

A brief review of the genus *Chalcoscirtus* Bertkau, 1880 in the faunas of Central Asia and the Caucasus (Aranei: Salticidae)

Краткий обзор рода *Chalcoscirtus* Bertkau, 1880 в фаунах Центральной Азии и Кавказа (Aranei: Salticidae)

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КЛЮЧЕВЫЕ СЛОВА: *Chalcoscirtus*, Salticidae, синонимика, описания, диагнозы, Центральная Азия, Кавказ.

ABSTRACT: A synopsis of 27 *Chalcoscirtus* species in the fauna of Central Asia and the Caucasus is presented. Two species are revalidated: *C. brevicymbialis* Wunderlich, 1980 and *C. ansobicus* Andreeva, 1976. Four species are newly synonymized: *Euophrys thorelli asiatica* Charitonov, 1951 and *Chalcoscirtus pauper* Wesołowska, 1996 under *C. infimus* (Simon, 1868); *Chalcoscirtus pavuk* Marusik, 1991 under *C. parvulus* Marusik, 1991; and *Euophrys elongata* Caporiacco, 1935 under *C. glacialis* Caporiacco, 1935. *C. martensi parvulus* Marusik, 1991 is elevated to full species: *C. parvulus* Marusik, 1991, stat.n. Unknown sexes are described and illustrated for five species: *C. ansobicus* Andreeva, 1976 (♂), *C. lepidus* Wesołowska, 1996 (♂); *C. platnicki* Marusik in Marusik & Eskov, 1995 (♀); *C. tanasevichi* Marusik, 1991 (♀); and *C. zyuzini* Marusik, 1991 (♀). Five new species are described: *C. bortolgois* sp.n. (♀, Mongolia), *C. charynensis* sp.n. (♀, Almaty Area, Kazakhstan), *C. iranicus* sp.n. (♀, Iran) and *C. michailovi* sp.n. (♂, Almaty Area, Kazakhstan), all from the subgenus *Chalcoscirtus*; and *C. koponeni* sp.n. (♀, Tuva) from the subgenus *Chalcosibiricus*. Most of the species are figured and diagnosed, and their distributions mapped; complete reference lists for each species with regard to the study area are given as well.

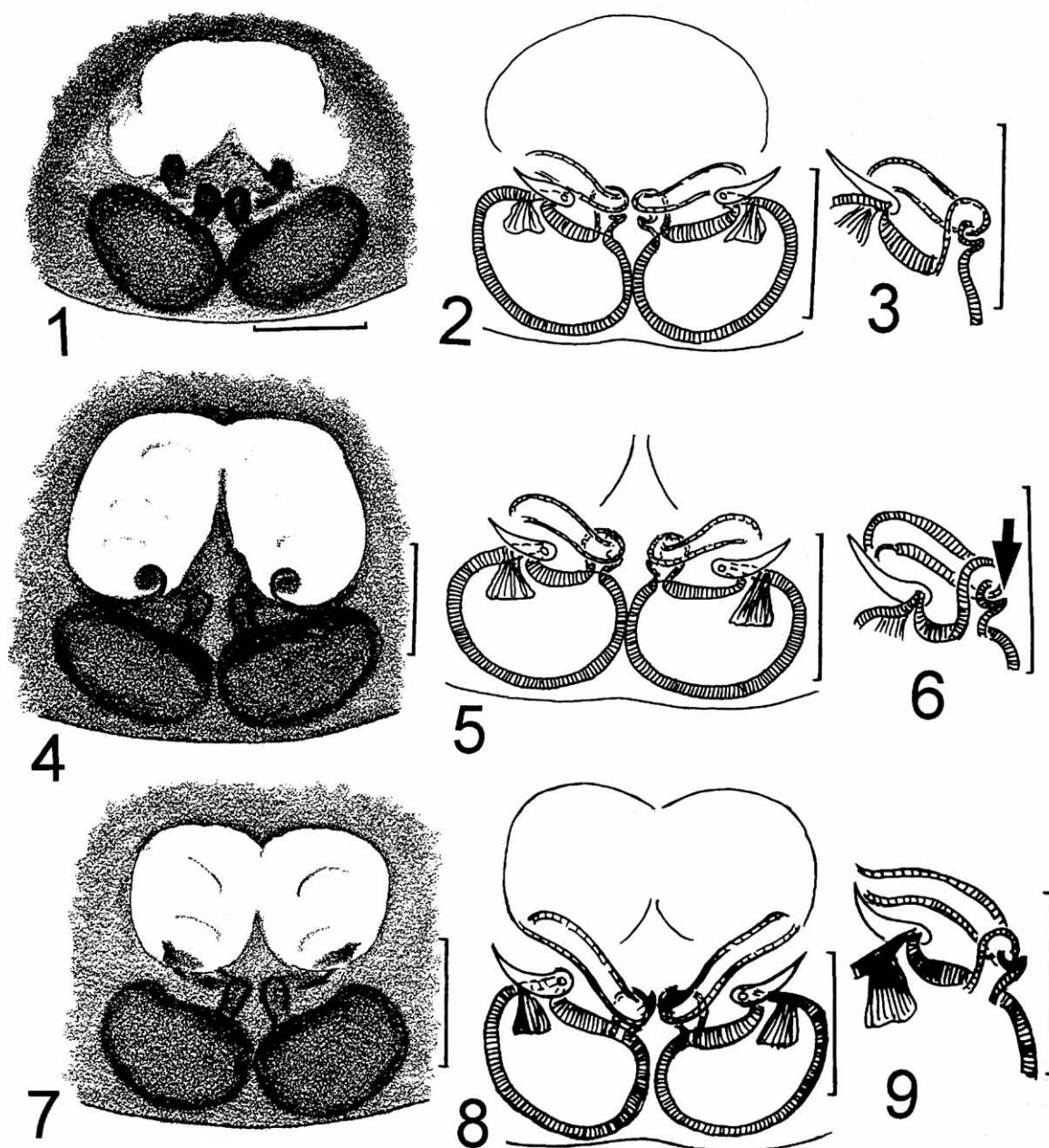
РЕЗЮМЕ: Работа является конспектом 27 видов *Chalcoscirtus* в фауне Центральной Азии и Кавказа. Восстановлена валидность двух видов: *C. brevicymbialis* Wunderlich, 1980 и *C. ansobicus* Andreeva, 1976. Четыре вида впервые синонимизированы: *Euophrys thorelli asiatica* Charitonov, 1951 и *Chalcoscirtus pauper* Wesołowska, 1996 с *C. infimus* (Simon, 1868); *Chalcoscirtus pavuk* Marusik,

1991 с *C. parvulus* Marusik, 1991; и *Euophrys elongata* Caporiacco, 1935 с *C. glacialis* Caporiacco, 1935. Таксономический ранг *C. martensi parvulus* Marusik, 1991 повышен до ранга самостоятельного вида: *C. parvulus* Marusik, 1991, stat.n. Даны описания и иллюстрации противоположного пола для пяти видов: *C. ansobicus* Andreeva, 1976 (♂), *C. lepidus* Wesołowska, 1996 (♂); *C. platnicki* Marusik in Marusik & Eskov, 1995 (♀); *C. tanasevichi* Marusik, 1991 (♀); и *C. zyuzini* Marusik, 1991 (♀). Описаны пять новых видов: *C. bortolgois* sp.n. (♀, Mongolia), *C. charynensis* sp.n. (♀, Алматинская область, Казахстан), *C. iranicus* sp.n. (♀, Иран) и *C. michailovi* sp.n. (♂, Алматинская область, Казахстан), все из подрода *Chalcoscirtus*; и *C. koponeni* sp.n. (♀, Тува) из подрода *Chalcosibiricus*. Большинство видов снабжены рисунками, диагнозами и картами с их ареалом; также к каждому виду даны полные списки библиографических ссылок, касающиеся изученной территории.

Introduction

The salticid genus *Chalcoscirtus* Bertkau, 1880 has recently been reviewed by one of us [Marusik, 1990, 1991a, b] in the scope of the entire Palaearctic fauna. According to these data, this genus numbers no less than 19 species, of which 17 have hitherto been reported in Central Asia and the Caucasus. More recently, further two species have been described from Turkmenistan [Wesołowska, 1996].

However, nearly a half of the species reported to date have only been described/recorded from a single sex and/or from a few or a single locality, or both. Since new abundant material of Central Asian



Figs 1-9. Female genitalia of *Chalcoscirtus infimus* (1-3 from Cogoleto, Italy; 4-6 from Zeravshansky Mt. Range, Uzbekistan; 7-9 from Izmir, Turkey); 1, 4, 7 — epigyne; 2, 5, 8 — spermathecae, dorsal view; 3, 6, 9 — insemination duct, ventral view. Scale: 0.1 mm.

Рис. 1-9. Гениталии самок *Chalcoscirtus infimus* (1-3 из Коголето (Италия); 4-6 из Зеравшанского хребта (Узбекистан); 7-9 из Измира (Турция)): 1, 4, 7 — эпигина; 2, 5, 8 — сперматеки, дорзально; 3, 6, 9 — оплодотворительные каналы, вентрально. Масштаб: 0,1 мм.

Chalcoscirtus (s. str.) *charynensis* sp.n.

Figs 20, 21, Map 8.

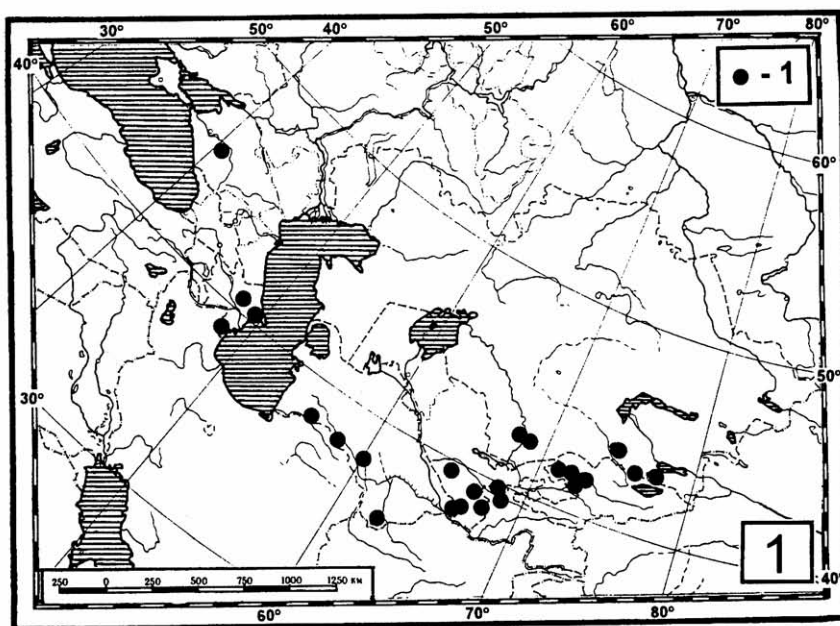
Holotype ♀ (ISE), Kazakhstan, Almaty Area, Chilik Distr., ca 1.5 km W of Charyn Canyon, Toraigyr Mts., 21.04.1990, C.K. Tarabaev & A.F.

DIAGNOSIS. This species is most closely related to *C. molo* Marusik, 1991, which is also known from the female only, but it can be easily separated by the position of the copulatory openings (visible in *C. charynensis* sp.n. vs.

invisible in *C. molo*; cf. Figs 20 and 21) and the size and proportions of the spermathecae (cf. Figs 21 and 23).

DISTRIBUTION. The type locality only (Map 8).

DESCRIPTION. FEMALE. Measurements. Carapace 1.20 long, 0.78 wide, 0.45 high at PLE. Ocular area 0.56 long, 0.70 wide anteriorly and 0.68 wide posteriorly. Diameter of AME 0.21. Abdomen 1.38 long, 0.98 wide. Cheliceral length 0.38. Clypeal height 0.05. Length of leg segments: leg I — 0.58 + 0.45 + 0.35 + 0.28 + 0.20; leg II — 0.53 + 0.30 + 0.30 + 0.27 + 0.30; leg III — 0.60 +



Map 1. Distribution of *Chalcoscirtus infimus* in Central Asia and the Caucasus.

Карта 1. Распространение *Chalcoscirtus infimus* в Средней Азии и на Кавказе.

0.40 + 0.35 + 0.35 + 0.23; leg IV — 0.70 + 0.38 + 0.49 + 0.45 + 0.28. Leg spination. Leg I: Tb v. 1-2-2ap.; Mt v. 2-2ap. Leg II: Tb v. 1-2ap.; Mt v. 2-2ap. Leg III: Tb v. 1-0; Mt pr. and rt. 2 ap., v. 2-2ap. Leg IV: Tb v. 0-1-0; Mt pr. and rt. 2 ap., v. 1-2ap. Coloration. Carapace dark brown, shining. Eye field black, with metallic shining tint. Clypeus brown, hairless. Sternum, maxillae, labium and chelicerae light brown. Abdomen monochromously grey-brown. Book-lung covers and spinnerets brown. All legs brown with yellowish stains. Epigyne and spermathecae as in Figs 20, 21.

NAME. The species is named after the type locality, Charyn Canyon in the Almaty Area of Kazakhstan.

Chalcoscirtus (s. str.) *grishkanae* Marusik, 1988

Chalcoscirtus grishkanae Marusik, 1988: 1475, ff. 4.2–5 (♂ holotype, in ZMUM, re-examined).

Chalcoscirtus grishkanae: Marusik, 1991a: 30; Danilov & Logunov, 1993: 28; Mikhailov, 1996: 130; 1997: 208.

MATERIAL. See Marusik [1988] and Danilov & Logunov [1993].

DIAGNOSIS. See Marusik [1988, 1991a].

DISTRIBUTION. The species has so far been recorded in the Magadan Area (the upper reaches of Kolyma River) and Transbaikalia (Sokhondo Nature Reserve) [Marusik, 1988; Danilov & Logunov, 1993].

DESCRIPTION. See Marusik [1988].

Chalcoscirtus (s. str.) *infimus* (Simon, 1868)

Figs 1–9, 24, 25, 32–35, Map 1.

Euophrys thorelli asiatica Charitonov: Kharitonov, 1951: 214–215, f. 6 (♀ holotype, in PSU, re-examined). **Syn.n.**

Chalcoscirtus infimus: Nenilin, 1984b: 134; 1985: 130, 132; Kuznetov & Fet, 1986: 61; Marusik, 1990: 51, ff. 1–3; Mikhailov & Fet, 1994: 516; Wesolowska, 1996: 26; Mikhailov, 1996: 130; 1997: 208.

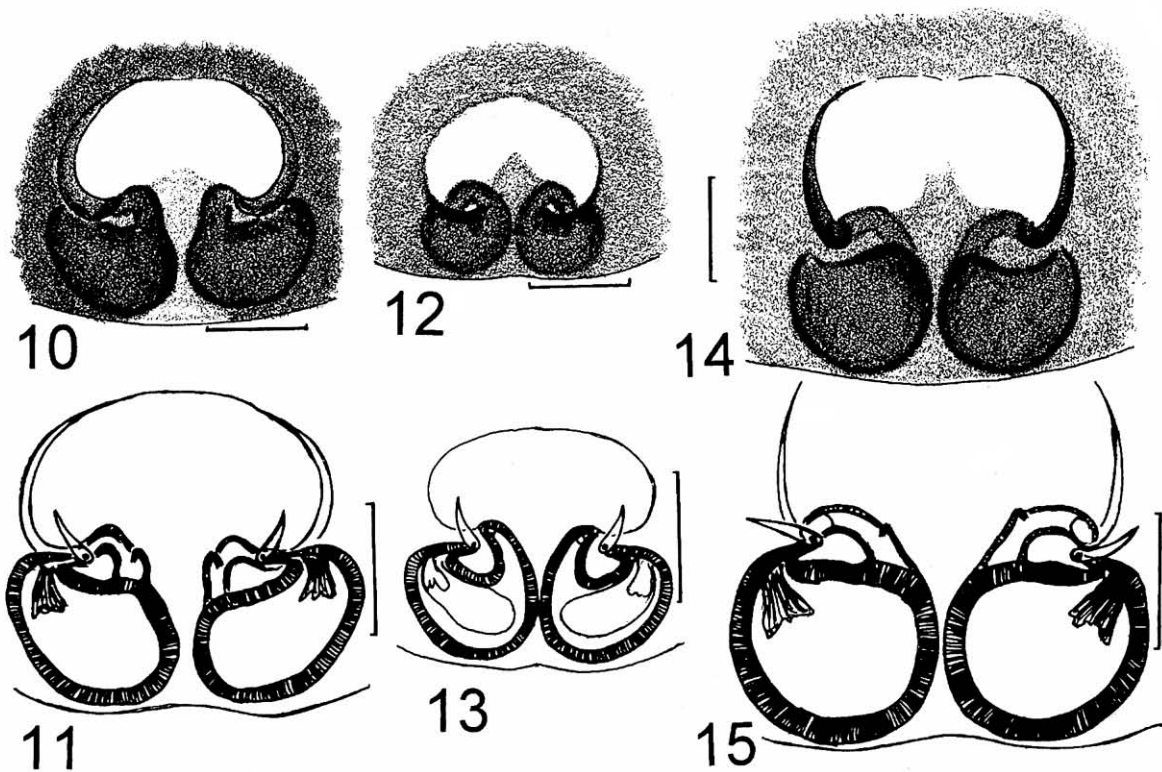
Chalcoscirtus asiaticus: Marusik, 1990: 53–54, ff. 3–5 [parte, ♀♀ only]; Mikhailov, 1996: 130; 1997: 208.

Chalcoscirtus pauper Wesolowska, 1996: 26–27, ff. 10C, D (♀ holotype, in ZISP, re-examined). **Syn.n.**

Chalcoscirtus pauper: Mikhailov, 1996: 130; 1997: 209.

MATERIAL. Yellow morph (true *C. infimus*): RUSSIA: 1 ♂ (ZISP), Krasnodar Prov., near Maikop, 9.06.1976, V.O. — AZERBAIJAN: 1 ♂ (ISE), Lerik Distr., Gosmalyan, 1400 m a.s.l., 14.05.1985, P.D.; 1 ♂ (ZMUM), Baky, 19–21.05.1981, S.I. Golovatch; 3 ♂♂ (ISE), same locality, 14.05.1977–14.06.1981, P.D.; 1 ♂ (ISE), Turianchai Nature Reserve, 13.05.1986, P.D. — KAZAKHSTAN: 1 ♂ (ISE), S-Kazakhstan Area, Arys, 7.05.1988, D.L.; 1 ♂ (ISE), Almaty Area, Zhambyl Distr., Mts. north of Otar, 11.05.1988, C.K. Tarabaev & A.Z.; 1 ♂ (ISE), same area, Chilik Distr., Sogety Valley, near Kokpek, 29.05.1988, A.Z.; 1 ♂ (ISE), Ili Distr., 60th km of highway Almaty-Kapchagay, 26.05.1988, A.Z. — KYRGYZSTAN: 1 ♂ (ISE), ca 13 km N of Tash-Kumyr, Kara-Tyt (41°28'N, 72°14'E), 18–23.05.1994, D.A. Milko; 2 ♂♂ (ISE), Baubashata Mt. Range, Yarodar, 8.06.1981, S.Z. — TURKMENISTAN: 1 ♂ (ISE), near Murgab, 8.04.1993, A.Z.; 1 ♂ (ISE), ca 8 km N of Guzhgy [= Kushka], near Morgunovka, 9–19.04.1993, D.L.; 1 ♀ (ZISP, holotype of *C. pauper*), SW-Kopetdagh Mts., Monzhukly, 1000 m a.s.l., 3–17.05.1985, T. Lukarevskaya; 1 ♂ (ISE), same, S-Syunt Plateau, Kalaligez, 3.05.1982, V.Ya. Fet; 3 ♀ (ISE), same locality, middle reaches of Sumbar River, 7.06.1982, V.Ya. Fet; 1 ♂, 1 ♀ (FSCA), near Garry-Gala [=Kara-Kala], 4.05.1987, A.Z.; 1 ♂ (ISE), same locality, 20.04.1985, S.Z.; 1 ♂ (ZMUM), same locality, 25.04.1989, K.G. Mikhailov; 1 ♂ (ISE), C-Kopetdagh Mts., near Firyuza, 4.05.1987, V.D.; 2 ♂♂ (ISE), same locality, 17–24.03.1979, G.T. Kuznetsov; 3 ♂♂ (ISE), same, Kopetdagh Nature Reserve, ca 12 km SE of Annau, 15–18.05.1987, V.D. — TAJIKISTAN: 1 ♂ (ISE), Sanglok Mt. Range, near Seistan, 3.05.1991, S.O. — UZBEKISTAN: 4 ♂♂ (ISE), Surkhandarya Area, 40–47 km SE of Denau, Babatagh Mt. Range, 5–13.05.1994, A.Z.; 2 ♂♂ (ISE), ca 7 km N of Kitab, Zeravshansky Mt. Range, 800 m a.s.l., 26.04.1993, D.L. & A.Z.

Black morph (*C. asiaticus*): TAJIKISTAN: 1 ♀ (PSU, holotype of *E. thorelli asiatica*), Hissar Mt. Range, Kondara Canyon, 1,100–1,200 m a.s.l., 29.07.1945, V. Gussakovskiy. — UZBEKISTAN: 5 ♀♀ (ISE), Babatagh Mt. Range, near Ak-Mechet, 3.05.1994, S.O.; 1 ♀ (ISE), Samarkand Area, Sovetobod Distr., Zeravshansky Mt. Range, ca 16 km upper of Dzhan, near Chon-Kaimysh, 9.06.1991, E.E. Koptykbaev & A.Z.; 1 ♀ (ZISP), Surkhandarya Area, Kuchitangtau Mt. Range, Kampyr-Tepa, 19.05.1983, A.B. Nenilin; 1 ♀ (ZMUM), ca 20 km S of Kagan, "Dzheiranii Pitomnik", summer 1995, coll. ? — KYRGYZSTAN: 1 ♀ (ZMUM), Talass Area, Toktogul Distr., ca 25 km NE of Kara-Kul, Kek-Bel Pass, 1,500 m a.s.l., 27–28.06.1992, A.Z. & A.F.; 1 ♀ (ISE), Dzhahal-Abad Area, Dzhany-Dzhal Distr., near Kyzyltdzhar, 22.06.1992, A.F. & A.Z. — KAZAKHSTAN: 1 ♂, 1 ♀ (ISE), S-Kazakhstan Area, near Arys, 21.05.1987–2.06.1990, D.L.; 1 ♀ (ISE), same area, Arys Distr.,



Figs 10–15. Female genitalia of *Chalcoscirtus pseudoinfimus* (10, 11 from type locality), *C. brevicymbialis* (12, 13 from Anninger, Austria) and *C. nenilini* (14, 15 from Kaindy, Kyrgyzstan): 10, 12, 14 — epigyne; 11, 13, 15 — spermathecae, dorsal view. Scale: 0.1 mm.

Рис. 10–15. Гениталии самок *Chalcoscirtus pseudoinfimus* (10, 11 из типового локалитета), *C. brevicymbialis* (12, 13 из Аннигера (Австрия)) и *C. nenilini* (14, 15 из Каинды (Кыргызстан)): 10, 12, 14 — эпигина; 11, 13, 15 — сперматеки, дорсально. Масштаб: 0,1 мм.

Kyzylkum Desert, near Baimakhan, 24.05.1993, A.Z.; 1 ♀ (ISE), 1 ♀ (ZMUM), Zhambyl Area, Krasnogorsk Distr., ca 17 km NW of Kenen, Chu-Ili Mts., 14–15.06.1990, A.F. & A.Z.; 1 ♀ (ISE), ca 7 km E of Khantau, Khantau Mts., 31.05–1.06.1996, A.V. Gromov. — TURKMENISTAN: 1 ♀ (ZISP), SW-Kopetdagh, near Garry-Gala [=Kara-Kala], 4–8.06.1982, N. Ustinova.

Comparative material: TURKEY: 2 ♂♂, 2 ♀♀ (ZMTU), Izmir Distr., Yamanlar Dagı, 1,100 m a.s.l., 24–25.05.1973, P. Lehtinen & F. Önder. — ITALY: 3 ♂♂, 3 ♀♀ (IZW), Cogoleto, 400 m a.s.l., 29.05.1966, M.&J. Prószyński; 1 ♂ (ZMTU), Corsica, Col de San Bastiano, 22.05.1972, P. Lehtinen.

DIAGNOSIS. *C. infimus* is somewhat disjunct from other congeners of the *infimus*-group and differs in the well-marked ducts of the accessory glands, which are seen in dorsal view as “outgrowths” of the insemination duct walls (arrowed in Figs 3, 6, 9), and the thinnest and longest embolus (Figs 24, 32, 34).

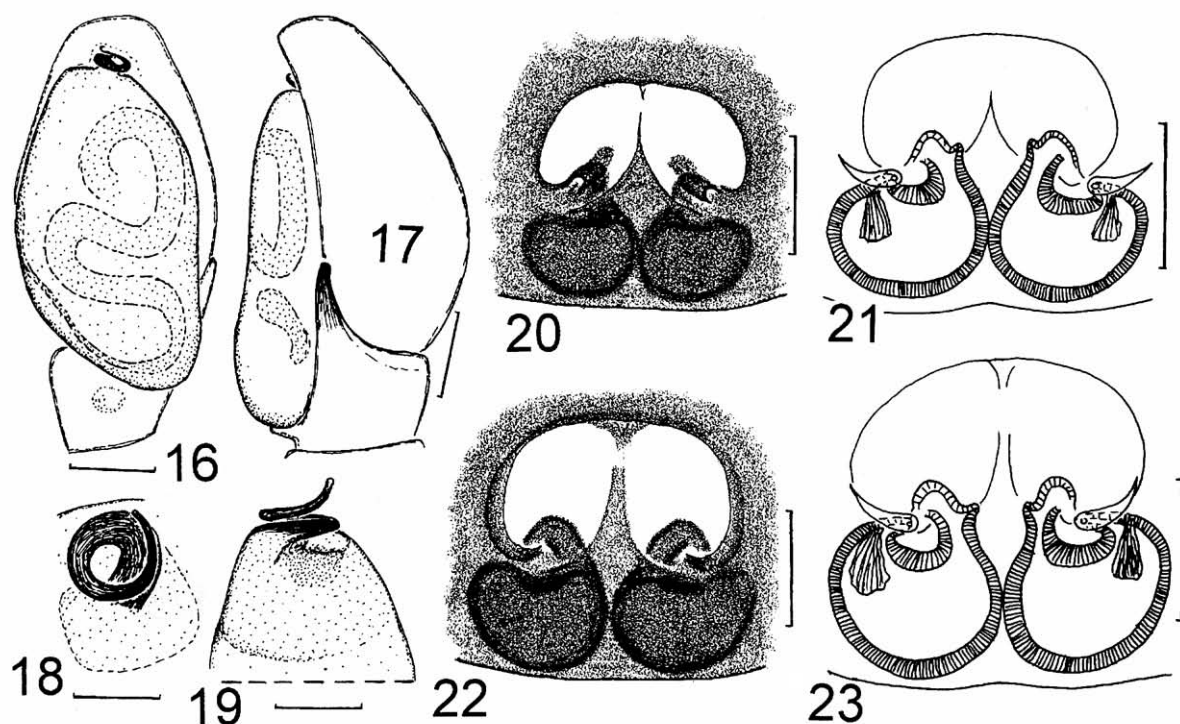
DISTRIBUTION. This seems to be a Mediterranean-Central Asian species, with its localities in Central Asia and the Caucasus being shown in Map 1.

NOTES. Based on Andreeva's figure alone [Andreeva, 1976: fig. 130, ♀], we have concluded that apparently she did not deal with *C. infimus* as stated [repeated by Andreeva, 1975 and Nenilin, 1984a], but with an unknown species. The problem is, a restudy of pertinent material is necessary.

There are two morphs of both females and males amongst Central Asian samples of *C. infimus*. Females differ in leg coloration. This has allowed to sort out all material studied into two groups, or morphs (see above): yellow (females with completely yellow legs) and black (those with dark grey/black legs). However, females from

Italy (see comparative material) show all legs with brown femora and yellow remaining segments. The genitalia of both colour morphs show no clear differences (see Figs 1–9), although yellow-legged females sometimes have a poorly developed, visible median septum of the epigyne (Fig. 1). Males of *C. infimus* differ in size and shape of the tegulum (cf. Figs 32, 33 and 34, 35). Although males with a narrower tegulum (Fig. 32) are more often found together with yellow-legged females, it seems impossible to prove they match each other. It has also been impossible to match black-legged females and males with a rounded tegulum (Fig. 34), as no black-legged females have ever been collected together with males. Moreover, we have even been unable to clearly sort out the males into two groups in agreement with bulb structure, as all intermediate forms appear to exist, sometimes even in the same sample. Therefore, we are bound to consider *C. infimus* as a quite variable species as regards both coloration and the structure of the genitalia.

Based on this, we advance the synonymy of both *Euophrys thorelli asiatica* (= *Chalcoscirtus asiaticus*) and *C. pauper* with *C. infimus*. Both species have hitherto been known from single female holotypes only. Of them, the former (*E. t. asiatica*) belongs to the black-legged morph, while the latter (*C. pauper*) to the yellow-legged one. The males of *C. asiaticus* have been mistaken by Marusik [1990], being in fact those of *C. paraansobicus* Marusik, 1990 (Marusik's specimens re-examined). The probably wrong synonymy of *C. ansobicus* Andreeva, 1976 with *C. asiaticus* will be discussed below (see “Diagnosis” under *C. ansobicus*).



Figs 16–23. Genitalia of *Chalcoscirtus michailovi* sp.n. (16–19, holotype), *C. charynensis* sp.n. (20, 21, holotype) and *C. molo* (22, 23, paratype from the type locality): 16, 17 — male palp, ventral and prolateral views; 18, 19 — embolic division, apical and ventral views; 20, 22 — epigyne; 21, 23 — spermathecae. Scale: 0.1 mm.

Рис. 16–23. Гениталии *Chalcoscirtus michailovi* sp.n. (16–19, голотип), *C. charynensis* sp.n. (20, 21, голотип) и *C. molo* (22, 23, паратип из типового локалитета): 16, 17 — пальпа самца, вентрально и пролатерально; 18, 19 — эмболярный отдел, апикально и вентрально; 20, 22 — эпигина; 21, 23 — сперматека. Масштаб: 0,1 мм.

Chalcoscirtus (s.str.) *molo* Marusik, 1991
Figs 22, 23, Map 8.

Chalcoscirtus molo Marusik, 1991b: 22–23, ff. 3–4 (♀ holotype, in ZMUM, re-examined).

Chalcoscirtus molo: Mikhailov, 1996: 130; 1997: 208.

MATERIAL. 2 ♀♀ (ZMUM, holotype and paratype), Kyrgyzstan, Terskei-Alatau Mt. Range, Molo, 3,100 m a.s.l., 15.07.1983, S.O.

DIAGNOSIS. See "Diagnosis" under *C. charynensis* and *C. pseudoinfimus*.

DISTRIBUTION. The type locality only (Map 8).

DESCRIPTION. See Marusik [1991b].

Chalcoscirtus (s.str.) *nenilini* Marusik, 1990
Figs 14, 15, 30, 31, Map 7.

Chalcoscirtus nenilini Marusik, 1990: 52–53, f. 2 (♂ holotype, in ZMUM, re-examined).

Chalcoscirtus nenilini: Mikhailov, 1996: 130; 1997: 208.

MATERIAL. KYRGHYZSTAN: 1 ♀ (ISE), foothills of Kirghizsky Mt. Range, Malinovoe Canyon, 1,500 m a.s.l., 1.07.1983, S.O.; 1 ♂ (ISE), W part of Inylchektau (?) Mt. Range, Sary-Dzhaz, 18–19.07.1993, D.A. Milko.

DIAGNOSIS. *C. nenilini* is the largest member of the *infimus*-group (cf. scales of Figs 10–15 and 24–31) and it can be easily distinguished by genitalic structure, i.e. the hook-shaped embolus in males (Fig. 30), the heavily sclerotized epigynal lips and the rounded spermathecae in females (Figs 14, 15).

DISTRIBUTION. Kyrgyzstan (Map 7).

DESCRIPTION. See Marusik [1990].

Chalcoscirtus (s.str.) *pseudoinfimus* Ovtsharenko, 1978
Figs 10, 11, 26, 27, Map 4.

Chalcoscirtus pseudoinfimus Ovtsharenko, 1978: 685–686, ff. 4–7 (♀ holotype, in ZISP, re-examined).

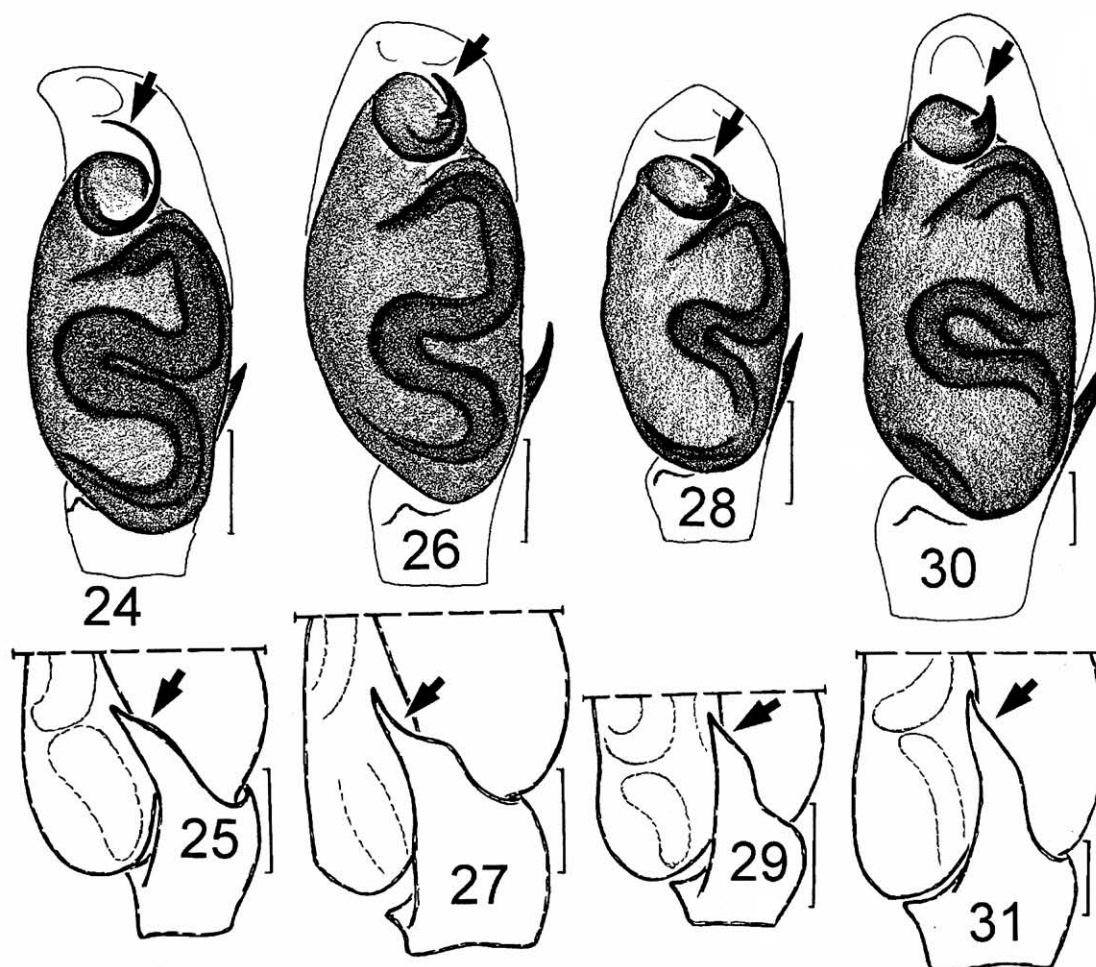
Chalcoscirtus pseudoinfimus: Nenilin, 1985: 130; Marusik, 1990: 51–52, ff. 4–7; Mikhailov, 1996: 130; 1997: 209.

MATERIAL. GEORGIA: 2 ♂♂, 2 ♀♀ (ISE), 1 ♂, 3 ♀♀ (ZISP), E-Georgia, Lagodekhi Nature Reserve, 2,700–2,800 m a.s.l., 23.06–3.07.1982, Y.M.; 2 ♂♂, 6 ♀♀ (ZISP), RUSSIA: Caucasus Major, Krasnodar Prov., Kavkazsky (= Caucasian) Nature Reserve, environs of Krasnaya Polyana, Mt. Pseashko, 2,800–3,000 m a.s.l., 22–27.07.1975, V.O.; 1 ♀ (ZISP, holotype?), Kabarda-Balkarian Republic, Mt. Elbrus, 3,300 m a.s.l., 2.07.1976, V.O.; 2 ♂♂ (ZISP), 1 ♂♂, 2 ♀♀ (ISE), same locality and date.

DIAGNOSIS. The species belongs to the *infimus*-group and is seems to be the closest to *C. brevicymbialis* and *C. molo*. For differences from the former species see "Diagnosis" above under *C. brevicymbialis*. Females of *C. pseudoinfimus* are especially similar to those of *C. molo* both in size and in the structure of the genitalia (cf. Figs 10–11 and 22–23) and neither can clearly be distinguished. At present, we consider both species separate, as the former seems to be restricted to high elevations of the Caucasus, while the latter to high elevations of the Tian Shan. Males are necessary to provide more detailed diagnoses of these species.

DISTRIBUTION. The Caucasus Major Mt. Range (high elevations only) (Map 2).

DESCRIPTION. See Ovtsharenko [1978].



Figs 24–31. Male palpi of *Chalcoscirtus infimus* (24, 25, from Babatagh Mt. Range, Uzbekistan), *C. pseudoinfimus* (26, 27, from the type locality), *C. brevicymbialis* (28–29, from Kapchagai, Almaty Area) and *C. nenilini* (30, 31, from Sary-Dzhaz, Kyrgyzstan): 24, 26, 28, 30 — ventral view; 25, 27, 29, 31 — prolateral view. Scale: 0.1 mm. Taxonomically important details arrowed.

Рис. 24–31. Пальпы самцов *Chalcoscirtus infimus* (24, 25 из хребта Бабатаг (Узбекистан)), *C. pseudoinfimus* (26, 27, из типового локалитета), *C. brevicymbialis* (28, 29 из Капчагая (Алматинская область)) и *C. nenilini* (30, 31 из Сары-Джаза (Кыргызстан)): 24, 26, 28, 30 — вентрально; 25, 27, 29, 31 — пролатерально. Масштаб: 0,1 мм. Стрелками помечены таксономически важные детали.

The *karakurt* species group

Chalcoscirtus (s.str.) *iranicus* sp.n. Figs 42, 43, Map 5.

Holotype ♀ (ISE), Iran, Tehran, 06.1859, coll. E. Keyserling.
DIAGNOSIS. The new species is most similar to *C. karakurt* but it can easily be separated by the longer and coiled insemination ducts (cf. Figs 42, 43 and 40, 41).

DISTRIBUTION. The type locality only (Map 5).

DESCRIPTION. FEMALE. Measurements. Carapace 1.60 long, 1.10 wide, 0.63 high at PLE. Ocular area 0.78 long, 0.94 wide anteriorly and 0.90 wide posteriorly. Diameter of AME 0.15. Abdomen destroyed and cannot be measured. Cheliceral length 0.50. Clypeus not marked. Length of leg segments: leg I — 0.88 + 0.51 + 0.55 + 0.43 + 0.30; leg II absent; leg III — 1.00 + 0.50 + 0.60 + 0.53 + 0.33; leg IV — 1.05 + 0.50 + 0.78 + 0.63 + 0.38. Legs strongly shabby, leg spination cannot be studied. Coloration. Carapace brown, with a dark brown eye field and black around eyes. Sternum, maxillae, labium and cheli-

cerae light brown. Abdomen yellowish-brownish. Dorsal colour pattern expressed but cannot be studied because of destroyed abdomen. Book-lung covers and spinnerets yellow, tinged grey. All legs and palpi yellow. Epigyne and spermathecae as in Figs 42, 43.

NAME. The species is named after the terra typica, Iran.

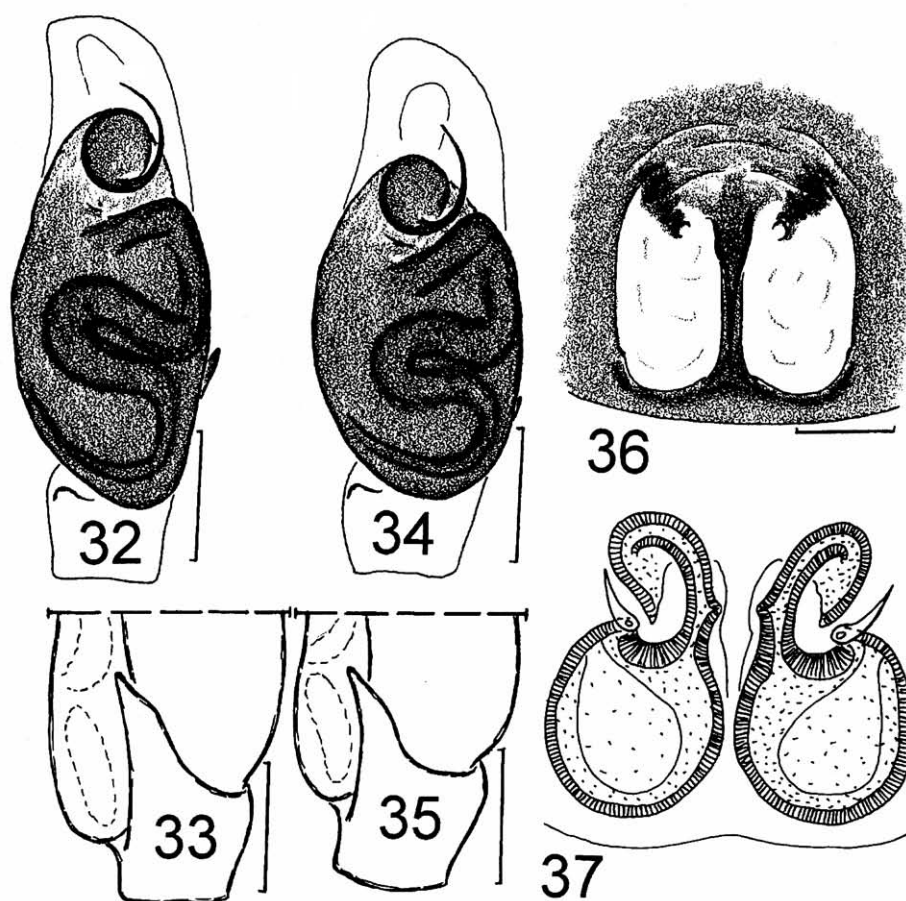
Chalcoscirtus (s.str.) *karakurt* Marusik, 1991 Figs 38–41, Map 7.

Chalcoscirtus karakurt Marusik, 1991a: 19, ff. 1.1–5 (♂ holotype, in ZMUM, re-examined).

Chalcoscirtus martensi parvulus Marusik, 1991a: 26–28, ff. 6–9 (pro parte, ♀♀ only).

Chalcoscirtus karakurt: Wesolowska, 1996: 26; Mikhailov, 1996: 130; 1997: 208.

MATERIAL. KAZAKHSTAN: 1 ♂, 1 ♀ (ZMUM), Ustyurt Plateau, Ustyurt Reserve, Kugusem and Baskorgan draw-wells, 23–28.05.1989, S.I.; 3 ♀♀ (ISE), Akmola Area, Baigalinsk Distr., N-Ustyurt Plateau, July 1989, A.Z.; 1 ♂ (ISE), Almaty Area, 270th km of highway Almaty-Karaganda, 7.05.1988, M.V. Zarko; 1 ♂ (ISE), same area, Chilik Distr., Charyn River Canyon, 29.05.1991, A.Z.; 2 ♂♂ (ZMUM), same area, Talgar Distr., near Kapchagai,



Figs 32–37. Genitalia of *Chalcoscirtus infimus* (32–33 from Cogoleto, Italy, 34–35 from Izmir, Turkey) and *C. bortolgois* sp.n. (36–37, paratype from the type locality): 32, 34 — male palp, ventral view; 33, 35 — tibial apophysis, prolateral view; 36 — epigyne; 37 — spermathecae. Scale: 0.1 mm.

Рис. 32–37. Гениталии *Chalcoscirtus infimus* (32–33 из Коголето (Италия), 34–35 из Измира (Турция)) и *C. bortolgois* sp.n. (36–37, паратип из типового локалитета): 32, 34 — пальпа самца, вентрально; 33, 35 — голенный отросток, пролатерально; 36 — эпигина; 37 — сперматеки. Масштаб: 0,1 мм.

10.06.1992, O.L.; 2 ♂♂, 4 ♀♀ (ISE), same locality, Ili River, 26.05.1990, A.F. & A.Z.; 2 ♀♀ (ISE), same locality, 24.07.1988, A.Z.; 1 ♀ (ISE), same area, Kurtinsk Distr., ca 72 km NW of Kolshengel [= Kanshengel], 13.05.1992, A.Z.; 5 ♀♀ (ISE), same area, Balkhash Distr., ca 29 km SE of Bakanas, 24.05.1995, A.Z.; 3 ♀♀ (ISE), Zhambyl Area, Moiynkumy Distr., ca 24 km NE of Ulanbel, Betpak-Dala' Desert, 17.05.1991, A.Z.; 1 ♀ (ISE), same area and district, 20th km of highway Birluk-Burubaital, 24.05.1991, S.I. & A.Z.; 2 ♀♀ (ISE), same area and district, Kumuzek, 25.06.1989, C.K. Tarabaev & A.Z.; 1 ♂ (ZMUM), same area, Talass Distr., 70th km of highway Akkol-Ulanbel, Moiynkumy Desert, 15.05.1991, S.I. & A.Z.; 2 ♀♀ (ISE), same area, Chu Distr., Chu River bank, 30.06.1989, C.K. Tarabaev & A.Z.; 2 ♂♂ (ISE), same area, Sarysu Distr., ca 40 km NE of Ulanbel, Sengeldy Spring, Betpak-Dala Desert, 20.05.1991, S.I. & A.Z.; 4 ♂♂, 16 ♀♀ (ISE), same area and district, ca 79 km NE of Ulanbel, Koktal, 18–19.05.1991, S.I. & A.Z.; 1 ♀ (ISE), same area and district, ca 13 km NE of Ulanbel, Kyzyltuz, Betpak-Dala Desert, 2.06.1990, A.F. & A.Z.; 12 ♂♂, 1 ♀ (ISE), Taldy-Kurgan Area, Panfilovsk Distr., 28–30 km SW of Konyrolen, Aktau Mts., 7–9.05.1992, A.F. & A.Z.; 1 ♀ (ZMUM), same area, 63th km of highway Ushtobe-Akzhar, 27.07.1988, A.Z.; 1 ♀ (ISE), same area, Karatalskiy Distr., 47th km of highway Ush-Tobe-Akzhar, 26.07.1988, A.Z.; 1 ♀ (ZMUM), Burlyutobinsk Distr., 38th km of highway Tulebaevo-Lepsy, 2.08.1988, A.Z.; 3 ♀♀ (ZMUM), S-Kazakhstan Area, ca 43 km W of Bairkum, Zhautkan, Kyzylkumy Desert, 11–16.05.1995, A.Z.; 1 ♂ (ZMUM), same area and district, Kyzylkum Desert, near Baimakkhan, 24.05.1993, A.Z. — UZBEKISTAN: 2 ♀♀ (ISE), Bukhara, Sayat, 3.05.1976, A.P. Kononenko; 2 ♂♂, 2 ♀♀ (FSCA), Nuratau, 14.06.1976, A.P. Kononenko; 1 ♀ (ISE), Navoi Area, ca 6 km NE of Dzhangeldy, 21.05.1994, A.Z. — TURKMENISTAN: 1 ♂ (ISE), W-Kopetdagh Mts., Kizil-Arvat Distr., ca 35 km S of Iskander, 12–18.09.1985, A.V. Abramov; 1 ♀ (ZISP), Malyi Balkhan Mt.

Range, 14.05.1984, V.Ya. Fet; 2 ♀♀ (ZISP), SE-Karakumy Desert, Repetek Nature Reserve, 13.05.1982, V.I. Krivokhatsky; 1 ♀ (ISE), same locality, 18.04.1993, S.O. — KYRGHYZSTAN: 1 ♀ (ZISP), Chu River Valley, Tokmak, 20.05.1979, S.Z. — IRAN: 1 ♂ (PSU), "Kerman, April 59, Keyserling et Bienart, 1869".

DIAGNOSIS. See "Diagnosis" under both *C. iraniscus* sp.n. and *C. michailovi* sp.n.

DISTRIBUTION. This is a typical Turanian lowland species (Map 7).

NOTE. Two kinds of *C. karakurt* females have been found during a survey of the collected material, of which most of the females but one display the genitalic structure as shown in Figs 40, 41, with the insemination ducts crossing the white epigynal "windows". Variation has turned out to be quite little. However, a female from the Repetek Reserve shows the genitalia with the insemination ducts running subparallel along the median septum (Figs 38, 39). The latter female is very likely to belong to a new species but, as both forms concerned are very close/similar, we postpone its description before more material, including that of males, has been collected.

DESCRIPTION. For males see Marusik [1991a], and for females see Marusik [1991a: sub *C. martensi parvulus*].

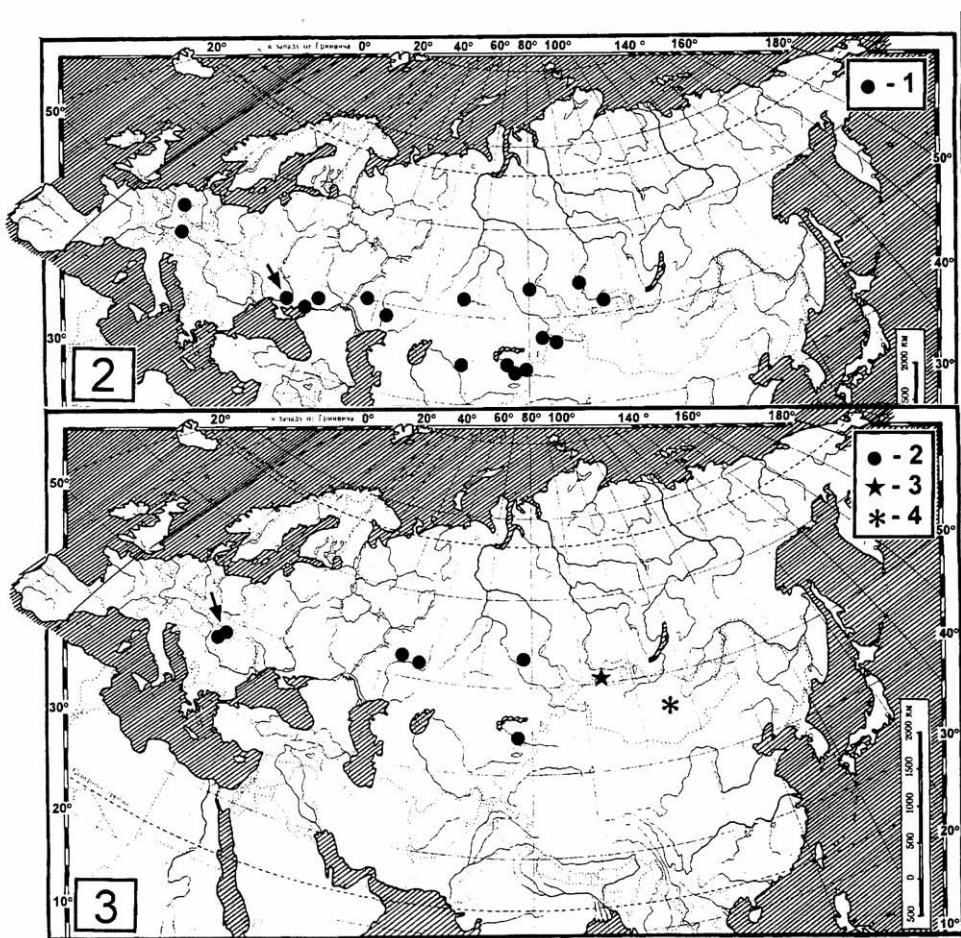
Chalcoscirtus (s.str.) *kirghizicus* Marusik, 1991
Map 8.

Chalcoscirtus kirghizicus Marusik, 1991b: 22, ff. 1–2 (♀ holotype, in ZMUM, re-examined).

Chalcoscirtus kirghizicus: Mikhailov, 1996: 130; 1997: 208.

Maps 2–3. Distribution of *Chalcoscirtus nigrinus* (1), *C. brevicymbialis* (2), *C. koponeni* sp.n. (3) and *C. bortolongoi* sp.n. (4). Type localities arrowed.

Карты 2–3. Распространение *Chalcoscirtus nigrinus* (1), *C. brevicymbialis* (2), *C. koponeni* sp.n. (3) и *C. bortolongoi* sp.n. (4). Типовые локалитеты помечены стрелками.



MATERIAL. KYRGHYZSTAN: 1 ♀ (ZMUM, holotype without epigyne), Lake Issyk-Kul, Tyup River Valley, Santash, 3,000 m a.s.l., 23.07.1983, S.O.

DIAGNOSIS. See "Diagnosis" below under *Chalcoscirtus* sp.

DISTRIBUTION. The type locality only (Map 8).

DESCRIPTION. See Marusik [1991b].

Chalcoscirtus (s.str.) *michailovi* sp.n.

Figs 16–19, Map 8.

Holotype ♂ (ISE), Kazakhstan, Almaty Area, Almaty Nature Reserve, 1,700 m a.s.l., 1.09.1983, Y.M.

Paratype: 1 ♂ (ZMUM), Turkmenistan, C-Kopetdagh, ca 20 km S of Geok-Tepe, Mt. Dushak, 2,400–2,500 m a.s.l., 19.04.1989, K.G. Mikhailov.

DIAGNOSIS. The species is particularly similar to *C. karakurt* but differs in the smaller coil of the embolus, the dissimilar proportions of the tegulum, and the longer tibial apophysis [cf. Figs 16–19 and Marusik, 1991a: 1.1–5].

DISTRIBUTION. SE-Kazakhstan and Turkmenistan (Map 8).

DESCRIPTION. MALE. Measurements. Carapace 1.40 long, 0.93 wide and 0.53 high at PLE. Eye field 0.58 long, 0.78 wide anteriorly and 0.68 wide posteriorly. AME 0.25. Abdomen 1.58 long, 1.03 wide. Cheliceral length 0.45. Clypeal height 0.05. Length of the leg segments: leg I — 0.70 + 0.33 + 0.40 + 0.33 + 0.28; leg II — 0.63 + 0.35 + 0.36 + 0.33 + 0.28; leg III — 0.73 + 0.35 + 0.48 + 0.45 + 0.35; leg IV — 0.70 + 0.35 + 0.58 + 0.45 + 0.35. Leg

spination. Leg I: Tib. v. 1-2-2ap.; Mt. v. 2-2ap. Leg II: Tib. v. 1-1-1ap.; Mt. v. 2-2ap. Leg III: Tib. pr., rt. and v. 0-1-0; Mt. pr. and rt. 2ap., v. 2-0-2ap. Leg IV: Mt. 3ap. (this specimen is damaged and lacks spines on tibia IV). Coloration. Whole body monochromous: dark grey, almost black, iridescent dorsally, dark brown ventrally. Leg segments dark grey except for white tarsi. Dorsum with a large scutum. Palpal structure as in Figs 16–19.

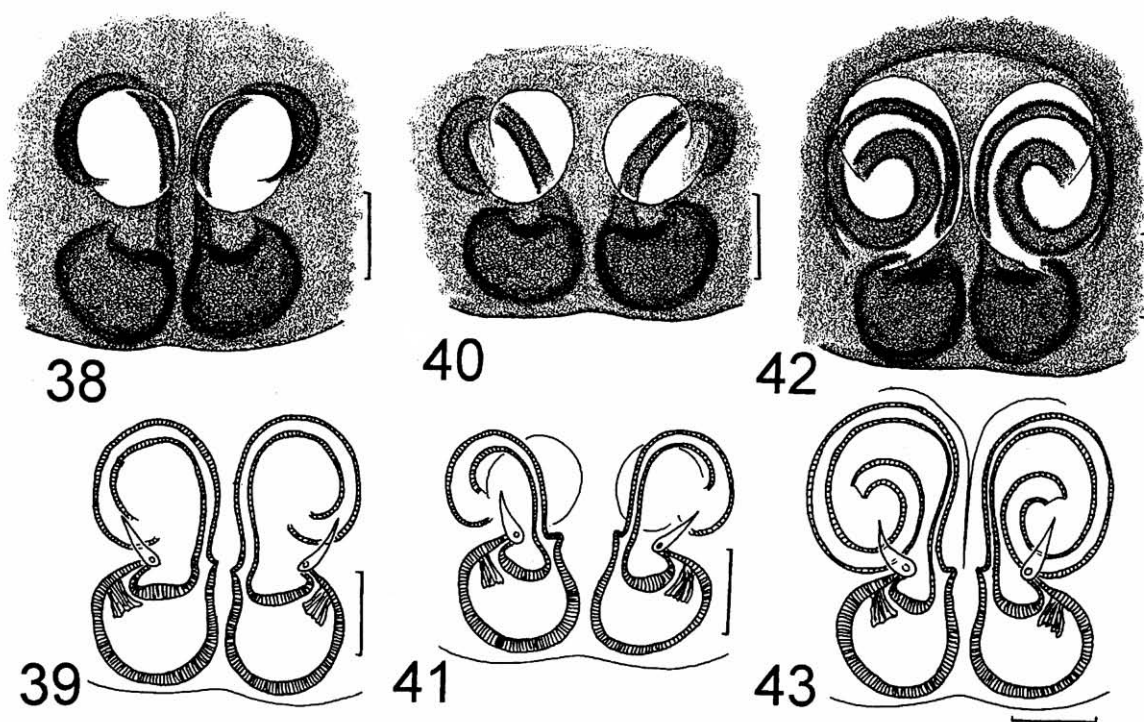
NAME. The species is gladly named after our friend and colleague, Dr. Kirill G. Mikhailov, arachnologist from ZMUM, Moscow, Russia.

Chalcoscirtus (s.str.) sp.

Figs 62, 63.

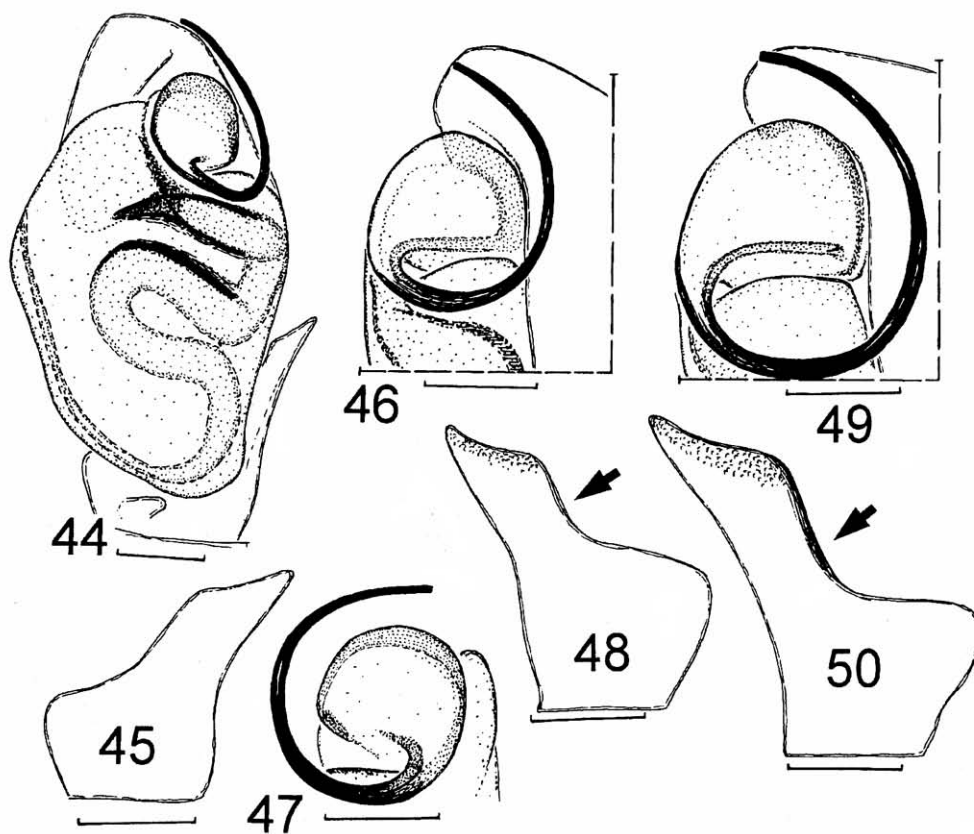
MATERIAL. KAZAKHSTAN: 1 ♀ (ISE), Taldy-Kurgan Area, Gvardeisk Distr., near Bakchit, 9.05.1992, A.F. & A.Z.

DIAGNOSIS. The genitalic structure of this species is quite similar to that of *C. kirghizicus* as shown by Marusik [1991b: figs 1–2] (cf. Figs 62, 63). However, a direct comparison of the genitalia of both females was impossible, as the genitalia of the holotype of *C. kirghizicus* had been lost during the original description (checked by DL). Despite this, we consider both species as separate, because the female of *Chalcoscirtus* sp. differs from that of *C. kirghizicus* in having a two times smaller body and metallic shining tint of the carapace. Furthermore, *Chalcoscirtus* sp. is here assumed to probably represent female *C. michailovi* (see above), for it



Figs 38–43. Female genitalia of *Chalcoscirtus karakurt* (38–39 from Repetek, Turkmenistan, 40–41 from Kapchagai, Almaty Area) and *C. iranicus* sp.n. (42–43, holotype): 38, 40, 42 — epigyne; 39, 41, 43 — spermathecae. Scale: 0.1 mm.

Рис. 38–43. Гениталии самок *Chalcoscirtus karakurt* (38–39 из Репетека (Туркменистан), 40–41 из Капчагая (Алматинская область)) и *C. iranicus* sp.n. (42–43, голотип): 38, 40, 42 — эпигина; 39, 41, 43 — сперматеки. Масштаб: 0,1 мм.



Figs 44–50. Male palpi of *Chalcoscirtus nigratus* (44–45 from Hessen, Germany, 46–48 from Taganrog, Rostov-on-Don Area) and *C. tanasevichi* (49–50 from Zhambyl Area, Kazakhstan): 44 — male palp, ventral view; 46, 47, 49 — embolic division, prolateral view; 45, 48, 50 — tibial apophysis, prolateral view. Scale: 0.1 mm.

Рис. 44–50. Пальпы самцов *Chalcoscirtus nigratus* (44–45 из земли Гессен (Германия), 46–48 из Таганрога (Ростовская обл.)) и *C. tanasevichi* (49–50 из Жамбылской области (Казахстан)): 44 — пальпа самца, вентрально; 46, 47, 49 — эмболярный отдел, пролатерально; 45, 48, 50 — голенный отросток, пролатерально. Масштаб: 0,1 мм.

Maps 4–5. Distribution of *Chalcoscirtus parvulus* (1), *C. pseudoinfimus* (2), *C. minutus* (3), *C. tanasevichi* (4) and *C. iranica* sp.n. (5) in Central Asia and the Caucasus. Type localities arrowed.

Карты 4–5. Распространение *Chalcoscirtus parvulus* (1), *C. pseudoinfimus* (2), *C. minutus* (3), *C. tanasevichi* (4) и *C. iranica* sp.n. (5) в Средней Азии и на Кавказе. Типовые локалитеты помечены стрелками.

shows the same pattern of the female genitalia as in other congeners of the *karakurt*-group and fits well the male size of *C. michailovi*. Unfortunately, there are no samples yet where males and females of *C. michailovi* have been collected together. So we delay a final conclusion concerning the assignment of *Chalcoscirtus* sp. before more specimens, including males, have become available for study.

DISTRIBUTION. Kazakhstan: Taldy-Kurgan Area.

DESCRIPTION. FEMALE. Measurements. Carapace 1.07 long, 0.70 wide, 0.41 high at PLE. Ocular area 0.43 long, 0.67 wide anteriorly and 0.65 wide posteriorly. Diameter of AME 0.20. Abdomen 1.04 long, 0.73 wide. Cheliceral length 0.30. Clypeal height 0.03.

Length of leg segments: leg I — $0.49 + 0.24 + 0.31 + 0.21 + 0.20$; leg II — $0.46 + 0.26 + 0.29 + 0.21 + 0.21$; leg III — $0.60 + 0.29 + 0.33 + 0.30 + 0.24$; leg IV — $0.50 + 0.30 + 0.46 + 0.36 + 0.27$. Leg spination. Leg I: Tb v. 1-2-2ap; Mt v. 2-2ap. Leg II: Tb v. 0-1-0; Mt v. 2-2ap. Leg III: Tb pr., rt. and v. 0-1-0; Mt pr. and rt. 1-2ap., v. 2ap. Leg IV: Tb v. 0-1-0; Mt pr. 1-2ap., rt. and v. 2ap. Coloration. Carapace dark brown, shining, with a black eye field. Clypeus brown, hairless. Sternum, labium, maxillae and chelicerae light brown. Abdomen: dorsum monochromously dark brown, venter yellow-grey. Book-lung covers and spinnerets yellow-grey. All legs and palpi yellowish-greyish. Epigyne and spermathecae as shown in Figs 62, 63.

The *nigratus* species group

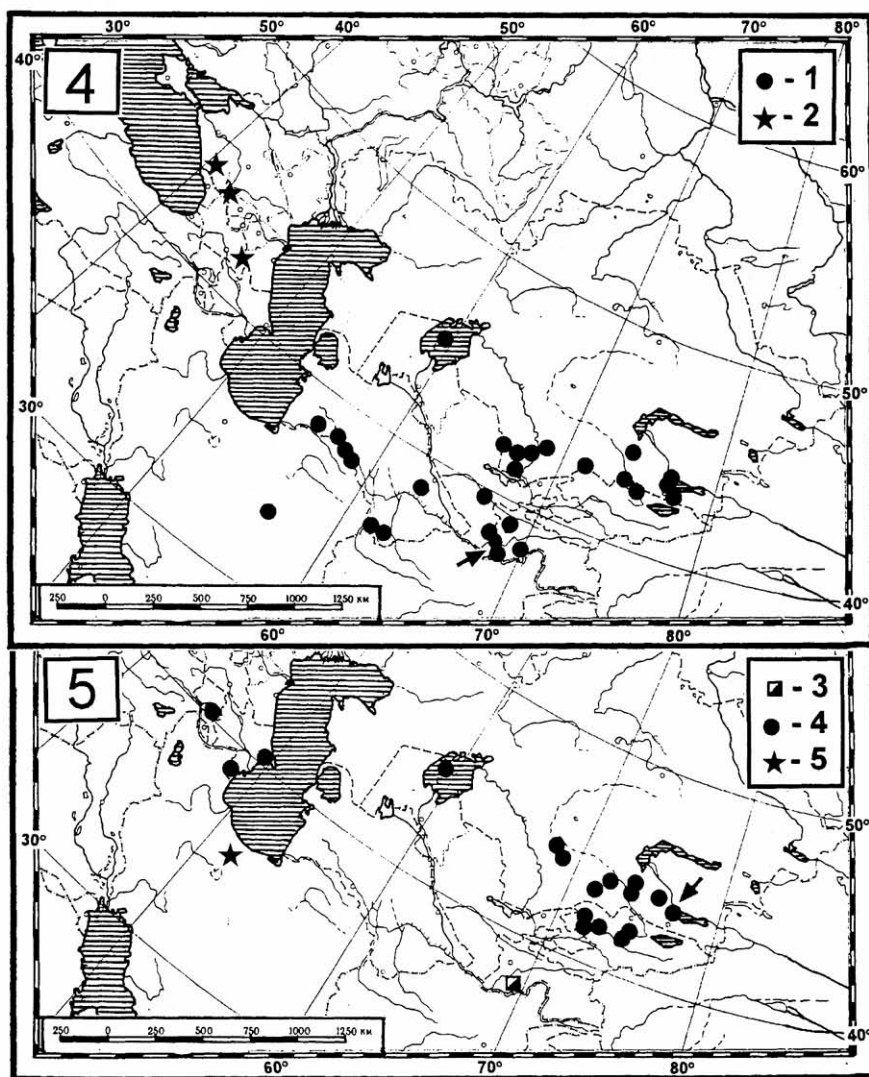
Chalcoscirtus (s.str.) *bortolgoi* sp.n.

Figs 36–37, Map 3.

Holotype ♀ (ISE), Mongolia, Bayanhongor Aimak, Bayanlig Somon, Bor-Tolgoi ($44^{\circ}06'N$, $100^{\circ}56'E$), 1400 m a.s.l., 2–4.06.1997, Y.M.

Paratypes: 2♀♀ (ZMUM), 2♀♀ (ISE), together with holotype.

DIAGNOSIS. Both epigynal (cf. Fig. 36 and 51, 52, 59) and spermathecal (cf. Figs 37 and 52, 53, 60)

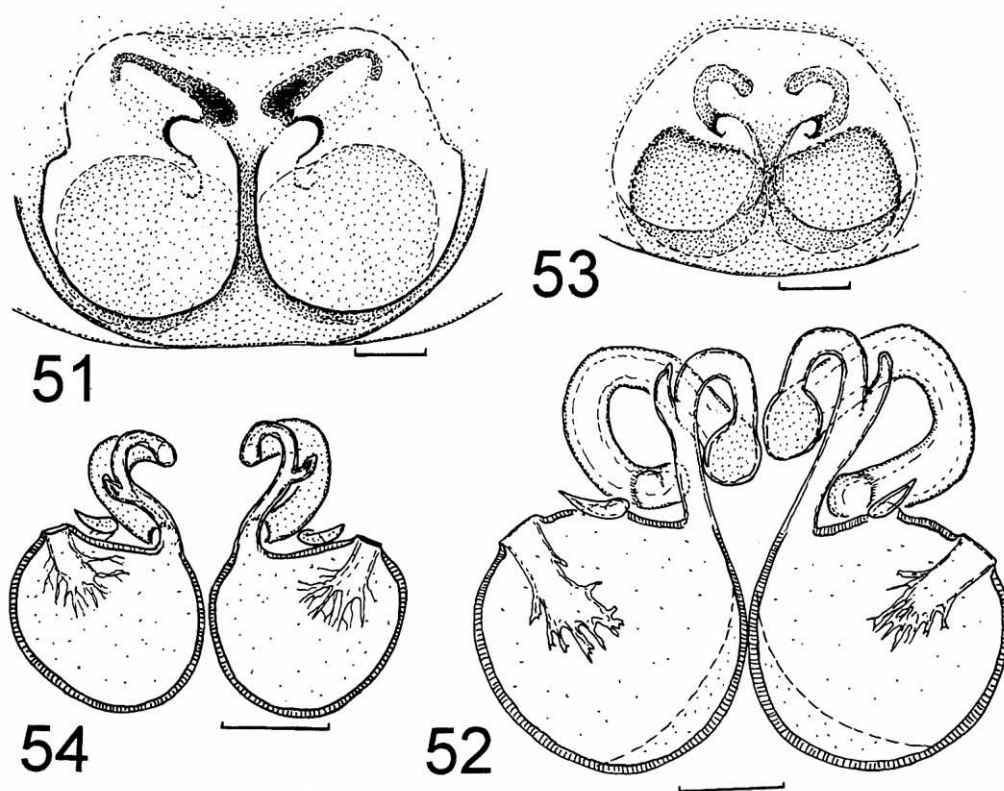


structures are diagnostic for this species.

DISTRIBUTION. The type locality only (Map 3).

DESCRIPTION. FEMALE. Measurements. Carapace 1.55 long, 1.05 wide, 0.93 high at PLE. Ocular area 0.71 long, 0.95 wide anteriorly and 0.90 wide posteriorly. Diameter of AME 0.25. Abdomen 2.53 long, 1.70 wide. Cheliceral length 0.48. Clypeus not marked. Length of leg segments: leg I — $0.75 + 0.48 + 0.50 + 0.38 + 0.30$; leg II — $0.83 + 0.45 + 0.40 + 0.38 + 0.25$; leg III — $0.85 + 0.50 + 0.50 + 0.48 + 0.35$; leg IV — $0.98 + 0.48 + 0.68 + 0.58 + 0.45$. Leg spination. Leg I: Tb v. 1-2-2ap.; Mt v. 2-2ap. Leg II: Tb v. 1-1-2ap.; Mt v. 2-2ap. Leg III: Tb pr. 0-1, v. 0-1-2ap.; Mt pr. 2ap., rt. 1-2ap., v. 2-2ap. Leg IV: Mt pr. 1-2ap., rt. and v. 2ap. Coloration. Carapace dark brown, almost black, sparsely covered with elongated, narrow, translucent/white scales. Eyes of first row surrounded by white scales. Sternum, maxillae, labium and chelicerae brown to dark brown. Abdomen dark grey to black and, like carapace, sparsely covered with elongated, narrow, translucent/white scales. Book-lung covers and spinnerets grey. All legs monochromously dark grey-brown. Epigyne and spermathecae as in Figs 36, 37.

NAME. The species is named after the type locality, i.e. Bor-Tolgoi, Bayanhongor Aimak, Mongolia.



Figs 51–54. Female genitalia of *Chalcoscirtus tanasevichi* (51 from Zhambyl Area, Kazakhstan, 52 from Pavlodar Area, Kazakhstan) and *C. nigrinus* (53–54 from E-Kazakhstan Area, Kazakhstan): 51, 53 — epigyne; 52, 54 — spermathecae. Scale: 0.1 mm.

Рис. 38–43. Гениталии самок *Chalcoscirtus tanasevichi* (51 из Жамбылской области (Казakhstan), 52 из Павлодарской области (Казakhstan)) и *C. nigrinus* (53–54 из Восточно-Казakhstanской области (Казakhstan)): 51, 53 — эпигина; 52, 54 — сперматеки. Масштаб: 0,1 мм.

Chalcoscirtus (s.str.) *minutus* Marusik, 1990
Figs 57, 58, Map 5.

Chalcoscirtus minutus Marusik, 1990: 54, ff. 4.3–5 (♂ holotype, in ZMUM, re-examined).

Chalcoscirtus minutus: Mikhailov, 1996: 130; 1997: 208

MATERIAL. TAJIKISTAN: 1 ♂ (ZMUM, holotype), lower reaches of Vakhsh River, "Tigrovaya Balka" Nature Reserve, 6.05.1986, coll. ?

DIAGNOSIS. This species is very similar to *C. platnicki* but males can be separated by the smaller size of both body and palps, as well as by the proportions of the tegulum (cf. Figs 57 and 57).

DISTRIBUTION. The type locality only (Map 5).

DESCRIPTION. See Marusik [1990].

Chalcoscirtus (s.str.) *nigrinus* (Thorell, 1875)
Figs 44–48, 53, 54, Map 2.

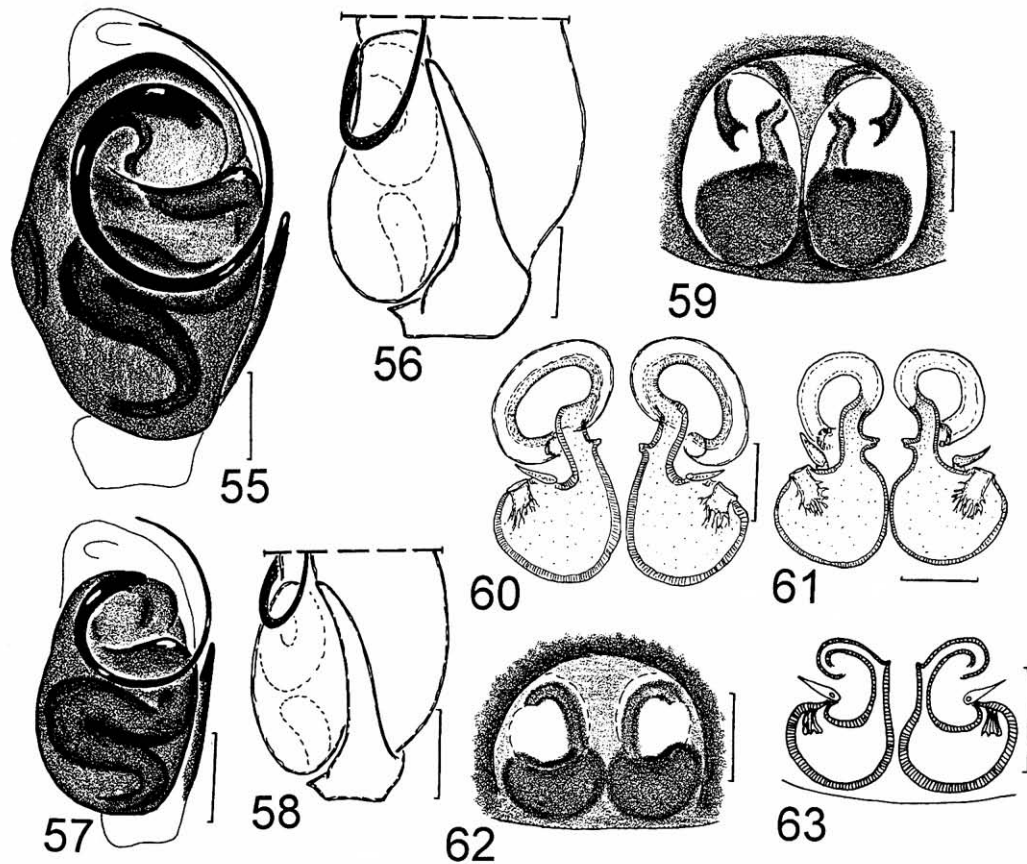
Euophrys nigrita: Prószyński, 1979: 307, ff. 75–77 (T from *Heliophanus*); Nenilin, 1984b: 135; 1985: 130, 132; Logunov, 1992a: 66; Zyuzin, Tarabaev & Fyodorov, 1993: 281.

Chalcoscirtus nigrinus: Bauchhenss, 1993: 43–45, ff. 1–4 (T from *Euophrys*); Mikhailov, 1996: 130; 1997: 209.

MATERIAL. GERMANY: 1 ♂, 1 ♀ (ISE), Hessen, 24.07.1992, Matten. — UKRAINE: 1 ♀ (ISE), Voroshilovgrad Area, Melovoe Distr., near Velikoe, "Streltsovskaya Step" Nature Reserve, 12.06–2.07.1984, N.Y. Polchaninova. — RUSSIA: 3 ♂♂ (PSU), Orenburg Area, near Aituar, 31.05.1996, N.S. Mazura; 2 ♂♂ (ISE), Volgograd Area, Pallasovka, 25.05.1996, Y.M.; 3 ♂♂ (ZISP), Rostov-on-Don Area, near Taganrog, Amvrosevka, June

1912, S.A. Spassky; 1 ♀ (ISE), Tuva, ca 15 km E of Kyzyl, Kaa-Khem River (51°43'N, 94°42'E), 800–1,200 m a.s.l., 16–18.06.1996, Y.M.; 1 ♀ (FSCA), Novosibirsk Area, 20–25 km SW of Karasuk, 30.06.1990, V.P. Pekin; 1 ♀ (ISE), Khakassia, Altai Distr., ca 40 km SE of Belyi Yar, near Novorossiyskoe, 400 m a.s.l., 23–24.06.1990, D.L. — KAZAKHSTAN: 1 ♂ (FSCA), Almaty Area, Ili Distr., 60th km of highway Almaty-Karaganda, 26.05.1988, A.Z.; 1 ♀ (ISE), same area, Balkhash Distr., ca 4 km SE of Bakanas, Ili River bank, 26–27.05.1995, A.Z.; 1 ♂ (ZMUM), same area, Balkhash Distr., Bakanas, 11–13.05.1986, A.Z.; 2 ♀♀ (ISE), same area and district, ca 24 km SE of Bakanas, 28.05.1995, A.Z.; 1 ♂ (ISE), Taldy-Kurgan Area, Kurtinsk Distr., near Aidarly, 27.06.1985, V.G. Linsky; 3 ♂♂, 3 ♀♀ (ISE), E-Kazakhstan Area, Zaisan Distr., Saur Mt. Range, basin of Akkolka River, 5–27.06.1990, K.Y. Eskov; 1 ♀ (ISE), same area, ca. 60 km WNW of Ust-Kamenogorsk, near Dongaly, Kalbinski Mt. Range, 4.06.1997, R.D. & V.Z.; 1 ♀ (ZMUM), same locality, Pass Saikan, 1,800 m a.s.l., 7.06.1990, K.Y. Eskov; 2 ♀♀ (ZMUM), same locality, Dzheminey River Canyon, 2–4.06.1990, K.Y. Eskov; 1 ♀ (ISE), same area and district, NW spurs of Manrak Mt. Range, ca 15 km upstream of Taizhusgen River, 7.06.1997, R.Y. Dudko & V.K. Zinchenko; 1 ♀ (ISE), Koktchetav Area, Kuibyshev Distr., Ruzaevsky Sovkhoz, 22.07.1982, I.B. Knor; 1 ♂ (ZMUM), W-Kazakhstan [= Uralsk] Area, Dzhanibek, 5.05.1975, coll. ?; 3 ♂♂, 5 ♀♀ (ZMUM), 3 ♂♂, 6 ♀♀ (ISE), same locality, 3–4.06.1982, K.G. Mikhailov.

DIAGNOSIS. *C. nigrinus* is most closely related to *C. tanasevichi* but males can be distinguished by the smaller embolic coil (cf. Figs 46–47 and 49) and shorter tibial apophysis (cf. Figs 48 and 50); females can be separated by the smaller and paler epigyne (the median septum almost invisible in *C. nigrinus*) (cf. Figs 53 and 51) and the smaller receptacles (cf. Figs 54 and 52).



Figs 55–63. Genitalia of *Chalcoscirtus platnicki* (55–56, 61 from E-Kazakhstan, 59 from Turgai Area, Kazakhstan, 60 from Ustyurt Palteau, Kazakhstan), *C. minutus* (57–58, holotype) and *Chalcoscirtus* sp. (62–63 from Taldy-Kurgan Area, Kazakhstan): 55, 57 — male palp, ventral view; 56, 58 — tibial apophysis; 59, 62 — epigyne; 60, 61, 63 — spermathecae. Scale: 0.1 mm.

Рис. 55–63. Гениталии *Chalcoscirtus platnicki* (55–56, 61 из Восточного Казахстана, 59 из Тургайской области (Казakhstan), 60 с плато Устюрт (Казakhstan)), *C. minutus* (57–58, голотип) и *Chalcoscirtus* sp. (62, 63 из Талды-Курганской области (Казakhstan)): 55, 57 — палепа самца, вентрально; 56, 58 — голенный отросток; 59, 62 — эпигина; 60, 61, 63 — сперматеки. Масштаб: 0,1 мм.

DISTRIBUTION. This species displays a Euro-Siberian subboreal distribution pattern (Map 2).

HABITAT. In Siberia, this species has been collected in meadow steppe, while in S-Kazakhstan in loamy desert habitats.

DESCRIPTION (specimens from Kazakhstan, Dzhanibek). **MALE.** Measurements. Carapace 1.64 long, 1.10 wide, 0.65 high at PLE. Ocular area 0.63 long, 0.83 wide anteriorly and 0.80 wide posteriorly. Diameter of AME 0.25. Abdomen 1.65 long, 0.95 wide. Cheliceral length 0.70. Clypeal height 0.08. Length of leg segments: leg I — $0.88 + 0.43 + 0.56 + 0.35 + 0.28$; leg II — $0.78 + 0.35 + 0.45 + 0.35 + 0.28$; leg III — $0.90 + 0.40 + 0.51 + 0.48 + 0.30$; leg IV — $0.94 + 0.38 + 0.63 + 0.54 + 0.35$. Leg spination. Leg I: Tb v. 1-2-2ap.; Mt v. 2-2ap. Leg II: Tb v. 1-1ap.; Mt v. 2-2ap. Leg III: Tb pr. and v. 0-1-0, rt. 1-1; Mt pr. and rt. 1-2ap., v. 2-2ap. Leg IV: Mt 6ap. Coloration. Carapace dark brown, lustrous, with a black eye field. Clypeus brown, hairless. Sternum, maxillae, labium and chelicerae brown. Abdomen monochromously dark grey, dorsum with a dark brown, shining scutum. Book-lung covers yellow, tinged brown. Spinnerets brown. All legs dark brown, but tarsi yellowish. Palpal structure as in Figs 44–48.

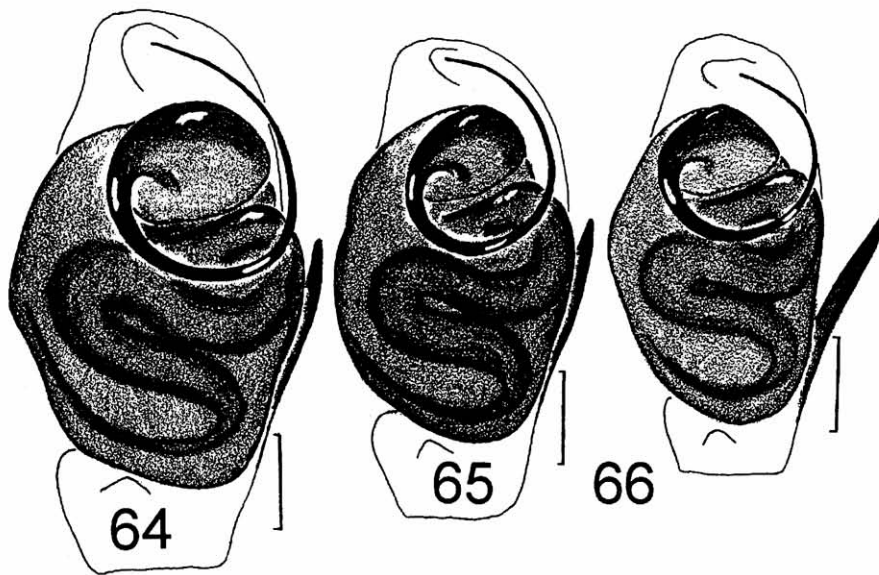
FEMALE. Measurements. Carapace 1.68 long, 1.10 wide, 0.73 high at PLE. Ocular area 0.63 long, 0.85 wide anteriorly and 0.81 wide posteriorly. Diameter of AME

0.25. Abdomen 2.25 long, 1.40 wide. Cheliceral length 0.68. Clypeal height 0.08. Length of leg segments: leg I — $0.88 + 0.48 + 0.54 + 0.40 + 0.29$; leg II — $0.75 + 0.38 + 0.45 + 0.35 + 0.29$; leg III — $0.93 + 0.48 + 0.50 + 0.53 + 0.28$; leg IV — $1.03 + 0.45 + 0.65 + 0.65 + 0.40$. Leg spination. Leg I: Tb v. 1-2-2ap.; Mt v. 2-2ap. Leg II: Tb v. 1-1ap.; Mt v. 2-2ap. Leg III: Tb pr., rt. and v. 0-1-0; Mt pr. and rt. 1-2ap., v. 2-2ap. Leg IV: Tb v. 0-1-0; Mt pr. and r. 1-2ap., v. 2ap. Coloration. Carapace yellow-brownish, eye field black. Carapace sparsely covered with long white scales. Clypeus brownish, "cheeks" yellow, both sparsely covered with white hairs. Sternum, maxillae, labium and chelicerae yellow-brownish. Abdomen: dorsum brownish, with five pairs of transverse white spots; sides and venter yellow-brown. Book-lung covers yellow, tinged brown. Spinnerets brown. All legs and palpi yellow to yellow-brownish. Epigyne and spermathecae as in Figs 53, 54.

Chalcoscirtus (s.str.) *platnicki* Marusik in Eskov & Marusik, 1995

Figs 55, 56, 59–61, Map 6.

Chalcoscirtus platnicki Marusik in Eskov & Marusik, 1995: 68, 72, 78, ff. 91–92 (♂ holotype, in ZMUM, re-examined). *Chalcoscirtus platnicki*: Mikhailov, 1996: 130; 1997: 209.



Figs 64–66. Male palpi (all ventral views) of *Chalcoscirtus paraansobicus* (64 from Babatagh Mt. Range, Uzbekistan, 65 from Uzun-Akhmat, Uzbekistan) and *C. ansobicus* (66 from Khabu-Rabot, Tajikistan). Scale: 0.1 mm.

Рис. 64–66. Пальпы самцов (все вентрально) *Chalcoscirtus paraansobicus* (64 из хребта Бабатаг (Узбекистан), 65 из Узун-Ахмата (Узбекистан)) и *C. ansobicus* (66 из Хабу-Работа (Таджикистан)). Масштаб: 0,1 мм.

MATERIAL. KAZAKHSTAN: 1 ♀ (ZMUM), Zhambyl Area, Sarysu Distr., Lake Bolshye Kamkaly, 27.06.1989, A.Z.; 1 ♀ (ISE), Atyrau Area, Embinskiy Distr., Kulsary, 4.06.1989, A. Raikhanov & S.I.; 1 ♀ (ISE), Almaty Area, Charyn Canyon, Sartogai, 12.06.1993, S.O.; 1 ♀ (ISE), Turgai Area, Arkalyk Distr., near Tselinnyi, Tersakan River, 2.06.1995, A.V. Gromov; 1 ♀ (ISE), E-Kazakhstan Area, S bank of Lake Zaisan, ca 10 km NW of Priozernyi, 10.06.1997, R.Y. Dudko & V.K. Zinchenko; 1 ♂ (ZMUM, holotype), same area, Zaisan Distr., Saur Mt. Range, Sarybulak River, 7.06.1990, K.Y. Eskov; 1 ♂ (ISE), same locality, Akkolka River Valley (basin of Kenderlyk River), 5–27.06.1990, K.Y. Eskov.

DIAGNOSIS. Males are similar to those of *C. minutus* but differ in the larger size and the proportions of the tegulum (cf. Figs 55 and 57). Females are close to those of *C. nigrinus* and *C. tanasevichi* but they can easily be separated by the shape of the insemination ducts (cf. Figs 60, 61 and 52, 54).

NOTES. Males and females of *C. platnicki* have been considered as matching only provisionally, as both sexes have never been collected together. However, we have got a female taken from a locality in E-Kazakhstan situated quite close to the type locality of *C. platnicki*. Moreover, both males and females well correspond to each other in size and coloration, so we are inclined to consider them as conspecific.

DISTRIBUTION. The species is distributed throughout Kazakhstan (Map 6).

HABITAT. In the E-Kazakhstan Area, the species has been collected in dry stony steppe habitats.

DESCRIPTION. MALE. See Eskov & Marusik [1995].

FEMALE (Kazakhstan, Charyn Canyon). Measurements. Carapace 1.48 long, 0.93 wide, 0.63 high at PLE. Ocular area 0.60 long, 0.85 wide anteriorly and 0.81 wide posteriorly. Diameter of AME 0.26. Abdomen 1.90 long, 1.30 wide. Cheliceral length 0.47. Clypeal height 0.07. Length of leg segments: leg I — 0.70 + 0.40 + 0.41 + 0.34 + 0.50; leg II — 0.64 + 0.36 + 0.36 + 0.32 + 0.50; leg III — 0.77 + 0.39 + 0.44 + 0.43 + 0.37; leg IV — 0.90 + 0.39 + 0.61 + 0.57 + 0.37. Leg spination. Leg I: Tb v. 1-2-2ap.; Mt v. 2-2ap. Leg II: Tb v. 0-1-0; Mt v. 2-2ap. Leg III: Tb pr., rt. and v. 0-1-0; Mt pr. and rt. 1-2ap., v. 2-2ap. Leg IV: Tb v. 0-1-0; Mt pr. and rt. 2 ap., v. 1-2ap. Coloration. Carapace brown, lustrous, shining, with a black eye field.

Clypeus brown, sparsely covered with white hairs. Sternum, maxillae, labium and chelicerae brown. Abdomen: dorsum dark grey, venter yellow-grey, each side with a longitudinal white stripe. Book-lung covers and spinnerets yellow-brownish. All legs and palpi brown, but patellae and tibiae dorsally and tarsi entirely yellow. Epigyne and spermathecae as in Figs 59–61.

Chalcoscirtus (s.str.) *tanasevichi* Marusik, 1991
Figs 49, 50, 51, 52, Map 5.

Chalcoscirtus tanasevichi Marusik, 1991a: 29, f. 5.1–5 (♂ holotype, in ZMUM, re-examined).

Chalcoscirtus tanasevichi: Eskov & Marusik, 1995: 72, 78; Mikhailov, 1996: 130; 1997: 209.

MATERIAL. ARMENIA: 1 ♀ (ISE), near Sevan Town, 2,100 m a.s.l., 28.07.1983, D.L. — **AZERBAIJAN:** 1 ♂, 2 ♀♀ (ISE), 2 ♂♂, 3 ♀♀ (ZMUM), Apsheron Peninsula, Dyubendy, 21.05.1977–20.05.1988, P.D.; 1 ♀ (ISE), Lerik Distr., Kelokhan, 6.07.1983, P.D.; 1 ♂ (ISE), same district, Gosmalyan, 1,300 m a.s.l., 28.06.1985, P.D.; 2 ♂♂ (ISE), same distr., Pirasora, 2,000 m a.s.l., 16.05.1985, P.D.; 1 ♀ (ISE), same distr., Divagach, 11.07.1983, P.D. — **KYRGHYZSTAN:** 2 ♀♀ (ZMUM), Dzhahal-Abad Area, Dzany-Dzhalskiy Distr., ca 5 km SW of Kyzyl-Dzhar, 22.06.1992, A.F. & A.Z.; 2 ♀♀ (ISE), Sary-Chelek Nature Reserve, Arkit, 8.07.1983, K.G. Mikhailov; 3 ♀♀ (ISE), Inner Tian Shan, middle flow of Kokomeran River, 21.06.1991, S.Z.; 1 ♂, 1 ♀ (FSCA), Talass Area, Toktogul Distr., ca 25 km NE of Kara-Kul, Pass Kyok-Bel, 1,500 m a.s.l., 27–28.06.1992, A.F. & A.Z.; 1 ♀ (ISE), Susamyrtov Mt. Range, 3–8 km SW of Kyzyl-Oi, Kobuksu [= Kovyuksu] Canyon, 23–27.07.1993, D.A. Milko. — **KAZAKHSTAN:** 1 ♀ (ISE), Pavlodar Area, Ermakovskoe Distr., ca 5 km N of Kyzyl-Dzhar, Irtysh River Valley, summer 1992, O.L.; 1 ♂ (ISE), Almaty Area, Zhambyl Distr., ca 12 km NW of Kolshengel [= Kanshengel], Taukum Sands, 13.05.1992, A.F. & A.Z.; 1 ♂ (ISE), same area and district, highway Almaty-Georgievka, ca 8 km W of Talgar, 13.05.1991, S.I. & A.Z.; 1 ♂ (ZMUM), same area, Talgar Distr., right bank of Ili River, near Kapchagai Reservoir, 8.05.1991, A.F. & A.Z.; 3 ♂♂ (ZMUM, holotype and paratypes), same locality, 15.05.1986, A.Z.; 1 ♂ (ISE), same locality, ca 9 km N of Kapchagai, 5–12.05.1996, A.V. Gromov; 2 ♀♀ (ISE), Zhambyl Area, Krasnogorka Distr., ca 37 km NE of Georgievka, Pass Kurdai, 13–14.06.1990, A.F. & A.Z.; 2 ♂♂, 4 ♀♀ (ISE), same locality, Chu-Ili Mts., near Georgievka, 7–11.06.1983, S.O.; 1 ♂ (ISE), 1 ♂, 1 ♀ (ZMUM), same mts., ca 16 km NW of Kenen, 14–15.06.1990 A.F.

Maps 6–7. Distribution of *Chalcoscirtus platnicki* (1), *C. paraansobicus* (2), *C. ansobicus* (3), *C. karakurt* (4) and *C. nenilini* (5) in Central Asia. Type localities arrowed.

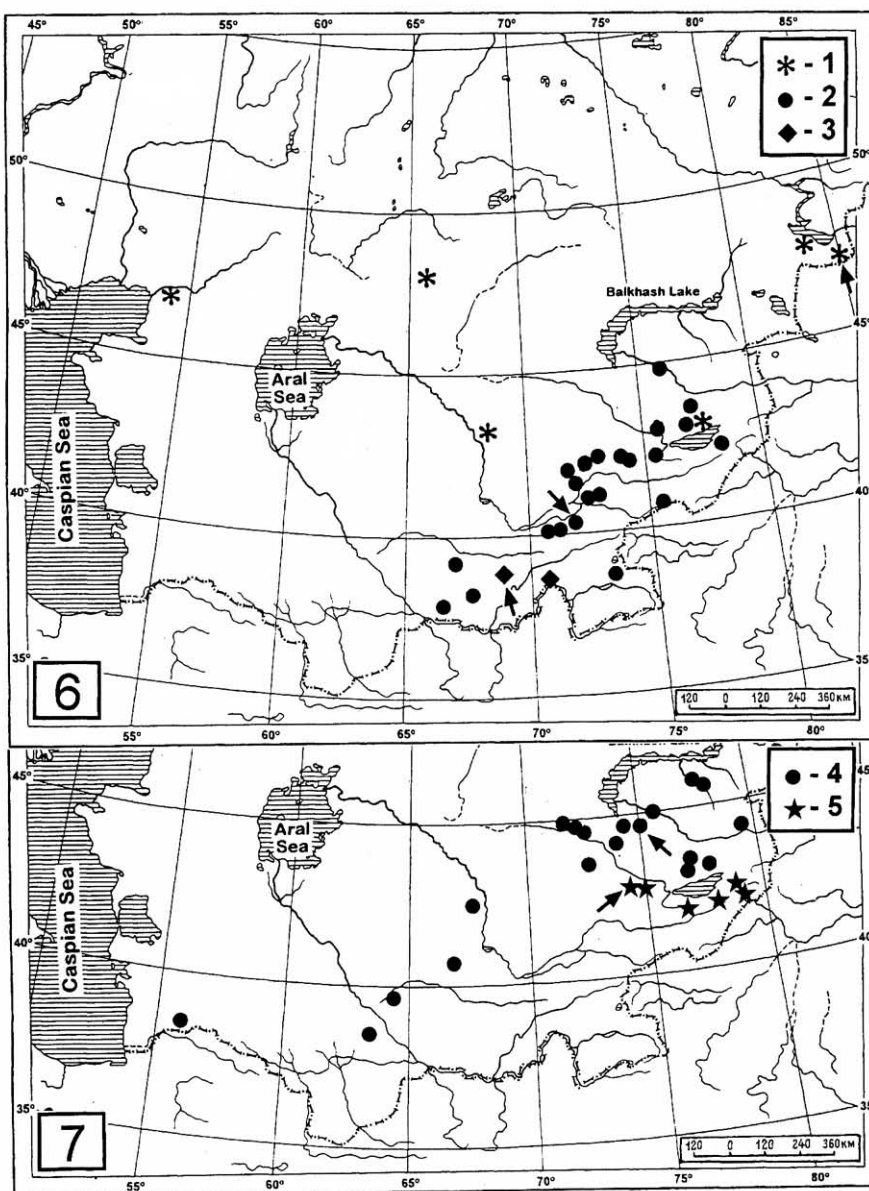
Карты 6–7. Распространение *Chalcoscirtus platnicki* (1), *C. paraansobicus* (2), *C. ansobicus* (3), *C. karakurt* (4) and *C. nenilini* (5) в Средней Азии. Типовые локалитеты помечены стрелками.

& A.Z.; 1 ♂ (ISE), same area, Chu Distr., near Apsara, 43°23'N, 73°37'E, 22–26.05.1997, A.V. Gromov & S.Y. Rakov; 1 ♀ (ISE), same area, Moynkumy Distr., ca 6 km SE of Khantau, Khantau Mts., 11.06.1990, A.F. & A.Z.; 1 ♂ (AVG), same locality, ca 7 km E of Khantau, 31.05–1.06.1996, A.V. Gromov; 2 ♂♂ (ISE), same area and district, ca 21 km S of Furmanovka, 15–16.05.1992, A.F. & A.Z.; 1 ♂, 1 ♀ (FSCA), same area and district, ca 58 km NW of Akbakai, Betpak-Dala Desert, 7.06.1990, A.F. & A.Z.; 2 ♀♀ (ISE), S-Kazakhstan Area, Turkestan Distr., Karatau Mt. Range, Pass Turlan, 24.06.1989, A.Z.; 1 ♂ (ZMUM), same area and district, Bayaldyr River Valley, Karatau, 11.06.1989, A.Z.; 1 ♀ (ZISP), Aral Sea, Barsakelmes Island, 26.05.1983, T.V. Pavlenko.

DIAGNOSIS. See "Diagnosis" under *C. nigrinus* and *C. platnicki*.

DISTRIBUTION. So far the species has been recorded throughout Middle Asia and the Caucasus (Map 5).

DESCRIPTION. **FEMALE** (Kyrgyzstan, Susamyrto Mt. Range). Measurements. Carapace 1.65 long, 1.15 wide, 0.73 high at PLE. Ocular area 0.78 long, 0.91 wide anteriorly and 0.88 wide posteriorly. Diameter of AME 0.40. Abdomen 2.43 long, 1.68 wide. Cheliceral length 0.68. Clypeal height 0.08. Length of leg segments: leg I – 0.95 + 0.50 + 0.63 + 0.40 + 0.30; leg II – 0.85 + 0.48 + 0.48 + 0.43 + 0.30; leg III – 1.00 + 0.48 + 0.55 + 0.55 + 0.35; leg IV – 1.10 + 0.49 + 0.79 + 0.71 + 0.45. Leg spination. Leg I: Tb v. 1-2-2ap.; Mt v. 2-2ap. Leg II: Tb v. 1-1ap.; Mt v. 2-2ap. Leg III: Tb pr., rt. and v. 0-1-0; Mt pr. and rt. 1-2ap., v. 2-2ap. Leg IV: Tb v. 0-1-0; Mt 6 ap. Coloration. Carapace dark brown, lustrous shining, sparsely covered with long white scales. Eye field black. Clypeus brown, sparsely covered with long white hairs. Sternum, maxillae, labium and chelicerae brown. Abdomen: dorsum and sides brown, sides rather densely covered with white hairs; dorsum with colour markings consisting of five pairs of white transverse spots; venter yellow-brown. Book-lung covers and spinnerets yellow, tinged brown. All legs and palpi yellow-brown, femora usually dark brown. Epigyne and spermathecae as in Figs 51, 52.



The *ansobicus* species group

Chalcoscirtus (s.str.) *ansobicus* Andreeva, 1976
Figs 66, 70–72, Map 6.

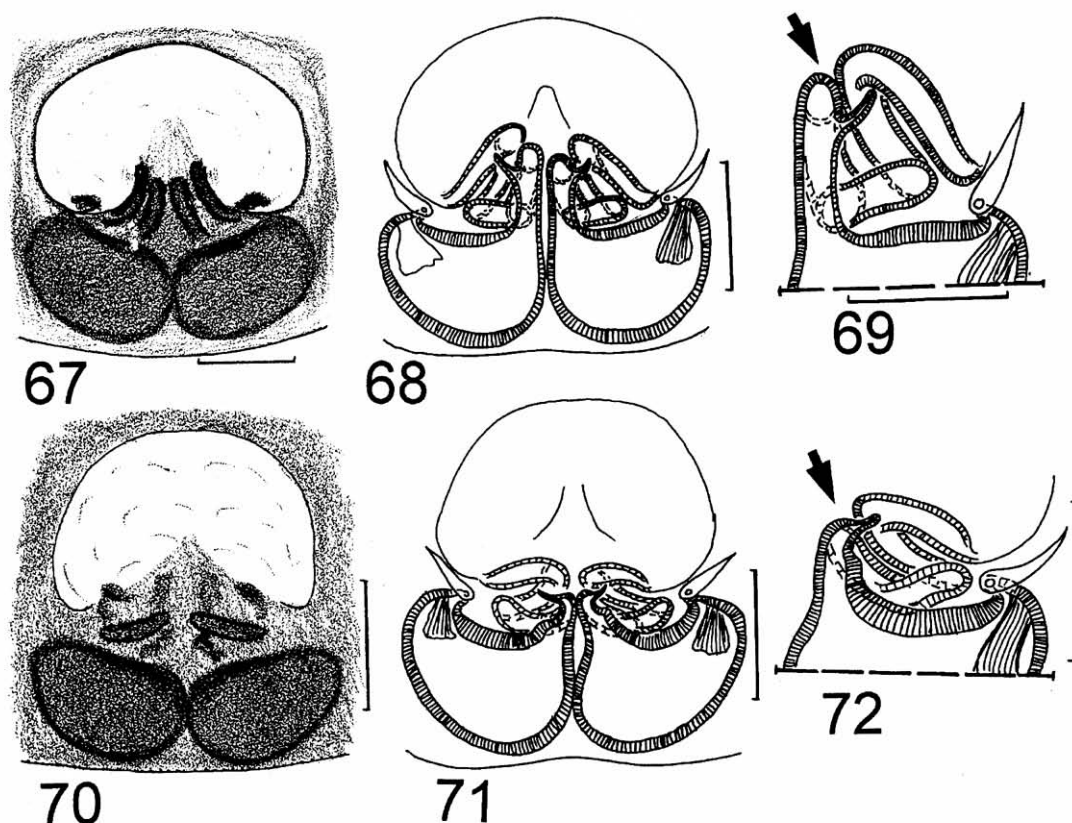
Chalcoscirtus ansobicus Andreeva, 1976: 91–92, f. 129 (♀ holotype, not re-examined).

Chalcoscirtus ansobicus: Andreeva, 1975: 340 (nomen nudum); Nenilin, 1985: 130.

Chalcoscirtus asiaticus (pro parte): Marusik, 1990: 53–54 (S with *C. asiaticus*); Mikhailov, 1996: 130; 1997: 208.

MATERIAL. TAJIKISTAN: 1 ♂, 3 ♀♀ (ISE), Darvaz Mt. Range, Pass Khabu-Rabot, 5.07.1976, V. Turkov.

DIAGNOSIS. So far as known (see "Notes" below), this species is particularly similar to *C. paraansobicus*, but it can be distinguished by the smaller tegulum (even in comparison with the smaller morph of the latter species) and the protruding tibial apophysis in males (cf. Figs 66 and 65) as well as by a different arrangement of the loops of the insemination ducts in females (the ducts



Figs 67–72. Female genitalia of *Chalcoscirtus paraansobicus* (67–69 from Uzun-Akhmat, Uzbekistan) and *C. ansobicus* (70–72 from Khabu-Rabot, Tajikistan): 67, 70 — epigyne; 68, 71 — spermathecae; 69, 72 — insemination ducts. Scale: 0.1 mm.

Рис. 67–72. Гениталии самок *Chalcoscirtus paraansobicus* (67–69 из Узун-Ахмата (Узбекистан)) и *C. ansobicus* (70–72 из Хабу-Работа (Таджикистан)): 67, 70 — эпигина; 68, 71 — сперматеки; 69, 72 — оплодотворительные каналы. Масштаб: 0,1 мм.

of *C. ansobicus* pressed closer to the receptacles) (cf. Figs 72 and 69).

DISTRIBUTION. Tajikistan only (Map 6). Nenilin [1984b] reported *C. ansobicus* from Kyrgyzstan (Dzhalal-Abad and Kugart). Since we have been unable to re-examine these specimens, this record requires confirmation by rechecking pertinent material. However, most probably these findings belong to *C. paraansobicus*.

NOTES. The identification of *C. ansobicus* is provisional, as we have been unable yet to revise the holotype. One of us [Marusik, 1990] has synonymized *C. ansobicus* with *C. asiaticus*, but this idea is no longer supported in the present study (for further details see "Notes" under *C. infimus*). The structure of the epigyne (Fig. 70) corresponds quite well to that figured by Andreeva [1976: fig. 129] and differs from that found in the true *C. paraansobicus* (Fig. 67). We have studied about a dozen females of *C. paraansobicus* and are sure that the differences observed between Figs 70–72 and 67–69 cannot be a matter of intraspecific variability. So we actually deal with two closely related species. However, a re-examination of the holotype of *C. ansobicus* is further required to prove or reject our identification. We delay a redescription of this species before a restudy of its holotype has been performed.

Chalcoscirtus (s.str.) *kamchik* Marusik, 1991

Chalcoscirtus kamchik Marusik, 1991b: 24–25, ff. 7–10 (♀ holotype, in ZMUM, re-examined).

Chalcoscirtus kamchik: Mikhailov, 1996: 130; 1997: 208.

MATERIAL. UZBEKISTAN: 1 ♀ (ZMUM, holotype, without epigyne), Tashkent Area, Pass Kamchik, 06.1979, A.B. Nenilin.

DIAGNOSIS. Unfortunately, the holotype of *C. kamchik* lacks the epigyne which was probably lost during the original description. Hence it appears impossible to fully diagnose this species. By its dorsal colour markings (see Marusik, 1991b: Fig. 10), *C. kamchik* is very similar to *C. lepidus* (Fig. 82), but the former has yellow stripes against a brown background, while the latter brown stripes against a yellow background. There seem to be clear differences in genitalic structure of both species as well [cf. Figs 79–80 and Marusik, 1991b: figs 7–9]. Moreover, the genitalia of *C. kamchik*, as shown by Marusik [1991b], seem to be closer to those of *C. ansobicus* and *C. paraansobicus* (see Figs 67–72). Thus, topotypes are required to finally diagnose and redescribe *C. kamchik*.

DISTRIBUTION. The type locality only.

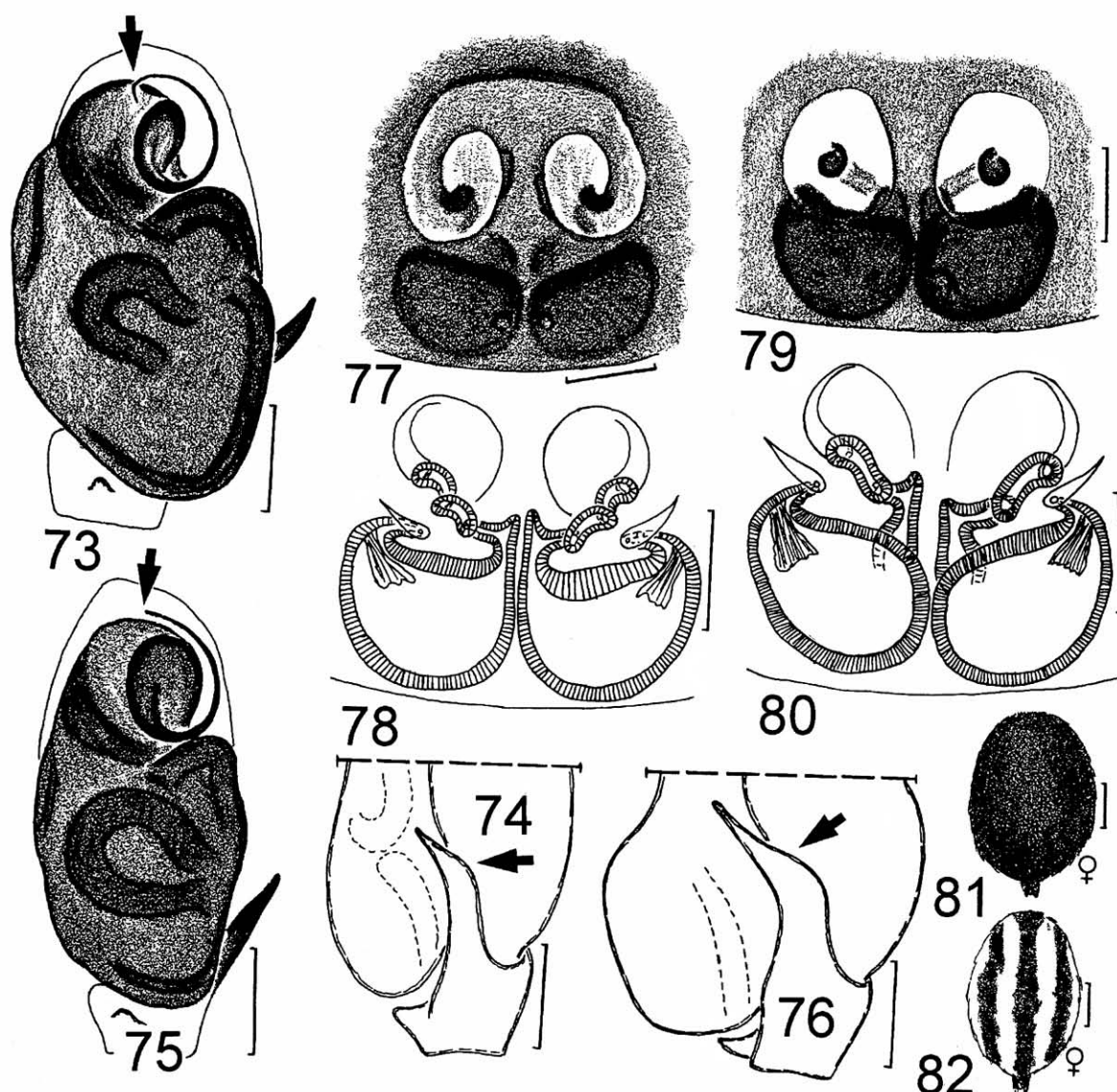
DESCRIPTION. See Marusik [1991b].

Chalcoscirtus (s.str.) *lepidus* Wesolowska, 1996 Figs 74, 75, 79, 80, 82, Map 8.

Chalcoscirtus lepidus Wesolowska, 1996: 26, f. 10A, B (♀ holotype, in ZMUM, re-examined).

Chalcoscirtus lepidus: Mikhailov, 1996: 130; 1997: 208.

MATERIAL. TURKMENISTAN: 2 ♀♀ (ZMUM, holotype and paratype), Krasnovodsk Area, Chilmamedkum Sands, 05.1987, E. Khachikov; 1 ♂, 4 ♀♀ (ISE), 20–25 km SE of Pulikhatum,



Figs 73–82. Diagnostic characters of *Chalcoscirtus zyuzini* (73, 76–78, 81 from Zeravshansky Mt. Range, Uzbekistan) and *C. lepidus* (74–75 from Samarkand Area, Uzbekistan, 79–80, 82 from Zulfagar Mt. Range, Turkmenistan): 73, 75 — male palp, ventral view; 74, 76 — tibial apophysis, prolateral view; 77, 79 — epigyne; 78, 80 — spermathecae; 81, 82 — ♀ abdomen, dorsal view. Scale: 73–80 0.1 mm; 81–82 0.5 mm.

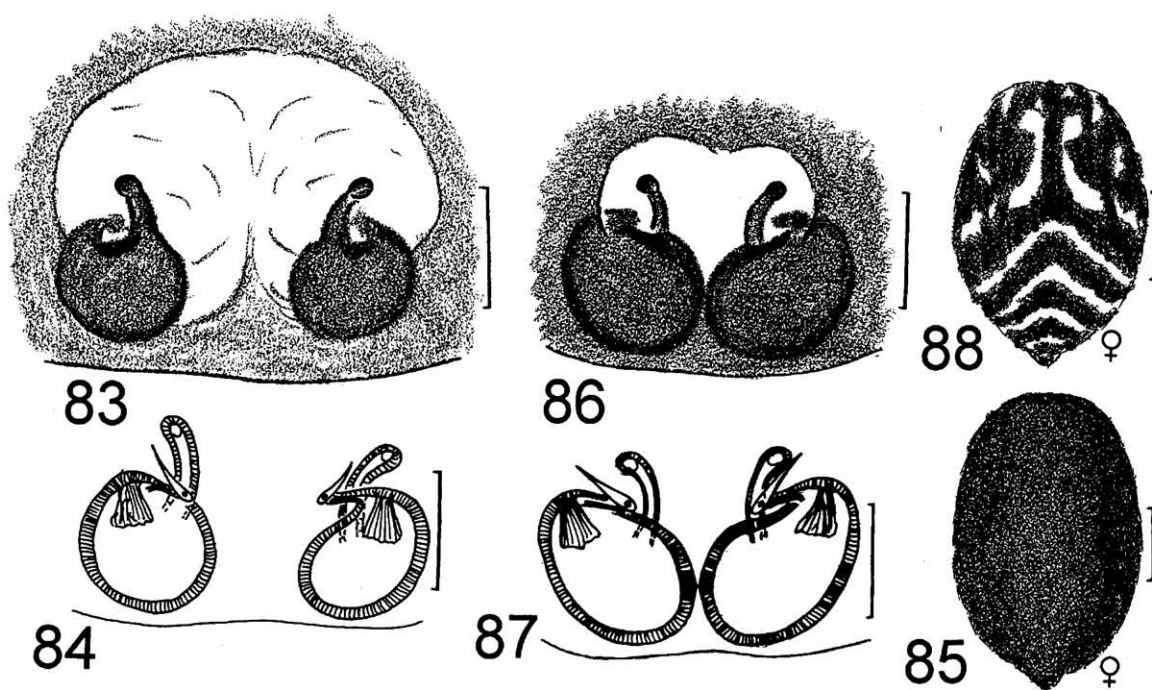
Рис. 73–82. Диагностические признаки *Chalcoscirtus zyuzini* (73, 76–78, 81 из Зеравшанского хребта (Узбекистан)) и *C. lepidus* (74–75 из Самаркандской области (Узбекистан), 79–80, 82 из Зулфугарского хребта (Туркменистан)): 73, 75 — пальпа самца, вентрально; 74, 76 — голенный отросток, пролатерально; 77, 79 — эпигина; 78, 80 — сперматека; 81, 82 — брюшко ♀, дорсально. Масштаб: 73–80 0,1 мм; 81–82 0,5 мм.

Gezgyadyk Mt. Range, 1,000–1,100 m a.s.l., 15–16.04.1993, D.L.; 2 ♀♀ (FSCA), 1 ♀ (ISE), ca 37 km SE of Pulikhatum, Zulfagar Mt. Range, 13–14.04.1993, S.O. & D.L.; 1 ♀ (ZMUM), Badkhyz Nature Reserve, Kyzyl-Dzhar, 10–12.04.1993, D.L. — TAJIKISTAN: 1 ♂ (ISE), Kurgan-Tyube Area, Gandzhyna, 19.04.1991, S.O. — UZBEKISTAN: 1 ♂ (ZMUM), Samarkand Area, Sovetobad Distr., near Ullus, 1.07.1986, A.Z.

DIAGNOSIS. *C. lepidus* is most closely related to *C. zyuzini* but it can be distinguished by a set of the following characters:

No	character	<i>C. lepidus</i>	<i>C. zyuzini</i>
1	Dorsum	striped both in ♂ and ♀ (Fig. 82)	monochromously dark brown both in ♂ and ♀ (Fig. 81)
2	Venter	dark grey both in ♂ and ♀	yellow both in ♂ and ♀
3	♂ first leg	yellow with a black longitudinal line	monochromously dark grey
4	♂ abdomen	without dorsal scutum	with a dorsal scutum (black and shining)
5	Embolic tip	straight (arrowed in Fig. 75)	curved (arrowed in Fig. 73)
6	♀ genitalia	as in Figs 77, 78	as in Figs 79, 80

DISTRIBUTION. S-Uzbekistan, Turkmenistan and Tajikistan (see Map 8).



Figs 83–88. Diagnostic characters of *Chalcoscirtus koponeni* sp.n. (83–85, holotype) and *C. alpicola* (86–88 from upper reaches of Kolyma River, Magadan Area): 83, 86 — epigyne; 84, 87 — spermathecae; 85, 88 — ♀ abdomen, dorsal view. Scale: 83–84, 86–87 0.1 mm; 85, 88 0.5 mm.

Рис. 83–88. Диагностические признаки *Chalcoscirtus koponeni* sp.n. (83–85, голотип) и *C. alpicola* (86–88 из верховьев Колымы (Магаданская область)): 83, 86 — эпигина; 84, 87 — сперматеки; 85, 88 — брюшко ♀, дорзально. Масштаб: 83–84, 86–87 0,1 мм; 85, 88 0,5 мм.

DESCRIPTION. MALE (Uzbekistan, Ulus). Measurements. Carapace 1.06 long, 0.69 wide, 0.40 high at PLE. Ocular area 0.44 long, 0.61 wide anteriorly and 0.60 wide posteriorly. Diameter of AME 0.19. Abdomen 1.03 long, 0.69 wide. Cheliceral length 0.37. Clypeal height 0.04. Length of leg segments: leg I — 0.50 + 0.26 + 0.31 + 0.26 + 0.23; leg II — 0.44 + 0.24 + 0.29 + 0.23 + 0.22; leg III — 0.54 + 0.23 + 0.33 + 0.31 + 0.23; leg IV — 0.59 + 0.26 + 0.43 + 0.40 + 0.31. Leg spination. Leg I: Tb v. 1-2; Mt v. 2-2ap. Leg II: Tb v. 0-1-0; Mt v. 2-2ap. Leg III: Tb pr. and rt. 0-1; Mt pr., rt. and v. 1-2ap. Leg IV: Mt 6ap. Coloration. Carapace brown, with black veins. Eye field dark brown, with black around eyes. Clypeus yellow-brown, hairless. Carapace sparsely covered with light elongated scales. Sternum yellow with brown margins. Maxillae, labium and chelicerae yellow but tinged brown. Abdomen: dorsum yellow with three longitudinal brown stripes and a large lustrous scutum; sides yellow-grey; venter yellow but tinged grey. Book-lung covers and spinnerets yellow, tinged grey. All legs yellow but sides of all segments but tarsi brown. Palpal structure as in Figs 75, 76.

Chalcoscirtus (s.str.) *paraansobicus* Marusik, 1990
Figs 64, 65, 67–69, Map 6.

Chalcoscirtus paraansobicus Marusik, 1990: 55–56, ff. 5.1–5 (♂ holotype, in ZMUM, re-examined).

Chalcoscirtus paraansobicus: Mikhailov, 1996: 130; 1997: 209. MATERIAL. UZBEKISTAN: 2♂♂, 1♀ (ZMUM), Surkhandarya Area, Kuhitangtau Mt. Range, Kampyr-Tepa, 15–22.05.1983, A.V. Tanasevitch; 2♂♂, 1♀ (ISE), Uzun-Akhmat, 4.06.1995, S.O.; 1♂ (FSCA), ca 7 km N of Kitab, S foothills of Zeravshansky Mt. Range,

800 m a.s.l., 26.04.1993, D.L.; 3♂♂ (ISE), Babatagh Mt. Range, near Ak-Mechet, 3.05.1994, S.O. — KAZAKHSTAN: 1♂ (ISE), Agbas Distr., Karatau Mts., Baraldai River Canyon, 16.04.1988, C.K. Tarabaev; 1♀ (ZMUM), Zailiyski Mt. Range, Bolshaya Almatinka River, 7.06.1993, S.O.; 1♀ (ZMUM), Almaty Area, 210th km of highway Almaty-Karaganda, 6–7.05.1988, M. Zarko; 1♀ (ISE), same area, Balkhash Area, ca 24 km SE of Bakanas, 28.05.1995, A.Z.; 1♂ (ISE), same area, Akterek Mt. Range, Argeity Canyon, 22.05.1988, S.I. Smigunova. — KYRGYZSTAN: 2♀♀ (ISE), Alashtau Mt. Range, near Alash, 1,750 m a.s.l., 26.05.1993, S.O.; 1♀ (ISE), Lake Issyk-Kul, near Dzety-Oguz (42°18'N, 78°18'E), 6–9.07.1997, D.A. Milko; 1♂ (ISE), Dzhalal-Abad Area, ca 2 km S of Arkit, Sary-Chelek Nature Reserve, 17–20.06.1992, A.F. & A.Z.; 1♀ (FSCA), same area, Dzhanly-Dzhal Distr., ca 5 km SW of Kyzyl-Dzhar, 22.06.1992, A.F. & A.Z.; 1♀ (ISE), Susamyrttoo Mt. Range, Kobuksu River, 27.07.1993, S.O.; 2♂♂ (ZMUM), Talass Area, Toktogul Distr., ca 25 km NE of Kara-Kul, Pass Kek-Bel, 1,500 m a.s.l., 27–28.06.1992, A.Z. & A.F.; 1♀ (ISE), Inner Tian Shan, middle flow of Kokomeren River, near Ornok, 06.1991, S.Z. — TURKMENISTAN: 1♀ (ISE), W-Kuhitangtau Mt. Range, 5–7 km SE of Bazar-Tepe, 13–19.05.1991, V.D.; 2♂♂ (ISE), same locality, Kara-Belent Mts., Khelis-Baba, 10–16.05.1991, V.D. — TAJIKISTAN: 1♂ (ISE), Sanglok Mt. Range, near Sebestan, 1–2.05.1991, S.O.; 1♀ (ISE), E-Pamirs, Pass Akbaital, 25.07.1988, S.O.

DIAGNOSIS. See “Diagnosis” and “Notes” under *C. ansobicus*.

DISTRIBUTION. E-Turkmenistan, Uzbekistan, Tajikistan, Kyrgyzstan and SE-Kazakhstan (Map 6).

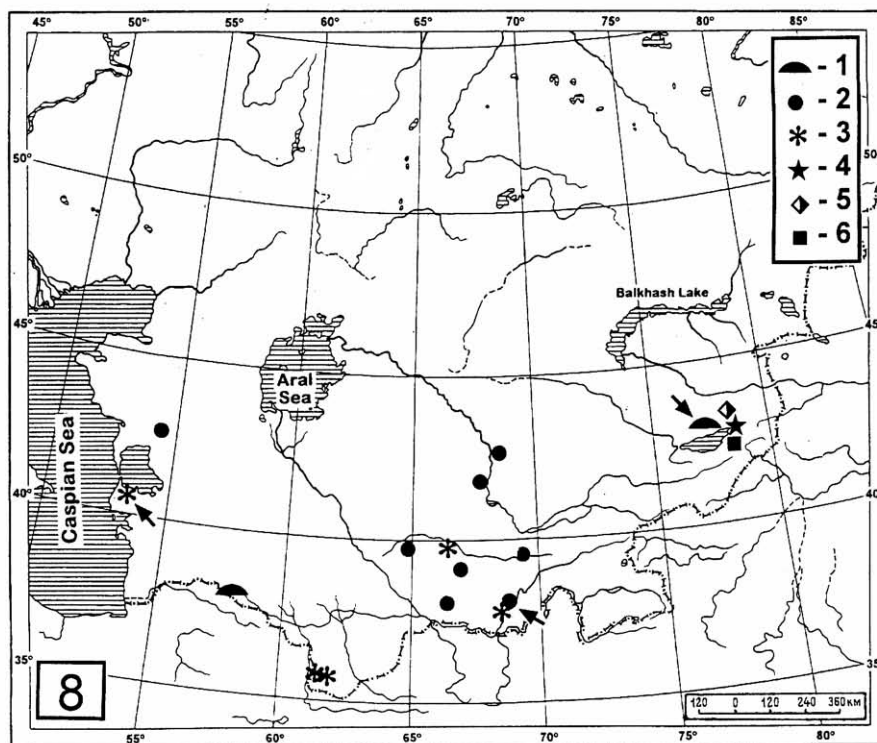
DESCRIPTION. See Marusik [1990].

Chalcoscirtus (s.str.) *zyuzini* Marusik, 1991
Figs 73, 76, 77, 78, 81, Map 8.

Chalcoscirtus zyuzini Marusik, 1991a: 30, ff. 6.1–3 (♂ holotype, in ZMUM, re-examined).

Map 8. Distribution of *Chalcoscirtus michailovi* sp.n. (1), *C. zyuzini* (2), *C. lepidus* (3), *C. kirghizicus* (4), *C. charynensis* sp.n. (5) and *C. molo* (6) in Central Asia. Type localities arrowed.

Карта 8. Распространение *Chalcoscirtus michailovi* sp.n. (1), *C. zyuzini* (2), *C. lepidus* (3), *C. kirghizicus* (4), *C. charynensis* sp.n. (5) и *C. molo* (6) в Средней Азии. Типовые локалитеты помечены стрелками.



Chalcoscirtus zyuzini: Mikhailov, 1996: 130; 1997: 209.

MATERIAL. KAZAKHSTAN: 1 ♂ (ZMUM), S-Kazakhstan Area, Chardara Distr., ca 45 km SW of Bairkum, Kyzylkum Desert, 15.04.1990, A.F. & A.Z.; 2 ♀♀ (FSCA), same area, Arys Distr., Kyzylkumy Desert, Karakly Mts., Mt. Karamola, 29.05.1993, A.Z.; 2 ♀♀ (ISE), Ustyurt Plateau, Ustyurt Nature Reserve, W of Baskorgan, 23–25.05.1989, A. Raikhanov & S.I. — **UZBEKISTAN:** 1 ♀ (ZMUM), Surkhandarya Area, Kuhitangtau Mt. Range, Kampyr-Tepa, 15–22.05.1984, A.V. Tanasevitch; 2 ♀♀ (ZISP), same locality, 19.05.1983, A.B. Nenilin; 2 ♂♂, 3 ♀♀ (ISE), 6 ♂♂, 6 ♀♀ (ISE), 7–9 km N of Kitab, Zeravshansky Mt. Range (foothills and Pass Aman-Kutan), 26–27.04.1993, D.L. & S.O.; 1 ♂ (FSCA), same locality, 05.1994, O.L.; 1 ♀ (ISE), Bukhara Area, ca 20 km S of Kagan, 18–19.05.1994, A.V. Gromov. — **TAJIKISTAN:** 2 ♂♂ (ISE), Zeravshansky Mt. Range, Ruskishlak and Kainar-Bulak, 10.04.1991, S.O.; 2 ♂♂ (ZMUM, holotype and paratype), Kurgan-Tyube Area, Aktau Mt. Range, near Gandzhyna, 800 m a.s.l., 21.04.1986, A.Z.; 3 ♂♂ (ISE), same locality, 19.04.1991, S.O.; 3 ♂♂ (ISE), same locality, 19.04.1991, S.O.; 2 ♀♀ (ZISP), near Varganza, 1.06.1978, V.O.

DIAGNOSIS. See "Diagnosis" under *C. lepidus*.

DISTRIBUTION. Southern regions of Kazakhstan, Uzbekistan and Tajikistan (Map 8).

DESCRIPTION. FEMALE (Uzbekistan, foothills of Zeravshansky Mt. Range). Measurements. Carapace 1.30 long, 0.87 wide, 0.57 high at PLE. Ocular area 0.54 long, 0.79 wide anteriorly and 0.77 wide posteriorly. Diameter of AME 0.24. Abdomen 1.50 long, 1.10 wide. Cheliceral length 0.43. Clypeal height 0.04. Length of leg segments: leg I — 0.61 + 0.37 + 0.40 + 0.33 + 0.24; leg II — 0.57 + 0.33 + 0.34 + 0.30 + 0.24; leg III — 0.71 + 0.36 + 0.43 + 0.40 + 0.31; leg IV — 0.77 + 0.37 + 0.54 + 0.50 + 0.31. Leg spination. Leg I: Tb v. 1-2-2ap.; Mt v. 2-2ap. Leg II: Tb v. 1-1ap.; Mt v. 2-2ap. Leg III: Tb rt. and v. 0-1-0; Mt pr., rt. and v. 1-2ap. Leg IV: Mt 6 ap. Coloration. Carapace dark brown, lustrous, shining. Eye field black. Clypeus and "cheeks" yellow, hairless. Sternum, maxillae, labium and chelicerae yellow-brown. Abdomen:

dorsum and sides monochromously grey (Fig. 81), venter yellow-grey. Book-lung covers and spinnerets yellow-grey. All legs and palpi yellow. Epigyne and spermathecae as shown in Figs 77, 78.

Subgenus *Chalcosibiricus* Marusik, 1991

The alpicola species group

Chalcoscirtus (Chalcosibiricus) alpicola (L. Koch, 1846)

Figs 86–88.

Chalcoscirtus alpicola: Marusik, 21, ff. 1.6–9; Danilov & Logunov, 1993: 28; Danilov, 1995: 62; Mikhailov, 1996: 130; 1997: 208.

MATERIAL. MONGOLIA: 1 ♂ (ISE), Bayanhongor Aimak, Gurvanbulag Somon, Khokh-Nuur (Lake) (47°32'N, 98°32'E), 2,600 m a.s.l., 7–10.06.1997, Y.M.

For other material studied see Marusik [1991a] and Danilov & Logunov [1993].

DIAGNOSIS. See "Diagnosis" below under *C. koponeni*.

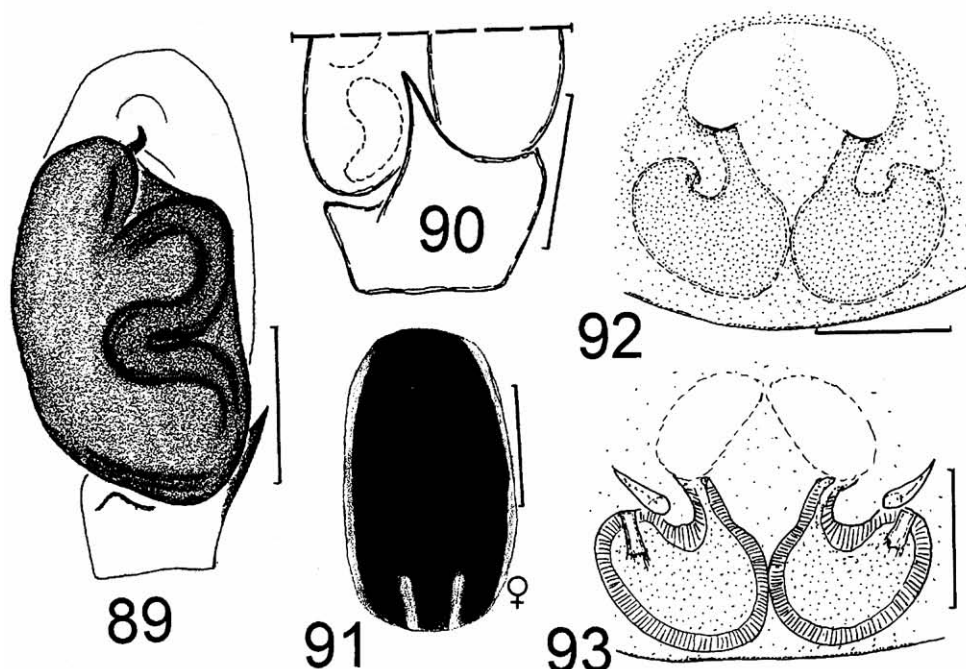
DISTRIBUTION. The species displays a Holarctic hypoarctic-montane distribution pattern, the Mongolian records are southernmost ones for this species.

DESCRIPTION. See Marusik [1991a].

Chalcoscirtus (Chalcosibiricus) koponeni sp.n.
Figs 83–85, Map 3.

Holotype ♀ (ISE), Russia, Tuva, Tannu-Ola Mt. Range, ca 20–25 km NW of Khol-Oozhu (50°50'N, 94°18'E), 2,120 m a.s.l., 8–17.06.1995, S. Koponen.

DIAGNOSIS. By genitalic structure, this species is most similar to *C. alpicola* but it can easily be separated by the



Figs 89–93. Diagnostic characters of *Chalcoscirtus parvulus* (Gandzhyna, Tajikistan): 89 — male palp, ventral view; 90 — tibial apophysis, retrolateral view; 91 — ♀ abdomen, dorsal view; 92 — epigyne; 93 — spermathecae. Scale: 89–90, 92–93 0.1 mm; 91 0.5 mm.

Рис. 89–93. Диагностические признаки *Chalcoscirtus parvulus* (Ганджина (Таджикистан)): 89 — папыла самца, вентрально; 90 — голенный отросток, ретролатерально; 91 — брюшко ♀, дорсально; 92 — эпигина; 93 — сперматеки. Масштаб: 89–90, 92–93 0,1 мм; 91 0,5 мм.

monochromous abdominal coloration (cf. Figs 85 and 88) and the position of the receptacles which are separated widely from each other (cf. Figs 83, 84 and 86, 87).

DISTRIBUTION. The type locality only (Map 3).

HABITAT. The holotype has been collected in the litter of a *Pinus cembra-Larix* forest.

DESCRIPTION. FEMALE. Measurements. Carapace 1.30 long, 0.89 wide, 0.63 high at PLE. Ocular area 0.56 long, 0.79 wide anteriorly and 0.76 wide posteriorly. Diameter of AME 0.23. Abdomen 2.03 long, 1.39 wide. Cheliceral length 0.40. Clypeal height 0.06. Length of leg segments: leg I — 0.60 + 0.36 + 0.36 + 0.30 + 0.23; leg II — 0.54 + 0.34 + 0.30 + 0.27 + 0.23; leg III — 0.63 + 0.31 + 0.36 + 0.34 + 0.29; leg IV — 0.77 + 0.36 + 0.53 + 0.49 + 0.31. Leg spination. Leg I: Tb v. 1-2-2ap.; Mt v. 2-2ap. Leg II: Tb v. 1-1ap.; Mt v. 2-2ap. Leg III: Tb pr., rt. and v. 0-1-0; Mt pr. and rt. 2 ap., v. 1-2ap. Leg IV: Tb v. 0-1-0; Mt pr. and rt. 2 ap., v. 1-2ap. Coloration. Carapace light brown with a black eye field. Clypeus brown, hairless. Sternum and chelicerae light brown. Maxillae and labium yellow-brown. Abdomen yellow-grey (Fig. 85). Book-lung covers and spinnerets yellow, tinged brown. All legs and palpi yellow. Epigyne and spermathecae as in Figs 83, 84.

NAME. We are very pleased to name the new species after its collector, Dr. Seppo Koponen, the Finnish arachnologist, our friend and colleague who collaborates with and supports us for many years.

The *martensi* species group

Chalcoscirtus (*Chalcosibiricus*) *parvulus* Marusik, 1991, **stat.n.**

Figs 89–93, Map 4.

Chalcoscirtus martensi parvulus Marusik, 1991a: 26–28, ff. 1–4 (♂ holotype, in ZMUM, re-examined).

Chalcoscirtus martensi: Nenilin, 1985: 130; Mikhailov, 1996: 130; 1997: 208.

Chalcoscirtus martensi parvus (lapsus!): Mikhailov & Fet, 1994: 516.

Chalcoscirtus martensi parvulus: Zyuzin et al., 1994: 7.

Chalcoscirtus pavuk Marusik, 1991b: 24, ff. 5–6 (♀ holotype, in ZMUM, re-examined). **Syn.n.**

Chalcoscirtus pavuk: Mikhailov, 1996: 130; 1997: 209.

MATERIAL. TURKEY: 1 ♀ (ZMTU), Izmir Distr., Yamanlar Dagi, 1,100 m a.s.l., 24.05.1973, P. Lehtinen & F. Önder. — IRAN: 1 ♀ (PSU), "Kerman, April 59, Keyserling et Biemert, 1869". — KAZAKHSTAN: 1 ♀ (FSCA), Almaty Area, Ili Distr., 60th km of highway Almaty-Kapchagai, 26.05.1988, A.Z.; 1 ♀ (ISE), same area, Chilik Distr., Kokpek Canyon, 28–29.05.1988, C.K. Tarabaev & A.Z.; 1 ♀ (ZMUM), same area, Talgar Distr., Ili River, 26.05.1990, A.F. & A.Z.; 1 ♂, 2 ♀♀ (ISE), S-Kazakhstan Area, near Arys, 21.05.1987–1.05.1988, D.L.; 1 ♀ (ISE), Arys Distr., ca 102 km NW of Bairkum, Dyusebai Well, 27–28.05.1993, A.Z.; 1 ♀ (ISE), Moynkumy Distr., ca 17 km E of Khantau, foothill of Mt. Sunkar, 12.06.1990, A.F. & A.Z.; 1 ♀ (ISE), Manghistaun Area, Ustyurt Plateau, Ustyurt Nature Reserve, Kendirli Well, 20.05.1989, A.Z.; 1 ♂ (ISE), same area, Kuibyshevo, 19.05.1985, A.Z.; 1 ♂ (ZMUM), Aral Sea, Barsakelmes Island, 5.05.1982, D.D. Piryukikh; 1 ♀ (ISE), Zhambyl Area, Krasnogorka Distr., ca 19 km NW of Kenen, Chu-Ili Mts., 15.06.1990, A.Z. — TAJIKISTAN: 1 ♀ (ISE), near Varganza, 23.05.1978, V.O.; 1 ♀ (ISE), Garavuti, 22.04.1986, A.Z.; 4 ♂♂, 1 ♀ (ISE), Kurgan-Tyube Area, Dzhalikul Distr., near Gandzhyna, 19.04.1991, S.O.; 1 ♀ (ZMUM), Pyandzh Karatau Mt. Range, foothill of Mt. Aktash, 800 m a.s.l., 26.04.1991, S.O.; 1 ♂, 1 ♀ (ISE), Dusti, 26–28.04.1991, S.O. — UZBEKISTAN: 1 ♀ (ISE), Dzhizak Area, Ishmantop, 6.05.1990, A.F. & A.Z.; 1 ♀ (ZMUM), Samarkand Area, Sovetobad Distr., near Ullus, 1.07.1986, A.Z.; 1 ♀ (ZMUM), ca 40 km SW of Tashkent, Gulbakhor, 30.04.1986, S. Kurbatov; 1 ♀ (FSCA), Surkhandarya Area, 40–47 km SE of Denau, Babatagh Mt. Range, 5–13.05.1994, A.Z.; 1 ♂, 5 ♀♀ (ISE), ca 7 km N of Kitab, S foothills of Zerafshansky Mt. Range, 800 m a.s.l., 04.1993, D.L. — TURKMENISTAN: 2 ♂♂, 1 ♀ (ISE), 5 km S of Firyuza, 20.04–20.05.1987, V.D.; 1 ♂, 1 ♀ (ZMUM), Kopetdagh Nature Reserve, Kalininsky Section, 18.05.1987, V.D.; 2 ♂♂, 3 ♀♀ (ISE), Repetek, Karakumy Desert, 18–22.04.1993, D.L. & S.O.; 2 ♂♂ (ZMUM), 12 ♂♂ (ISE), ca 10 km SW of Bakharden, 3–4.04.1993, D.L.; 8 ♂♂, 5 ♀♀ (ISE), 2 ♂♂ (ZMUM), 20–25 km SE of Pulikhatum, Gezgyadyk Mt. Range, 500–1,100 m a.s.l., 15–16.04.1993, D.L.; 1 ♀ (ZMUM), ca 40 km SE of Pulikhatum, Zulfagar Mt. Range, 1,000 m a.s.l., 13–14.04.1993, D.L.; 1 ♂ (FSCA), ca 13 km N of Chemen-Ibit, ca 20

km NE of Bairam-Ali, 18–20, 04.1993, A.Z.; 1 ♂ (FSCA), ca 60 km N of Gyzhgy [= Kushka], near Kala-i-Mor, 9–20.04.1993, D.L.; 1 ♂ (ISE), Badkhyz Nature Reserve, 10–12.04.1993, D.L.

DIAGNOSIS. This species is most similar to *C. martensi* Zabka, 1980. Since the small differences observed in the structure of the embolic division between *C. martensi* [Zabka, 1980: figs 1–2] and *C. martensi parvulus* [Marusik, 1991a: figs 4.1–4] (see also Figs 89, 90) appear consistent, both taxa can be considered as separate species. Moreover, because of these differences, the rank of *C. martensi parvulus* is here revised and elevated to full species: *C. parvulus*, stat.n.

DISTRIBUTION. This is a lowland Turanian species (Map. 4), with its westernmost locality lying in Turkey, Izmir (not shown in Map 4).

DESCRIPTION. See Marusik [1991a: sub *C. martensi parvulus*] and Wesołowska [1996: sub *C. martensi parvulus*].

The *glacialis* species group

Chalcoscirtus (Chalcosibiricus) glacialis Caporiacco, 1935

Chalcoscirtus glacialis sibiricus Marusik, 1991a: 24, ff. 2.3–5, 3.3–4 (♂ holotype, in ZMUM, re-examined).

Chalcoscirtus glacialis: Marusik, 1991a: 22–24, ff. 2.1–2, 3.1–2; Logunov, 1992b: 51–52; Danilov & Logunov, 1993: 28; Danilov, 1995: 62–63; Mikhailov, 1996: 130; 1997: 208.

Euophrys elongata Caporiacco, 1935: 204, t. 6, f. 2 (♀ holotype, not examined). **Syn.n.**

Euophrys elongata: Prószyński, 1984: 42.

MATERIAL. RUSSIA: 16 ♂♂, 8 ♀♀ (ISE), SE-Altai, Kosh-Agach, 1,000 m a.s.l., 11.07.1972, A.P. Kononenko; 1 ♂ (FSCA), same area, ca 40 km SW of Kosh-Agach, E part of South Chu Mt. Range, left bank of Tarkhata River, 2,400–3,100 m a.s.l., summer 1997, R. Dudko; 1 ♂ (ISE), Chita Area, Dahurian Nature Reserve, N bank of Lake Zun-Torei, Mt. Kuku-Khadan, 8–13.06.1995, R.D.; 1 ♀ (ISE), Erzin Distr., NE bank of Lake Tere-Khol, Sharlaa (50°47'N 95°45'E), 1,050 m a.s.l., 6–14.07.1996, Y.M.; 1 ♀ (ISE), same area, middle flow of Kargy River (50°31'N 97°03'E), 1,400 m a.s.l., 28–30.06.1996, Y.M.; 7 ♂♂, 3 ♀♀ (ISE), Chukot Peninsula, middle flow of Anadyr River, Lake Utyosnoye, (65°10'N 173°90'E), 6.07.1996, D.I. Berman. — KAZAKHSTAN: 1 ♀ (PSU), E-Kazakhstan Area, near Lake Zaisan, Mt. Ak-Tas, 5.08.1936, D.E. Kharitonov. — MONGOLIA: 1 ♂, 3 ♀♀ (ISE), Bayanhongor Aimak, Bayanlig Somon, Bogd Somon, Ikh-Bogd Mt. Range, Pass Ikh-Bogd (44°43'N 100°52'E), 2,000–2,100 m a.s.l., 4–6.06.1997, Y.M.; 2 ♂♂, 2 ♀♀ (ISE), Bayanhongor Aimak, Gurvanbulag Somon, Khokh-Nuur (Lake) (47°32'N 98°32'E), 2,600 m a.s.l., 7–10.06.1997, Y.M.; 1 ♀ (ISE), Arkhangai Aimak, Ondrer-Ulaan, Tsakhir, Chulut Gorge (48°07'N 100°22'E), 2,100 m a.s.l., 10–13.06.1997, Y.M.

DIAGNOSIS. See Marusik [1991a: sub *C. glacialis sibiricus*].

DISTRIBUTION. This is a Siberio-North American temperate species, with its S and SW localities lying in Central Asia (Mongolia, Altai and E-Kazakhstan). Only recently it has been found in Alaska (Yukon Territory) [Dondale et al., 1997].

Prószyński [1976] reported *C. glacialis* from the Pamirs, referring to Andreeva's work [1976]. This is a wrong record, as Andreeva's work does not contain these data.

NOTES. While describing *C. glacialis sibiricus*, Marusik [1991] did not examine the holotype of *C. glacialis*. Instead, he compared material from NE-Siberia as well as samples newly collected from Tuva, S-Siberia with the Mongolian specimens of *C. glacialis* determined

and reported as such earlier by Prószyński [1982]. One of us (DL) has again compared all Siberian and Mongolian material of both *C. glacialis glacialis* and *C. glacialis sibiricus* (sensu Marusik, 1991a), including the holotype of the latter subspecies, and found no clear differences between them. Thus, *C. glacialis sibiricus* is perhaps a junior synonym of *C. glacialis*, though this synonymy is not formalized here as the problem calls for further re-examination of the holotype of *C. glacialis*.

Based on Prószyński's [1984: 42] figures of the holotype of *Euophrys elongata* described from Urdukas, Karakorum, it seems safe to conclude, this species is a synonym of *C. glacialis*. Both species in question, *Euophrys elongata* and *C. glacialis*, were described by Caporiacco [1935] in the same paper, but the description of the latter taxon (p. 197) precedes that of the latter one (p. 204). Thus, *C. glacialis* is chosen as the valid name for this species.

DESCRIPTION. See Marusik [1991a: sub *C. glacialis sibiricus*].

Chalcoscirtus (Chalcosibiricus) hyperboreus Marusik, 1991

Chalcoscirtus hyperboreus Marusik, 1991a: 25–26, ff. 2.6–9, 3.5–6 (♀ holotype, in ZMUM, re-examined).

Chalcoscirtus hyperboreus: Danilov & Kurtova, 1991: 34; Danilov & Logunov, 1993: 28; Mikhailov, 1996: 130; 1997: 208.

MATERIAL AND DIAGNOSIS. See Marusik [1991a].

DISTRIBUTION. So far the species has been recorded in the Magadan Area (upper flow of Kolyma River) and Transbaikalia (Sokhondo Nature Reserve) [Marusik, 1988; Danilov & Kurtova, 1991; Danilov & Logunov, 1993].

NOTES. In the original description, Marusik [1991a] reported a female holotype of *C. hyperboreus*, but actually its holotype is a male (deposited in the ZMUM, re-examined).

DESCRIPTION. See Marusik [1991a].

Acknowledgements. We wish to express our warmest thanks to the following persons who contributed specimens for this study: Dr. P.D. Dunin (Togliatti), Dr. A.A. Zyuzin and Mr. A.V. Gromov (both from Almaty), Mr. O.V. Lyakhov (Pavlodar), Dr. V.V. Dubatolov and Mr. V.K. Zinchenko (Novosibirsk), and Mr. S.V. Ovtchinnikov, Dr. S.L. Zonstein and Mr. D.A. Milko (Bishkek). Our special thanks are extended to Dr. K.G. Mikhailov, of the ZMUM, Drs. S. Koponen and M. Saaristo, of the ZMTU, Dr. S.L. Eshyunin, of the PSU, Prof. J. Prószyński, of the IZW, and Dr. V.I. Ovtsharenko, of the ZISP, for the opportunity to study some material under their care. Finally, our thanks also go to Dr. S.I. Golovatch (Moscow) for his kind linguistic help.

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