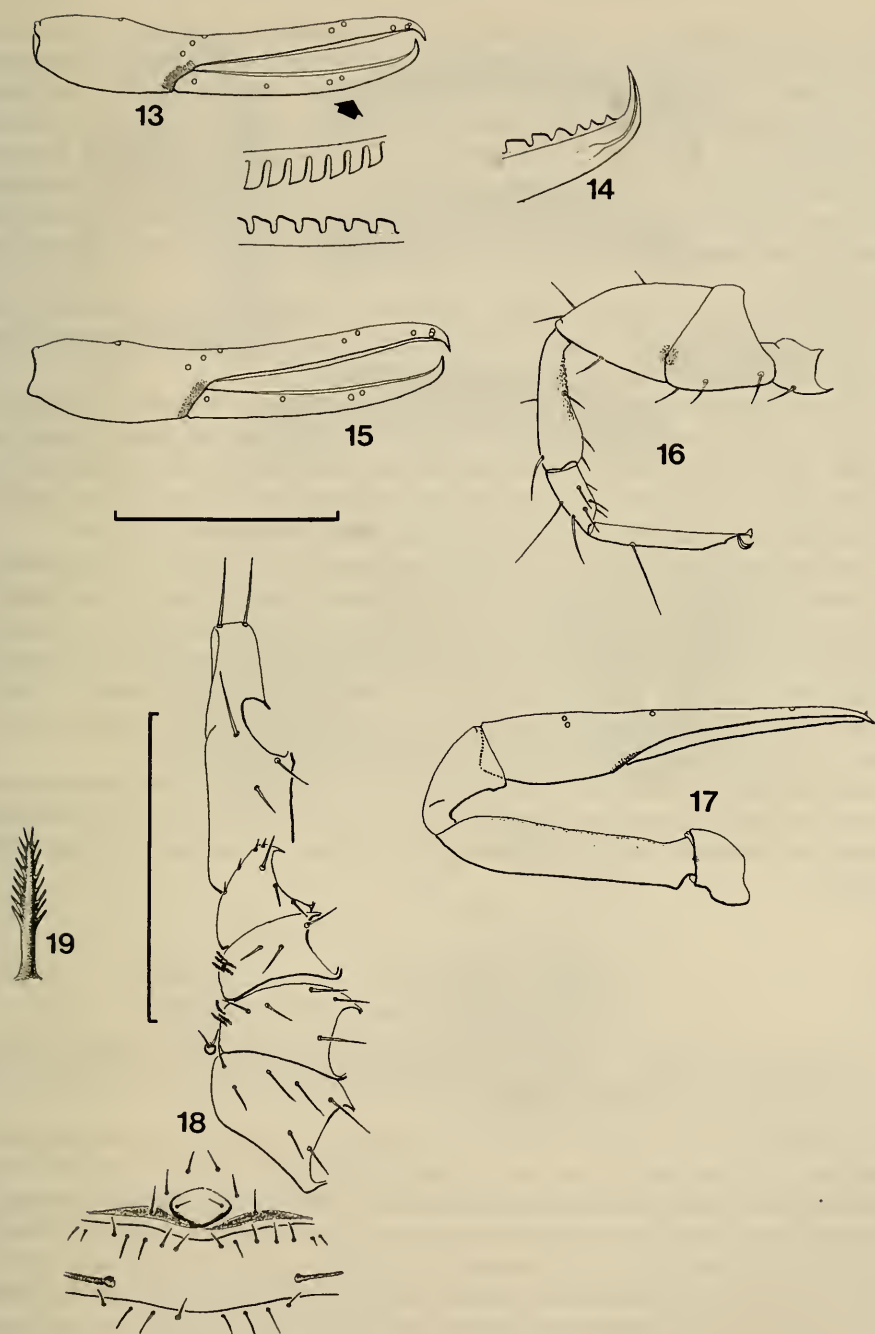
Holotype: ♂ (IZB 212), Tadzhikistan, Dangara Distr., Sibeston [10], Kolkot, near Nurek reservoir, 1450–1550 m, under stones, 3. V. 1990 leg. DASHDAMIROV.

Paratype: 1 ♀ (IZB 212), with holotype.

Description of ♂ holotype: Carapace (fig. 7) broader than long, with feebly marked small eyes. Epistome (fig. 8) well-developed and dentate. Anterior margin of carapace rather irregularly dentate, lateral margin with minute denticles. Carapace with 4-4, 20 setae. Chelicera large, with minute denticles in basal part, on dorsal side with 6 setae, chaetotaxy and dentation as shown in fig. 10. Besides, well visible pores on dorsal side. Movable finger only with 1 seta, galea present as tubercle. Flagellum with 10 blades, characteristic of the genus. Serrula exterior with 14 blades. Abdomen oval, surface of tergites smooth, tergal chaetotaxy 4-4-4-4-6-6-6-6-6-8. Sternal chaetotaxy x-x-6-10-8-8-8-6-7-6. Genital area as shown in fig. 11–12. Pedipalp



Figs. 7–12. *Chthonius tadzhikistanicus* n. sp., holotype and paratype (9), IZB 212, from Sibeston. — 7. Carapace; — 8. Anterior carapacal region; — 9. Epistome; — 10. Chelicera, dorsal view; — 11. Genital area; — 12. Ventral aspect of male genitalia. — Scale lines: 0.3 mm (7), 0.5 mm (8–10), 0.1 mm (11).



Figs. 13–19. *Chthonius tadzhikistanicus* n. sp., holotype (13–14, 16–17) and paratype (15, 18–19), IZB 212, from Sibeston. — 13. Chela, lateral view; — 14. Tip of movable finger of chela; — 15. Chela, lateral view; — 16. Leg IV; — 17. Pedipalp, dorsal view; — 18. Coxal areas and genital area in the female; — 19. Coxal spines. — Scale lines: 0.3 mm.

(figs. 13–15, 17): femur on medial side gently shagreened, 4.5x, tibia 1.89x, chela 5.4x and hand 1.8x longer than broad. Fixed finger of chela with 73 and movable one with 56 teeth. Trichobothriotaxy as in figs. 13 and 15, characteristic of the genus. Apex of pedipalpal coxa with 2 long setae. Coxa I with 7, coxa II with 3 (+ 5 spines), coxa III with 5 (+ 3 spines) and coxa IV with 7 setae. Intercoxal tubercle bisetose. Leg IV as shown in fig. 16; femur 2.0x, tibia 3.17x, basitarsus 2.5x and telotarsus 10.0x longer than broad; tibia medially sparsely granulate; telotarsus 2.0x as long as basitarsus. Basitarsus with a tactile seta (TS = 0.45), telotarsus also with 1 tactile seta (TS = 0.30).

Measurements (in mm): carapace 0.30/0.31. Palps: femur 0.36/0.08, tibia 0.17/0.09, chela 0.54/0.10, length of hand 0.18. Leg IV: femur 0.30/0.15, tibia 0.19/0.06, basitarsus 0.10/0.04, telotarsus 0.20/0.02.

Sexual dimorphism of the new species is not well-defined, it concerns mainly some sizes of the pedipalps and the chaetotaxy. Some characters of the female (paratype): epistome (fig. 9) large, lance-like, dentate; sternal chaetotaxy x-x-14-10-8-6-6-6-7; pedipalp chela 5.27x (0.58/0.11 mm) as long as broad; fixed finger of chela with 65 and movable one with 51 teeth; coxal and genital area as shown in fig. 18.

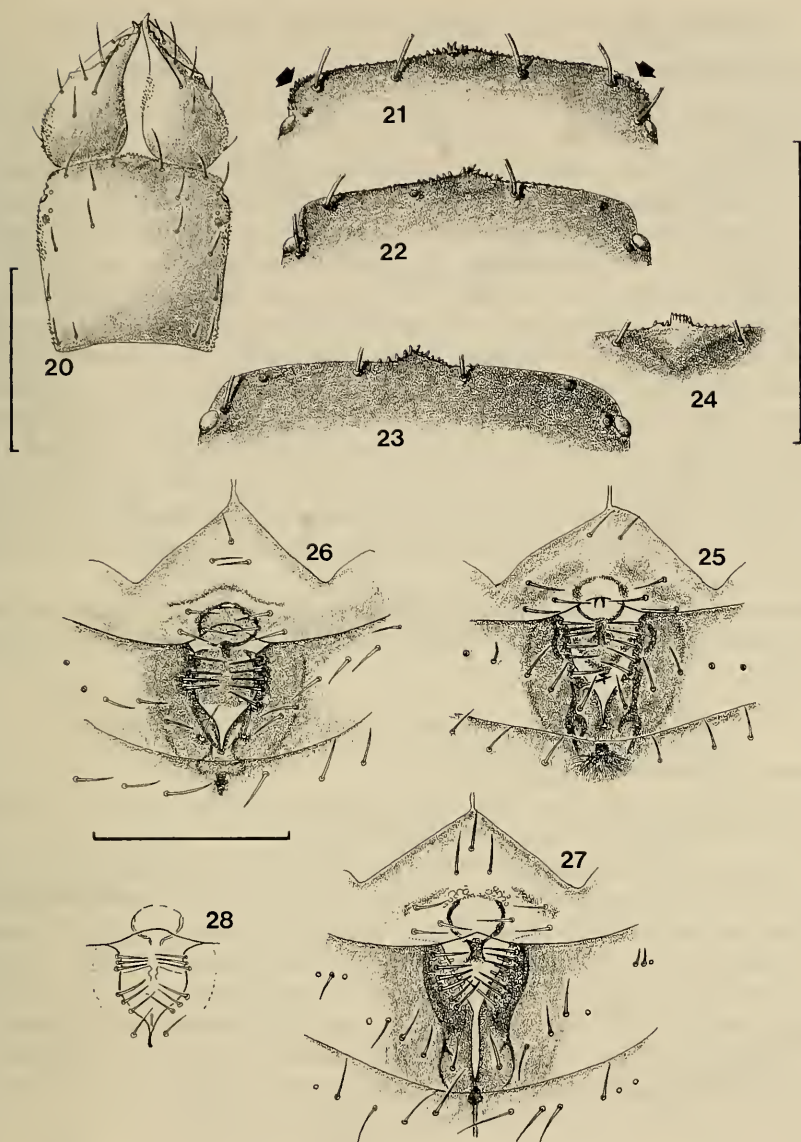
Relationship: *Chthonius* (C.) *tadzhikistanicus* n. sp. is close to *shelkovnikovi*, from which it differs by the more slender pedipalps (in *shelkovnikovi* the femur is 3.0x, chela 4.0x longer than broad, in *tadzhikistanicus* n. sp. 4.5x and 5.4x, respectively), larger number of teeth on the chelal fingers (in *shelkovnikovi* about 50 teeth, in *tadzhikistanicus* n. sp. 73/56 teeth), shape of the notch and chaetotaxy of the ♂ genital area. Besides, the more feebly developed eyes and more dentate anterior margin of the carapace make the new species quite distinguished.

Both specimens at hand were found in a rather arid land, under smaller stones near burning-hot, bare stone ridge at an altitude about 1500 m. The species is obviously adapted for extremely arid conditions, well in contrast to the mostly mesophilous congeners.

2.3. *Chthonius* (C.) sp. (figs. 4–6, 20–21, 25)

Material: Uzbekistan, Djizak Distr., Nuratau Mt. Ridge, Nuratinsky reserve [6], Khayatsay canyon, 1400 m, under stones, 9. IV. 1990 leg. DASHDAMIROV & ALIEV, 2 ♂♂ 1 ♀ (IZB 210), 1 ♂ (SMNS 2851).

The identification of this small series is doubtful. By most of the morphological characters (the sizes and proportions of the pedipalps, the number of teeth on the chelal fingers, chaetotaxy of both tergites and sternites, the shape and chaetotaxy of the genital area), the above specimens are close to *shelkovnikovi*. But the strongly serrate anterior margin of the carapace, particularly at the antero-lateral corners (fig. 21), as well as the presence of a great number of minute denticles on the surface of both carapace and chelicerae makes the situation obscure. Probably we face one of the extremes in the variation range of *shelkovnikovi*. To clarify this picture it is necessary to study variability of the above characters. Possibly by long geographic isolation (the Nuratau mountain ridge is well isolated from the other mountain systems in Middle Asia) and by increasing overall aridization of the climate in this region we confront a case of vicariance speciation, with *shelkovnikovi* as an initial element.



Figs. 20–21. *Chthonius* spec., IZB 210, from Nuratinsky Reserve. — 20. Carapace and chelicerae, ♂; — 21. Anterior carapacial region. — Scale lines: 0.3 mm (20), 0.5 mm (21).

Fig. 22. *Chthonius shelkovnikovi*, IZB 182, from Firyuza; anterior carapacial region, ♂. — Scale line: 0.5 mm.

Fig. 23. *Chthonius shelkovnikovi*, IZB 115, from Azerbaijan, Kerrar; anterior carapacial region, ♀. — Scale line: 0.5 mm.

Fig. 24. *Chthonius shelkovnikovi*, IZB 174, from Firyuza; epistome, ♂. — Scale line: 0.5 mm.

Figs. 25–28. Genital areas of *Chthonius*. — 25. *Chthonius* spec., IZB 210, from Nuratinsky Reserve; — 26. *Ch. shelkovnikovi*, IZB 182, from Firyuza; — 27. *Ch. shelkovnikovi*, IZB 118, Azerbaijan, Razgev; — 28. *Ch. shelkovnikovi*, IZB 115, from Azerbaijan, Kerrar. — Scale line: 0.1 mm.

2.4. *Neobisium carcinoides* (Hermann 1804) (figs. 32–37)

Neobisium improvisum Redikorzev 1949 n. syn.

Material: Kazakhstan, Alma-Ata region, Chilik (formerly Tau-Chilik) [24], 18. VII. 1919 leg.?, 1 ♂ holotype of *improvisum* (ZIL 1253).

Restudy of the type material of *N. improvisum* as well as its comparison with already known findings of *N. carcinoides* from the Ural and western Siberia shows that we actually face one single species. Therefore we consider *improvisum* as a junior synonym of the polymorphic *carcinoides*. The specimen studied by SCHAWALLER (1989) was obviously not the single type specimen because of different dates (18. VII. 1934, leg. CHETVERTKOV), the labelling of the specimen treated herein corresponds with the original description (REDIKORZEV 1949). The presence of alternate smaller and larger teeth in the distal third of the palpal fixed finger is one characteristic feature of *carcinoides*. Also, the sizes and proportions of the pedipal segments [femur 3.63x (0.69/0.19 mm), tibia 2.55x (0.56/0.22 mm), chela 4.11x (1.44/0.35 mm) longer than broad, length of the movable finger 0.84 mm] as well as a serration of the antero-medial corner of the leg coxa I are the same as in *carcinoides*. Trichobothriotaxy and structure of the flagellum in the type specimen are characteristic of the genus.

Neobisium carcinoides has a wide distribution in the western Palearctic region. The closest record derives from the vicinities of Lake Teletskoye, Altai Mountains (SCHAWALLER 1985).

2.5. *Neobisium validum* (L. Koch 1873) (figs. 29–31)

Neobisium zhiltzovae Čurčić 1984 n. syn.

Material: Turkmenia, Kara-Kala region, mouth of river Ay-Dere [4], 2. II. 1982 leg. MIKHAILOV, 1 ♀ holotype of *zhiltzovae* (ZMMU).

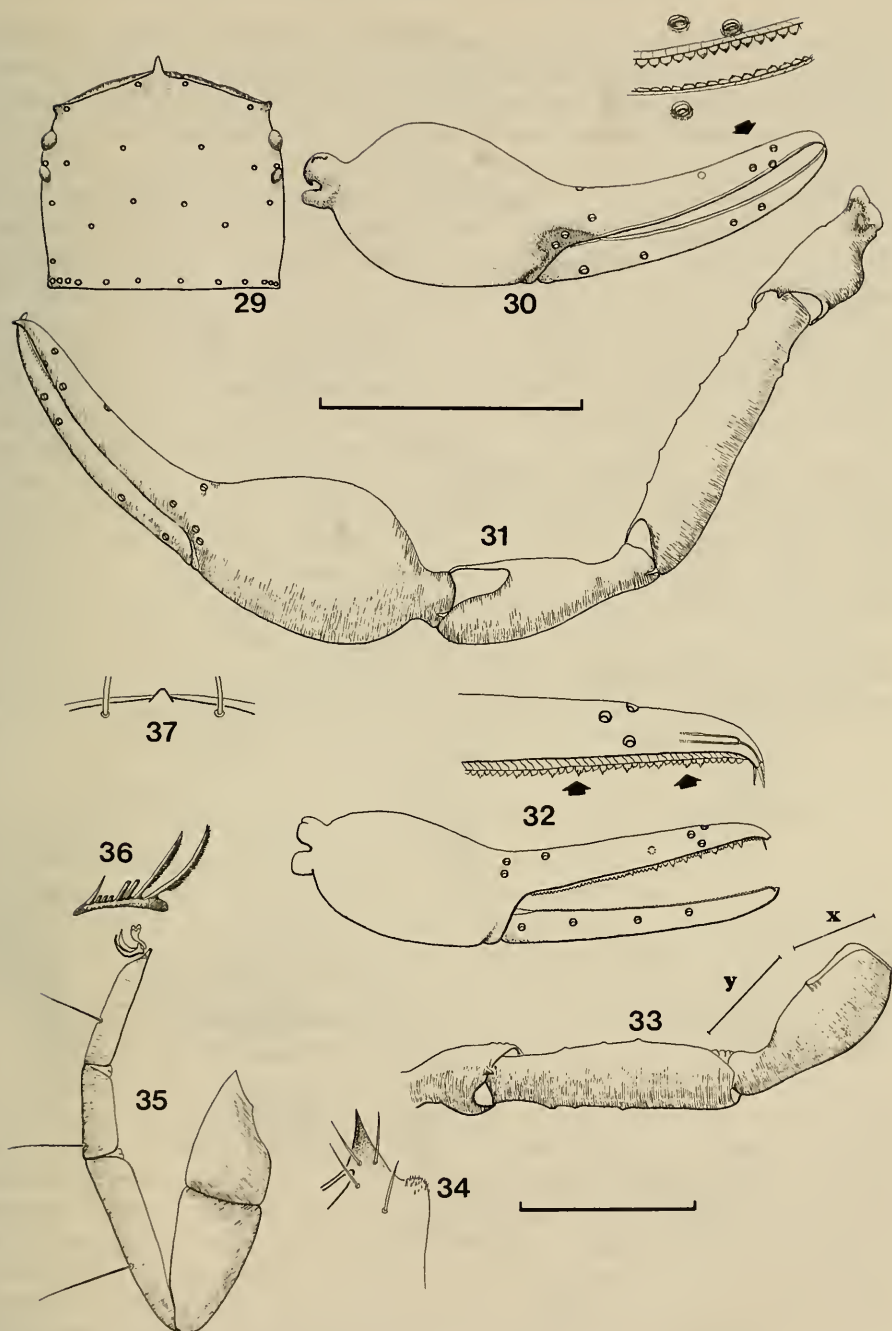
The species *validum* has already been recorded in Turkmenia, Ay-Dere (SCHAWALLER 1989), the locus typicus of *zhiltzovae* Čurčić 1984. Besides, *validum* has been reported from the Caucasus (BEIER 1928, KOBAKHIDZE 1960, SCHAWALLER 1983a, SCHAWALLER & DASHDAMIROV 1988) and Iran (BEIER 1951 and 1971, SCHAWALLER 1983b). Taking into consideration all these discoveries, particularly the topotypes, and the full coincidence of the characters between *validum* and *zhiltzovae* (figs. 29–31), the latter is a doubtless junior synonym of the former. The other *Neobisium* species described by ČURČIĆ (1984) are given only with short discussions of the relationships and are also doubtful.

2.6. *Acanthocreagris ronciformis* (Redikorzev 1934)

Material: Turkmenia, Ashkhabad Distr., 20 km S Gevers [3], Sherlovka reserve near river, 600 m, 5. IV. 1990 leg. MURATOV, 1 ♀ (IZB 214).

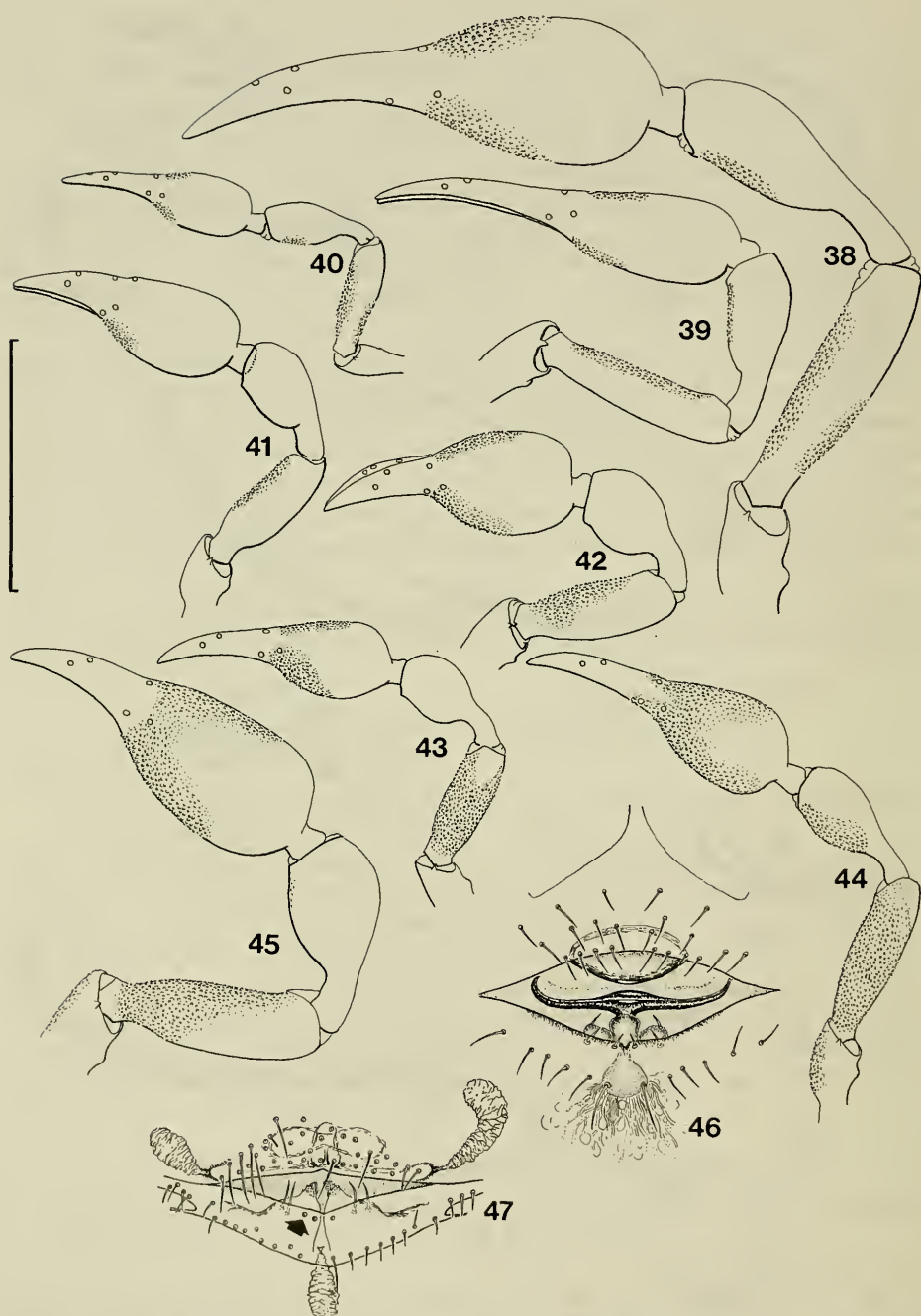
2.7. *Bisetocreagris gracilis* (Redikorzev 1934) (figs. 38–39, 47, 53–55)

Material: Kirgizia, Kirghizsky Mt. Ridge, Tatyrt [18], 25. VI. 1986 leg. OVTCHINNIKOV, 1 ♀ (IZB 172). – Kirghizsky Mt. Ridge, Chon-Kurchak [16], 8. VII. 1986 leg. OVTCHINNIKOV, 1 ♂ (IZB 215). – Susamyr-Too Mt. Ridge, near Susamyr [21], Shakyurtma, 10. VIII. 1986 leg. OVTCHINNIKOV, 1 ♂ (IZB 184). – Talassky Mt. Ridge, Kumbel Pass [14], 19. VIII. 1986 leg. OVTCHINNIKOV, 1 ♂ (IZB 222). – Kirghizsky Mt. Ridge (formerly Alexandrovsky Mts.), Tuyuk (= Tuyk) [16], 13. VI. 1931 leg. SCHNITNIKOV, 1 ♂ holotype (ZIL 1082), 1 ♀ paratype of *gracilis* (ZIL 1083).



Figs. 29–31. *Neobisium validum*; types of *N. zhiltzovae* n. syn., from Kara-Kala, ZMMU. — 29. Carapace; — 30. Chela, lateral view; — 31. Pedipalp, dorsal view. — Scale line: 1.0 mm.

Figs. 32–37. *Neobisium carcinoides*; types of *N. improvisum* n. syn., from Chilik, ZIL 1253. — 32. Chela, lateral view; — 33. Pedipalpal trochanter, femur and tibia, dorsal view; — 34. Coxa of leg I; — 35. Leg IV; — 36. Flagellum; — 37. Epistome. — Scale line: 0.5 mm.



Figs. 38–47. Pedipalpus and genital areas in *Bisetocreagris turkestanica* (40–46) and *B. gracilis* (38–39, 47). — 38. IZB 172, Taty; — 39. IZB 215, ♂, from Chon-Kurchak; — 40. IZB 170, ♂, from Georgievka; — 41. IZB 213, ♀, from Vannovka; — 42. IZB 217, ♀, from Mullo-Kuni; — 43. IZB 217, ♂, from Mullo-Kuni; — 44. IZB 219, ♂, from Arslanbob; — 45. IZB 219, ♀, from Arslanbob; — 46. IZB 191, ♂, from Kulan; — 47. ZIL 1082, type, ♂, from Tujuk. — Scale line: 1.0 mm (38–45).

The examination of these few, partly type specimens, redescribed earlier by ČURČIĆ (1985), shows that most of the generic criteria given in the diagnosis of *Bisetocreagris* by ČURČIĆ (1983) vary widely and may not be considered as reliable. In particular, the presence of a "fixed" number of setae on the anterior margin of the sternite III in ♂♂ (figs. 46, 47, 50, 52, 61) ranges from 2–4. SCHAWALLER (1985) also noticed this fact in the species *tenuis* (Redikorzev 1934). Besides, there are about 6 setae on the internal parts of the genital apparatus, and both the depth of the V-like notch on the sternite III and the position of an antero-medial group of setae in relation to it are variable. Neither is the division of the genus into species convincing according to the structure of the flagellum, and the "presence" of discal setae on the tergites and sternites is puzzling. To sum up, we may suppose that the criteria distinguishing genera within the complex around *Microcreagris* is still unclear. A modern revision is necessary for a more biological generic diagnosis (with chaetotaxy of the genital area and the structure of the flagellum).

In our collection is the first known female of this species. Chaetotaxy of carapace 4–12, 39; tergal chaetotaxy 11–12–12–17–15–19–19–19–18–18; sternal chaetotaxy x–x–14–20–20–21–21–19–18–14; genital area as in fig. 53; pedipalp: femur 4.63x (1.25/0.27 mm), tibia 3.03x (1.06/0.35 mm), chela 3.65x (2.01/0.55 mm), chelal palm with stalk 1.95x (1.07 mm) longer than broad, length of fixed finger 1.07 mm. Pedipalpal femur, tibia and chelal palm granulate.

As regards ♂♂, their sizes are considerably less, but the pedipalpal proportions in general and other characteristics of *gracilis*, given in the original description (REDIKORZEV 1934) and redescription (ČURČIĆ 1985) are comparable.

2.8. *Bisetocreagris kaznakovi* (Redikorzev 1918) (figs. 48–50)

Bisetocreagris phoebe Čurčić 1985 n. syn.

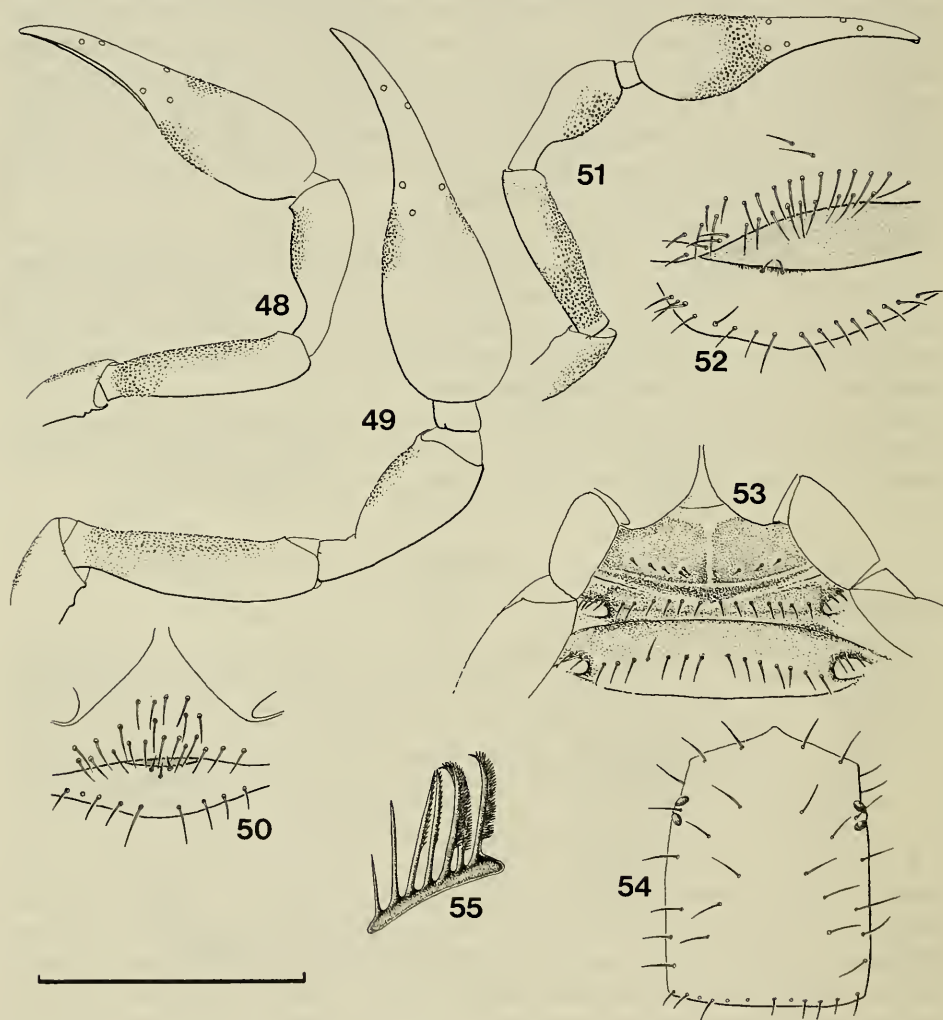
Material: Kirgizia, Talassky Mt. Ridge, Otmek-Pass [17], 3200 m, 21. VIII. 1986 leg. OVTCHINNIKOV, 1 ♀ (IZB 207). — Moldo-Too Mt. Ridge, canyon Kanzheerty [22], under stones, about 3000 m, 14. VII. 1987 leg. ZONSTEIN, 1 ♀ with egg packet (IZB 209). — Sary-Djaz, Keney river basin [23], about 4000 m, 16. VII. 1986 leg. OVTCHINNIKOV, 1 ♂ 1 T (IZB 220). — Tibet, Amnenkor Mt. Ridge, Yellow river basin, 35°64'N, 97°77'E, 4810 m, 6.–11. VI. 1900 leg. KAZNAKOV, 1 ♀ holotype of *kaznakovi* (ZIL 72). — Tchok-tchio, tributary of Mecong river, 32°66'N, 96°75'E, about 3900 m, 31. VIII. 1900 leg. KAZNAKOV, 1 ♀ holotype of *phoebe* (ZIL 114).

B. kaznakovi described on 2 ♀♀ from Tibet (REDIKORZEV 1918) was recently found in Nepal (SCHAWALLER 1987). The examination of the new material collected a considerable distance northwest of the locus typicus has revealed no significant distinction. Newly collected material in Nepal (SCHAWALLER 1991), unfortunately mostly nymphs, have the palpal proportions not so slender as figured in SCHAWALLER (1987). *Bisetocreagris kaznakovi* differs from *gracilis* by the proportions of the pedipalps (shorter chela, not so slender tibia), while other characters seem to display no good distinctions. Both species are very similar to each other.

As regards *phoebe* Čurčić 1985, reexamination of the type and a comparison with the type of *kaznakovi* have failed to trace any distinctions other than some size characters considered as not specific. Therefore, we regard *phoebe* as a junior synonym of *kaznakovi*.

As regards the systematics within *Bisetocreagris*, a situation similar to the genus *Neobisium* is observed, where such characters as flagellum, galea, serrula, chaetotaxy

of the genital area, as well as chaetotaxy of both carapace and abdomen are not very helpful in distinguishing the valid species. So, the separation of species is based on the distinction of proportions, granulations, dentations and trichobothriotaxy of the pedipalps, which probably give only a typological view of speciation within *Neobisium* and *Bisetocreagris*.



- Figs. 48–50. *Bisetocreagris kaznakovi*. — 48. Pedipalp, ♂, IZB 220, from Sary-Djaz; — 49. Pedipalp, dorsal view, ♀, IZB 207, from Otmek; — 50. Genital area, ♂, IZB 220, from Sary-Djaz. — Scale line: 1.0 mm.
- Figs. 51–52. *Bisetocreagris* spec., IZB 221, ♂, from Nuratinsky Reserve. — 51. Pedipalp, dorsal view; — 52. Genital area. — Scale line: 1.0 mm.
- Figs. 53–55. *Bisetocreagris gracilis*. — 53. Genital region, ♀, IZB 172, from Taty; — 54. Carapace, ♀, IZB 172, from Taty; — 55. Flagellum, ♂, IZB 222, from Kumbel. — Scale line: 1.0 mm (53, 54).

2.9. *Bisetocreagris latona* (Ćurčić 1985) n. comb.

Material: Tadzhikistan, Dushanbe, Varzob region, canyon Kondara [9], 28. IV. 1944 leg. KIRYANOVA, 1 ♀ holotype of *Orientocreagris latona* (ZIL 71). — Dushanbe, canyon Varzob [9], under stones, 22. IV. 1990 leg. DASHDAMIROV, 1 T (IZB 211).

The type (ZIL, micropreparation) is badly damaged (crushed between the glasses) therefore the sizes and proportions of the pedipalps are distorted and the identification of this "species" is very difficult. However, despite the poor condition, this specimen does belong to the genus *Bisetocreagris*. It seems important to us to note that the holotype specimen had been identified earlier by BEIER as *turkestanica*. The validity of this species can be proved only by more material, ♂♂ in particular. The single tritonymph found south of the locus typicus does not solve the problem.

The status of the genus *Orientocreagris* Ćurčić 1985 is doubtful, probably this "genus" is a synonym of *Bisetocreagris* Ćurčić 1983 (as well as the genera *Chinacreagris* Ćurčić 1983 and *Pedalocreagris* Ćurčić 1985). Probably only a single genus, *Bisetocreagris* by priority, is actually involved. A restudy of "*Orientocreagris*" *syrix* Ćurčić 1985, the type species, is necessary to make final conclusions.

2.10. *Bisetocreagris nuratiensis* n. sp. (figs. 56–65)

Holotype: ♂ (IZB 223), Uzbekistan, Djizak Distr., Nuratau Mt. Ridge, Nuratinsky reserve [6], canyon Khayatsay, 1400 m, under stones, 9. IV. 1990 leg. DASHDAMIROV & ALIEV.

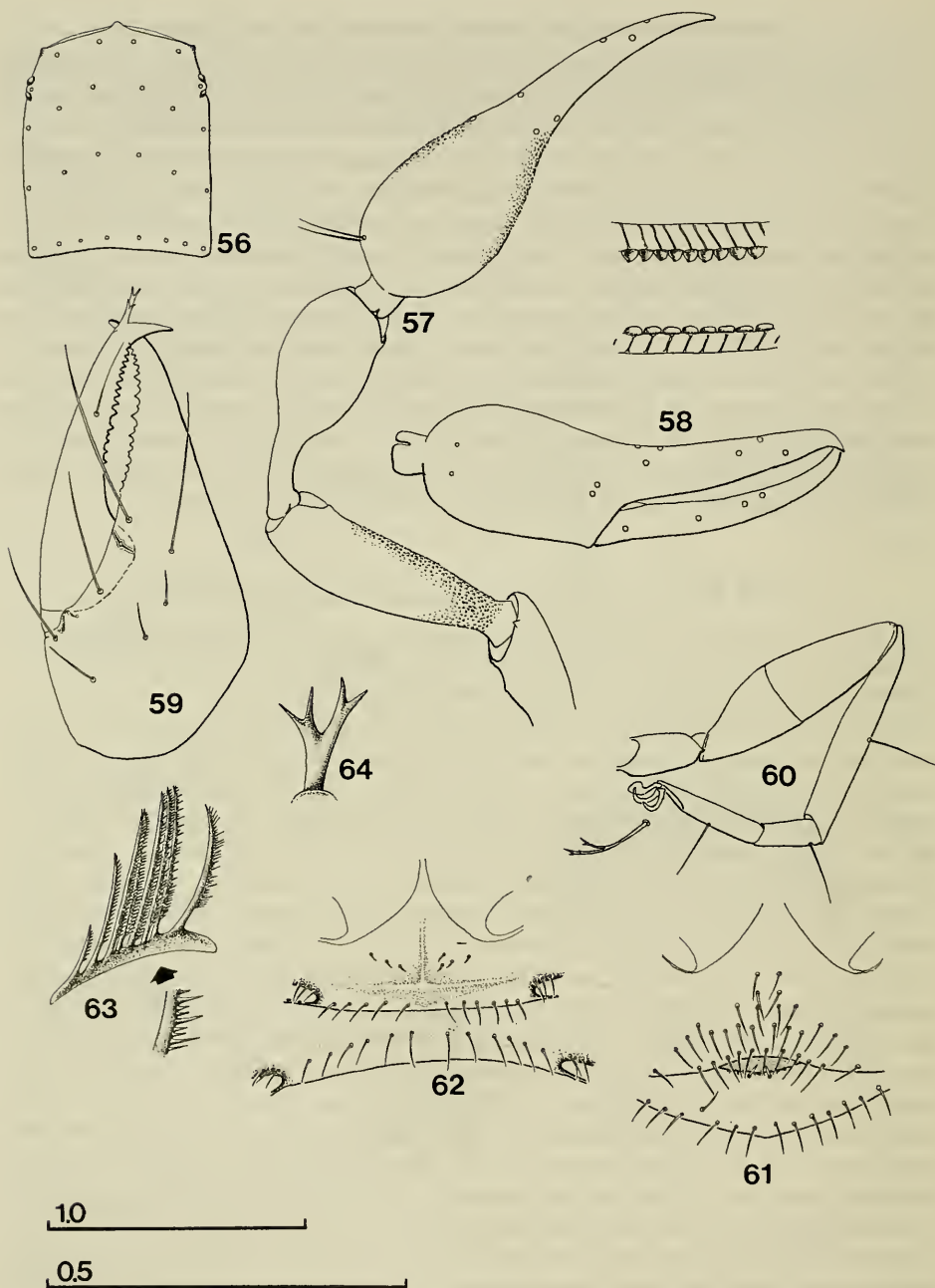
Paratypes: 2 ♀♀ (IZB 223), 1 ♀ (SMNS 2852) with holotype.

Description of ♂ holotype: Carapace (fig. 56) 1.26x as long as broad, with four small eyes and a small, knob-like epistome. Carapace with 26 setae (4-8-6-8). Chelicera (fig. 59) dorsally with 7 setae, movable finger with one seta. Flagellum with 8 blades, characteristic of the genus. Galea well developed, structure as shown in fig. 64. Tergal chaetotaxy 10-10-10-11-12-12-12-12-11-10, sternal chaetotaxy x-x-18-17-18-18-16-16-13-8. Pleural membranes of abdomen granulo-striate. Genital area as shown in fig. 61. Coxa I with 9, coxa II with 7, coxa III with 6 and coxa IV with 10 setae. Pedipalps: trochanter smooth, 2.4x longer than broad; femur with small and faint granulations, 4.0x longer than broad; tibia smooth without granulation, 2.66x longer than broad; chela with granulation on the palm, 3.44x longer than broad. On lateral side of chelal palm 2 long setae. Chelal palm longer than fingers. Fixed finger with 77 close-set teeth, movable finger with 65 teeth. Trichobothriotaxy see fig. 58. Mace-like part of tibia 1.74x as long as pedicel of tibia. Leg IV: femur 3.41x, tibia with one tactile seta (TS = 0.51) 6.69x, basitarsus with one basal tactile seta (TS = 0.19) 2.8x, telotarsus with one tactile seta (TS = 0.45) 5.25x as long as broad, telotarsus 1.5x longer than basitarsus. Subterminal seta as shown in fig. 60.

Measurements (in mm): body length about 3.4, carapace 0.92/0.73. Pedipalp: trochanter 0.60/0.25, femur 1.04/0.26, tibia 0.93/0.35, pedicel of tibia 0.34/0.12, chela with pedicel 1.72/0.50, fixed finger length 0.86, palm of chela 0.92/0.50. Leg IV: femur 0.92/0.27, tibia 0.87/0.13, basitarsus 0.28/0.10, telotarsus 0.42/0.08.

Sexual dimorphism of the new species is not well-defined, mainly concerning some sizes of the pedipalps (♀♀ paratypes): femur 3.52–3.62x (0.88–1.05/0.25–0.29 mm), tibia 2.38–2.49x (0.81–0.92/0.33–0.37 mm), chela with pedicel 3.17–3.22x (1.58–1.68/0.49–0.53 mm) longer than broad. Genital area see fig. 62.

Relationship: *Bisetocreagris nuratiensis* n. sp. is quite similar to *gracilis* in the size of the body, chaetotaxy of the genital area, carapace, tergites and sternites, but can be



Figs. 56–64. *Bisetocreagris nuratiensis* n. sp.; holotype and paratypes (62–64), IZB 223, from Nuratinsky Reserve. — 56. Carapace, dorsal view; — 57. Pedipalp, dorsal view; — 58. Chela, lateral view; — 59. Chelicera; — 60. Leg IV; — 61. Genital area; — 62. Genital area; — 63. Flagellum; — 64. Galea. — Scale lines: 1.0 mm (56–58, 60–62), 0.5 mm (59).

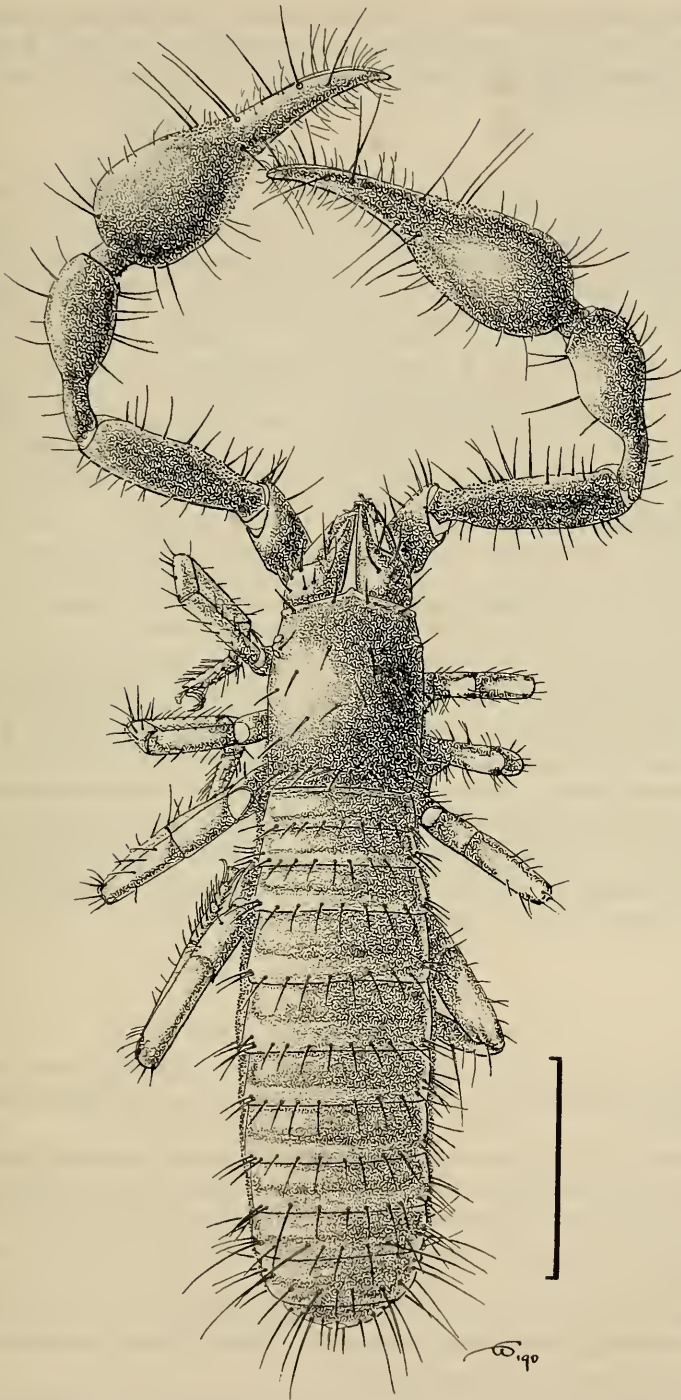


Fig. 65.

Bisetocreagris nuratiensis n. sp., paratype, IZB 223, from Nuratinsky Reserve, dorsal view. — Scale line: 1.0 mm.

distinguished from that species by the proportions of the pedipalps, particularly by the shape of the tibia and by the absence of granulations on the tibia. It can be distinguished from *turkestanica* (see next species) by its slender pedipalps and larger size.

2.11. *Bisetocreagris turkestanica* (Beier 1929) (figs. 40–46)

Material: Kazakhstan, Djambul area, Georgievka [20], 25. X. 1984 leg. OVTCHINNIKOV, 1 ♂ (IZB 170), 1 ♂ (SMNS 2853). – Djambul area, canyon Kulan [13], 23 km SWW Djambul, 11. IV. 1988 leg. TARABAEV, 1 ♂ (IZB 191). – Zailiysky Alatau Mt. Ridge, 30 km E Chimkent, Vannovka [12], 850 m, under stones, 6. IV. 1990 leg. DASHDAMIROV, 2 ♀♀ (IZB 213), 1 ♀ (SMNS 2854). – Kirghizia, Kirghizsky Mt. Ridge, Malinovoye [19], 1700 m, 21. X. 1984 leg. OVTCHINNIKOV, 1 ♀ (IZB 208). – Tien-Shang Mts., Osh area, Fergansky Mt. Ridge, near Yarodar, Arslanbob [15], 1400–1500 m, forest with *Juglans regia*, *Acer*, *Malus*, *Prunus*, *Crataegus*, in litter, 8. V. 1990 leg. DASHDAMIROV, 1 ♂ 3 ♀♀ 2 T (IZB 219), 1 ♂ 2 ♀♀ (SMNS 2855). – Uzbekistan, Kashkadarya area, Kitabsky reserve, Djaus [8], sparse growth of *Juglans regia*, under stones, 13. IV. 1990 leg. DASHDAMIROV, 1 ♂ 1 T (IZB 216), 1 ♂ (SMNS 2856). – Tadzhikistan, Pamir Alai Mts., Gandjina [7], 7.–12. IV. 1987 leg. ZONSTEIN & ZORKIN, 1 ♀ (IZB 186). – Pamir Alai Mts., Sary-Khosor reserve, 50 km N Khovaling, Mullo-Kuni [11], 1500 m, under stones, 28. IV. 1990 leg. DASHDAMIROV, 5 ♂♂ 4 ♀♀ 1 T 1 D (IZB 217), 2 ♂♂ 2 ♀♀ (SMNS 2857). – Same locality, 29. IV. 1990 leg. ALIEV, DASHDAMIROV & ZONSTEIN, 2 ♀♀ (IZB 218), 1 ♀ (SMNS 2858).

The present material is in complete accordance with the original description of *turkestanica*, but one series from the Sary-Khosor Reserve is distinguished by its plump pedipalps and the absence of a granulation on the pedipalp tibia, in ♀♀ of *turkestanica* this granulation on the tibia is also absent. Thus, this character is probably a manifestation of sexual dimorphism. Besides, some specimens from Vannovka, Kitabsky Reserve are peculiar due to a very small body size but pedipalp proportions and the range of variation of this character show no differences. The structure of the genital area is obviously only of little use for the separation of species, at least in this group of the genus *Bisetocreagris*.

2.12. *Bisetocreagris* sp. (figs. 51–52)

Material: Uzbekistan, Djizak Distr., Nuratau Mt. Ridge, Nuratinsky reserve, canyon Khayatsay [6], 1400 m, under stones, 9. IV. 1990 leg. DASHDAMIROV & ALIEV, 1 ♂ (IZB 221).

This single ♂ is difficult to be properly determined, as it is strongly damaged (part of carapace, chelicerae, only one pedipalp and a fragment of the abdomen being preserved). Shape of the flagellum, presence of a galea, trichobothriotaxy, the structure and chaetotaxy of the genital area strongly suggest the position of this material within *Bisetocreagris*.

Pedipalpal trochanter, femur, tibia and chelal palm are granulated (fig. 51). Pedipalp: femur 3.94x (0.71/0.18 mm), tibia 2.57x (0.59/0.23 mm) and chela with pedicel 3.56x (1.14/0.32 mm) as long as broad.

By the shape of the pedipalps, its morphometric ratios and measurements, this specimen seems to be similar to *klapperichi* (Beier 1959) from southern Afghanistan, but may be distinguished by its granulation on the pedipalp tibia. More material is necessary to clarify this problem.



Fig. 66.

Collecting localities of pseudoscorpions in Middle Asia. — 1. Firyuza (*Chthonius shelkovnikovi*); — 2. Dushak (*Ch. shelkovnikovi*); — 3. Gevers (*Acanthocreagris ronciformis*); — 4. Kara-Kala (*Neobisium validum*); — 5. Kalininsky Reserve (*Ch. shelkovnikovi*); — 6. Nuratau (*Bisetocreagris nuratiensis* n. sp., *Bisetocreagris* spec., *Chthonius* spec.); — 7. Gandjina (*B. turkestanica*); — 8. Djaus (*B. turkestanica*); — 9. Varzob (*B. latona*); — 10. Sibeston (*Ch. tadjikistanicus* n. sp.); — 11. Mullo-Kuni (*B. turkestanica*); — 12. Vannovka (*B. turkestanica*); — 13. Kulan (*B. turkestanica*); — 14. Kumbel (*B. gracilis*); — 15. Arslanbob (*B. turkestanica*); — 16. Chon-Kurchak (*B. gracilis*); — 17. Otmek (*B. kaznakovi*); — 18. Taty (*B. gracilis*); — 19. Malinovoye (*B. turkestanica*); — 20. Georgievka (*B. turkestanica*); — 21. Susamyr-Too (*B. gracilis*); — 22. Moldo-Too (*B. kaznakovi*); — 23. Sary-Djaz (*B. kaznakovi*); — 24. Chilik (*Neobisium carcinoides*).

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

Jahr/Year: 1992

Band/Volume: [474_A](#)

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Artikel/Article: [Pseudoscorpions from Middle Asia, Part 1 \(Arachnida: Pseudoscorpiones\) 1-18](#)