

A revision of the western hemisphere *Chalcoscirtus* (Araneae: Salticidae)

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Summary

Chalcoscirtus contains 2 species in the western hemisphere, *C. alpicola* (L. Koch) [= *C. montanus* (Banks)] and *C. carbonarius* Emerton. The genus is found in Alaska, Canada and the northern United States, south to Colorado and Utah in the Rocky Mountains. Both species occur in northeast Siberia, and *C. alpicola* also occurs in Europe. A key to the species is included, along with a range map and diagnostic figures.

Introduction

Chalcoscirtus Bertkau, 1880 is a predominantly Old World genus, some species are Mediterranean, but the majority are alpine or far northern in distribution (Bonnet, 1956; Prószyński, 1982; Ovtsharenko, 1978; Zabka, 1980, 1981). Two species have been known from northern North America since the turn of the century; both species fit the general pattern of alpine distribution. One of these species is known from Europe [*C. alpicola* (L. Koch)], and recently both species have been found in eastern Siberia by Marusik (1988). Thus there is no strictly western hemisphere species in the genus. The spiders are only 2-3 mm long, and live under rocks and debris on the ground. It is probable that further localities remain to be discovered in the less collected alpine and northern areas. The collection of *C. alpicola* in a short grass prairie in Saskatchewan is intriguing, and a careful perusal of collection records seems to indicate that *C. carbonarius* Emerton is entirely alpine, while *C. alpicola* can be found at lower elevations in the north. One anomaly which may reflect collector bias is the total allopatric nature of the species over broad areas of the Rocky Mountain region. Both species occur in the Yukon Territory but not together in any other major political division (Map 1). *C. alpicola* has a more southerly distribution. Swann & Robey (1975) revised our information on *C. carbonarius*, but did not consider *C. montanus* (Banks) [a synonym of *C. alpicola*] as a valid member of the genus. This is the only paper discussing the genus in North America, other than locality records or catalogues, since the original descriptions. Prószyński (1987) synonymised *C. montanus* with *Euophrys alpicola*, and properly placed *E. alpicola* in *Chalcoscirtus*.

Chalcoscirtus may be distinguished from all other western hemisphere salticid genera by the small size; shining, strongly sclerotised prosoma which lacks scales; and absence of retromarginal cheliceral teeth. In addition, mature males have a ventral, palpal tibial apophysis, apparently as a support for the bulb, as

noted previously by Zabka (1980, 1981).

All measurements in mm.

Key to species

1. Males 2
Females 3
2. Palpal tibial apophysis simple *C. alpicola*
Palpal tibial apophysis forked *C. carbonarius*
3. Copulatory tubes short with simple curve (Fig. 12) *C. alpicola*
Copulatory tubes long with double curve (Fig. 17) *C. carbonarius*

Western hemisphere distribution

C. alpicola (L. Koch) — CANADA: Saskatchewan, Yukon Territory; U.S.A.: Colorado, New Hampshire, Utah, Wyoming.

C. carbonarius Emerton — CANADA: Alberta, Yukon Territory; U.S.A.: Alaska, Montana.

Chalcoscirtus alpicola (L. Koch) (Figs. 1-3, 5-12, Map 1)

Euophrys alpicola L. Koch, 1876: 273, 346-348 (♀), holotype ♀ from "Funsterthaljoch gegen Niederthai", Stubier Alpen.

Euophrys (?) *alpicola*: Thaler, 1981: 124, figs. 59, 67, 71 (♂, ♀).

Chalcoscirtus alpicola: Prószyński, 1987: 13-14, 7 figs. (♂, ♀).

Icius [*Scius* as printed was a typographical error] *montanus* Banks, 1896: 62 (♂).

Chalcoscirtus montanus: Emerton, 1909: 231, pl. 12, fig. 9 (♂, ♀); Peckham & Peckham, 1909: 587, pl. 43, fig. 6 (♂, ♀).



Map 1: Distribution of western hemisphere *Chalcoscirtus*.

C. alpicola — open circles; *C. carbonarius* — filled circles;
C. sp. immatures — triangles.

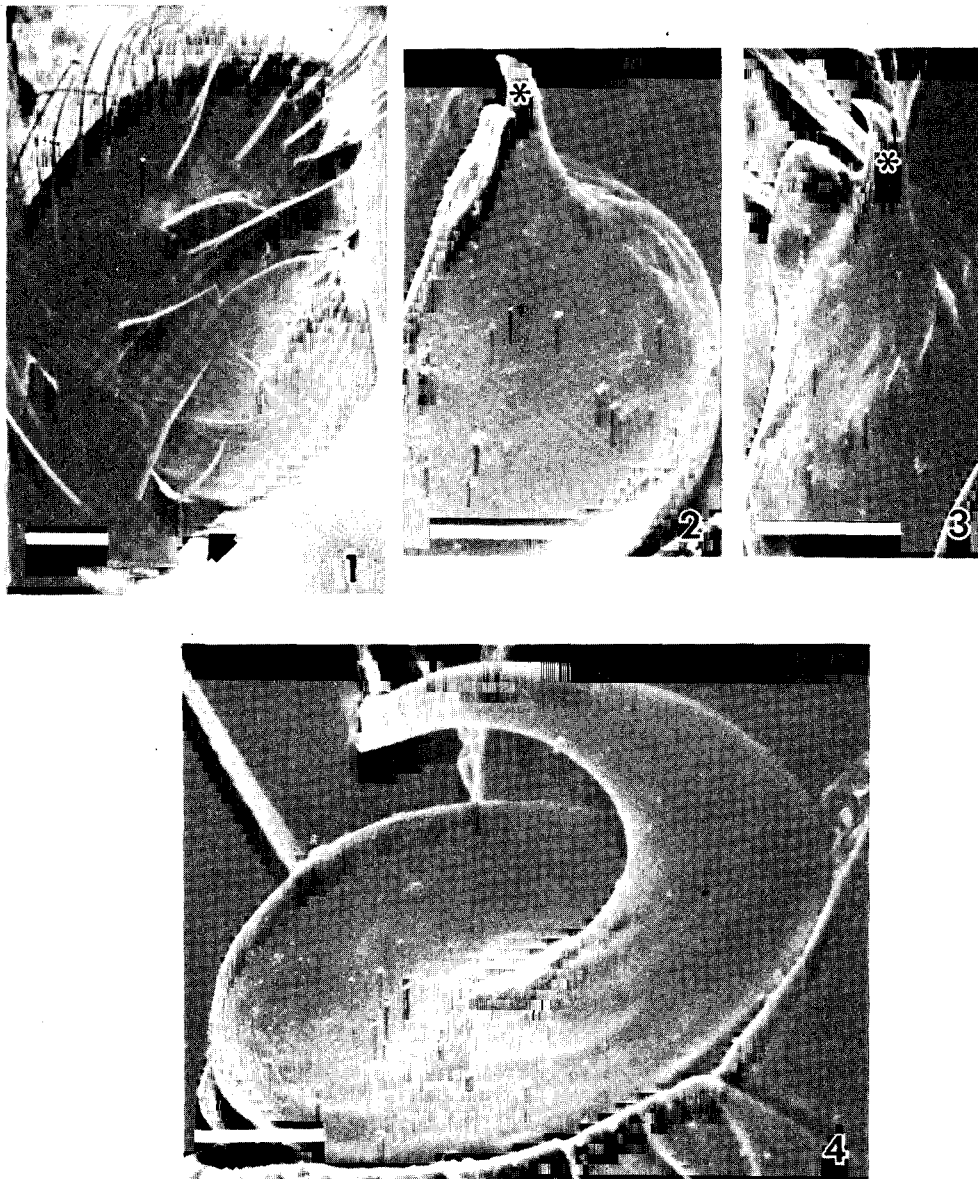
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Diagnosis: The shape of the embolus (Figs. 2-3) and of the female copulatory tubes (Fig. 12) differentiate this species from all other *Chalcoscirtus*. One male from Saskatchewan (Figs. 8-10) has a somewhat variant palpus with a smaller tibial apophysis and slightly different embolus. However, the palpi of the other 3 males collected at the same time resemble those of males from other parts of North America.

Male from U.S.A.: New Hampshire: Mt Washington, JHE (MCZ). Total length 2.2. Carapace 1.09 long, 0.80 wide. Eyefield 0.47 long. Eyerow I 0.73 wide, eyerow III 0.72 wide. Diameter median eyes row I 0.22, laterals row I 0.15, row II eyes 0.03, row III eyes 0.12. Distance eyerow II from eyerow I 0.17, eyerow II from eyerow III 0.12. Femur lengths leg I 0.53, II 0.47, III 0.47, IV 0.55. Leg order 4312. Opisthosoma 1.1 long, 0.7 wide. Chelicerae with 2 promarginal teeth, retro-marginal teeth absent. Ventral leg spination: leg I

metatarsus 2 serial retrolateral, 2 serial prolateral; tibia 3 small retrolateral: leg II metatarsus as leg I; tibia 1 mid retrolateral. Colour uniformly dark brown with shining carapace and shining opisthosomal scutum. Carapace width in 13 males, mean 0.50, range 0.47-0.57.

Female, same locality as male: Total length 3.0. Carapace 1.30 long, 0.85 wide. Eyefield 0.53 long. Eyerow I 0.80 wide, eyerow III 0.78 wide. Diameter median eyes row I 0.22, laterals row I 0.13, row II eyes 0.03, row III eyes 0.22. Distance eyerow II from eyerow I 0.17, eyerow II from eyerow III 0.13. Femur length leg I 0.60, II 0.50, III 0.60, IV 0.72. Leg order 4312. Opisthosoma 1.7 long, 0.8 wide. Chelicerae as in male. Ventral leg spination: leg I metatarsus as in male; tibia 3 serial retrolateral, 2 serial prolateral, 1 middle, 1 distal: leg II as in male. Colour: carapace as in male, opisthosoma dark brown with faint chevrons, scutum



Figs. 1-4: Scanning electron micrographs of palpal elements of *Chalcoscirtus*. **1-3** *C. alpicola* (L. Koch) from New Hampshire. **1** Prolateral view of palpus, arrow indicates ventral tibial apophysis. **2-3** Embolic region, asterisk marks embolus; **2** Ventral view; **3** Retrolateral view. **4** *C. carbonarius* Emerton from Montana, Fergus Co., embolus, ventro-lateral view. Scale lines: Fig. 1 = 0.05 mm, Figs. 2-3 = 0.02 mm, Fig. 4 = 0.015 mm.

lacking, legs orange-yellow. Carapace width in 8 females, mean 0.50, range 0.40-0.72.

Material examined: CANADA: Saskatchewan: 64 km N of Swift Current, Matador Project, 2 June 1970, P. W. Riegert, shortgrass prairie (4 ♂♂; CNC); same locality, 21 June 1971 (3 ♀♀; CNC); Yukon Territory: 32 km N of Burwash, 139° 25' W, 61° 35' N, 9 August 1968, W. Ivie (1 ♂, AMNH); nr. km 72 of Dempster Hwy, N. Klondike Rv., 1100m, 15 June 1981, D. Maddison, on cobbles among grasses (1 ♂; WM). U.S.A.: Colorado: Gunnison Co., Cottonwood Pass, Sawatch Mtns, 3700m, 5 July 1961, H. & L. Levi (1 ♂; MCZ); New Hampshire: Coos Co., Mt Washington, F.J.H.E. (1 ♂, 1 ♀; MCZ); same locality, 11 July 1907, J. H. Emerton (1 ♂, 1 ♀; MCZ); Alpine gardens, 1585m, 14 August 1981, R. M. Reeves, pitfall trap (1 ♂; BC); same locality, 28 August 1981 (1 ♂; RMR); Utah: Box Elder Co., Kellon Pass, 1615m [29 km W of Snowville], 16 April 1969, G. E. Knowlton, juniper and grass duff (3 ♀♀; CNC); Wyoming: Big Horn Co., 10 km E of Shell on Hwy 14, 21 May 1977, D. Maddison, on rocks in area of many rocks and low shrubby vegetation (1 ♂; WM); Yellowstone Natl. Park, Bridge Bay, 110° 27' W, 44° 32' N, 20 June 1938, W. Ivie (1 ♂; AMNH).

It is possible that this species occurs on some of the other high mountains of the northeast and should be looked for on Mt Marcy, New York; Mt Katahdin, Maine; and the Shickshocks, Gaspé Peninsula, Quebec.

***Chalcoscirtus carbonarius* Emerton** (Figs. 4, 13-17, Map 1)

Chalcoscirtus carbonarius Emerton, 1917: 271, fig. 23 (♂, ♀), holotype male from "Simpson Summit, Banff", Alberta.

Chalcoscirtus carbonarius: Swann & Robey, 1975: 101-104, figs. 1-10 (♂, ♀).

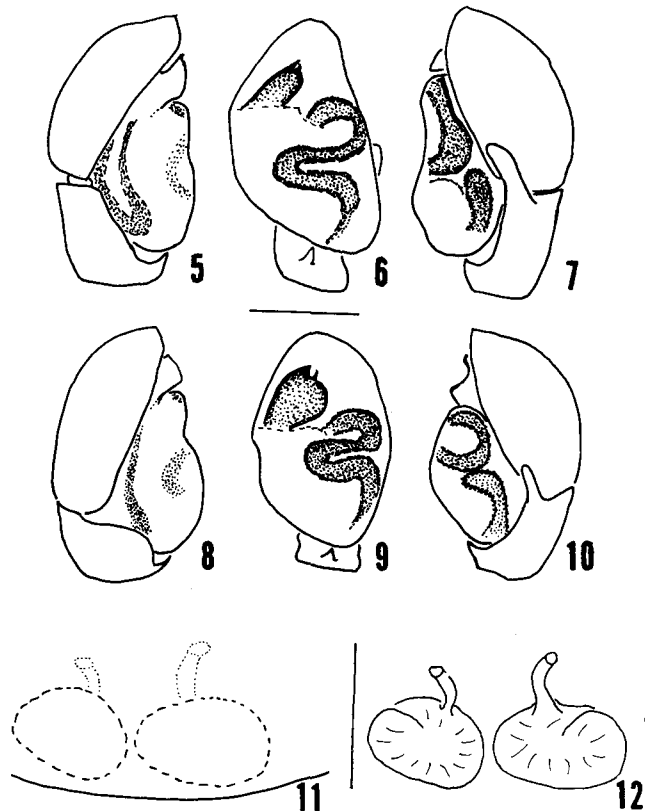
Diagnosis: Males can be distinguished easily by the forked tibial apophysis (Fig. 15). The elongated copulatory tubes with a double curve are diagnostic of the female (Fig. 17).

Male from Canada: Alberta: Waterton Lakes Natl. Park, Carthew Lakes, 1980-2200m, 27 July 1953, HWL (MCZ). Total length 2.7. Carapace 1.30 long, 0.90 wide. Eyefield 0.63 long. Eyerow I 0.94 wide, eyerow III 0.89 wide. Diameter median eyes row I 0.27, laterals row I 0.18, row II eyes 0.03, row III eyes 0.15. Distance eyerow II from eyerow I 0.17, eyerow II from eyerow III 0.15. Femur lengths leg I 0.73, II 0.67, III 0.73, IV 0.80. Leg order 4312. Opisthosoma 1.5 long, 0.9 wide. Chelicerae with 2 promarginal teeth, retromarginal teeth absent. Ventral spination: leg I metatarsus 2 serial each retrolateral and prolateral; tibia 3 serial each retrolateral and prolateral; leg II as leg I. Colour as in *C. alpicola*, but all tarsi dark yellow. Carapace width in 7 males, mean 0.65, range 0.58-0.70.

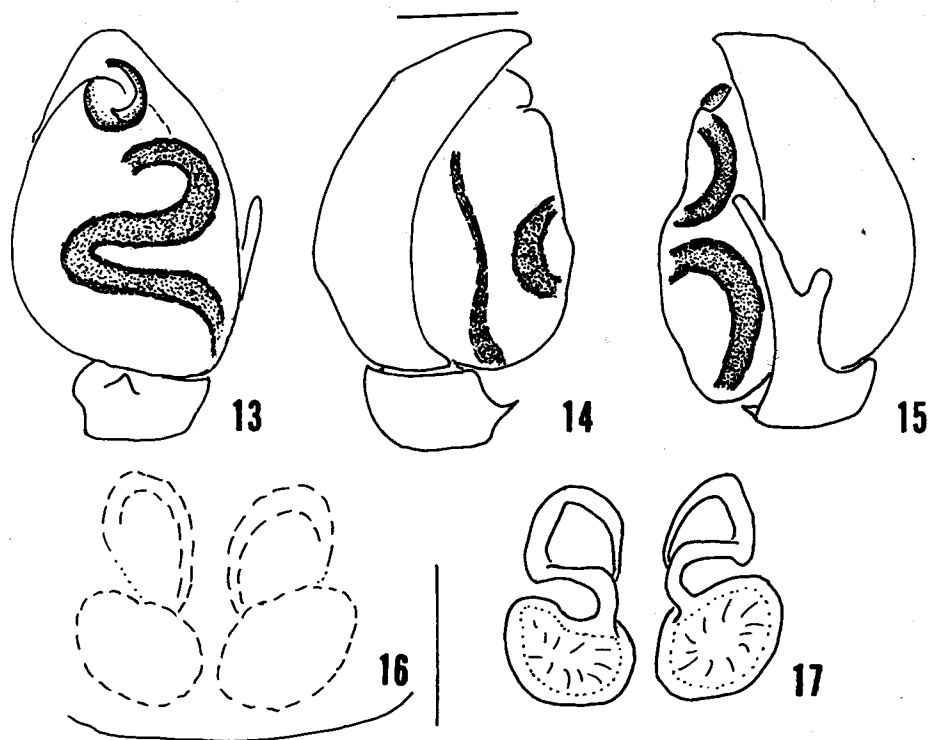
Female, same locality as male: Total length 3.4. Carapace 1.50 long, 1.07 wide. Eyefield 0.65 long. Eyerow I 1.04 wide, eyerow III 1.02 wide. Diameter median eyes row I 0.29, laterals row I 0.20, row II eyes 0.03, row III eyes 0.17. Distance eyerow II from eyerow I 0.18, eyerow II from eyerow III 0.17. Femur lengths leg I 0.75, II 0.73, III 0.82, IV 1.00. Leg order

4312. Opisthosoma 2.0 long, 1.2 wide. Chelicerae as in male. Ventral leg spination: leg I as in male, but leg II tibia lacking prolateral, proximal spine. Colour as in female *C. alpicola*, but legs all brown. Carapace width in 40 females, mean 0.76, range 0.62-0.85.

Material examined: CANADA: Alberta: Banff, Simpson Summit, 27 July 1916, N. B. Ganson, Emerton det. 1917 (6 ♀♀; MCZ); Jasper National Park, Mt Edith Cavell, 16 July 1981, C. D. Dondale, under stones (5 ♀♀; CNC); lodge, 118° 02' W, 52° 41' N, 24 August 1965, Jean & Wilton Ivie (1 ♂, 1 ♀, AMNH); Waterton Lakes National Park, Carthew lakes, 1980-2200m, 27 July 1953, Levi, under stones (3 ♂♂, 21 ♀♀, 1 imm. ♂; MCZ); Alberta [no locality given] (1 ♀, AMNH); Yukon Territory: Dempster highway, km 132, 22 June 1981, C. D. Dondale, tundra and stony mountainside (2 ♀♀; CNC). U.S.A.: Alaska: Nunatuk [probably the Nunatuk Mt. in the St Elias Range 139° 02' W, 59° 49' N], 12 July 1949, Peter Wood (1 ♀; AMNH); Southeastern District, T3N, R5E, s. 28, NE¼ (144° 30' W, 62° 01' N), 1375m, Mt Wrangell, Dadina Drainage, 20 July 1978, R. Saltmarch, under rocks in rock slide (4 ♀♀; BC); Montana: Fergus Co., Big Snowie Mts, 2600m, 5 August 1961, B. Vogel (4 ♀♀; AMNH); Glacier National Park, Cracker Lake, 1830m, 16 July 1953, rocks, Levi (1 ♂ — missing, 1 ♀; AMNH); Cut Bank Pass, 2320 m, 15 August 1953, Levi



Figs. 5-12: *Chalcoscirtus alpicola* (L. Koch). 5-7 Male palpus from New Hampshire. 5 Prolateral view; 6 Ventral view; 7 Retrolateral view. 8-10 Male palpus from Saskatchewan, north of Swift Current. 8 Prolateral view; 9 Ventral view; 10 Retrolateral view. 11-12 Female epigynum from New Hampshire. 11 External view; 12 Internal view. Scale lines = 0.17 mm.



Figs. 13-17: *Chalcoscirtus carbonarius* Emerton. **13-15** Male palpus from Alberta: Jasper National Park, Mt Edith Cavell. **13** Ventral view; **14** prolateral view; **15** Retrolateral view. **16-17** Female epigynum from Alberta: Banff. **16** External view; **17** Internal view. Scale lines = 0.17 mm.

(1 ♀; AMNH); Dawson Pass, 2290m, 11 August 1953, Levi (1 ♂, 1 ♀; AMNH).

Two additional records of immature *Chalcoscirtus* unable to be placed to species are: **CANADA: Northwest Territories:** District of Mackenzie, Aklavik, 30 June 1956, R. E. Leech (CNC); **Yukon Territory:** 19km SE of Beaver Creek Town, 140° 42' W, 62° 16' N, 9 August 1968, W. Ivie (AMNH).

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References

- BANKS, N. 1896: A few new spiders. *Can. Ent.* **28**: 62-65.
 BONNET, P. 1956: *Bibliographia Araneorum* **2**(2): 919-1926. Toulouse.
 EMERTON, J. H. 1909: Supplement to the New England spiders. *Trans. Conn. Acad. Arts Sci.* **14**: 171-236, 12 plates.
 EMERTON, J. H. 1917: New spiders from Canada and the adjoining states. *Can. Ent.* **49**: 261-272.
 KOCH, L. 1876: Verzeichnis der in Tirol bis jetzt beobachteten Arachniden. *Z. Ferdinand. Tirol* (3) **20**: 219-354.
 OVTSHARENKO, V. I. 1978: Spiders of the family Salticidae (Aranei) from the greater Caucasus. *Ent. Rev., Wash.* **57**: 469-472.
 PECKHAM, G. W. & PECKHAM, E. G. 1909: Attidae of North America. *Trans. Wis. Acad. Sci. Arts Lett.* **16**: 355-646.
 PRÓSZYŃSKI, J. 1982: Salticidae (Araneae) from Mongolia. *Annls hist.-nat. Mus. natn. hung.* **74**: 273-294.
 PRÓSZYŃSKI, J. 1987: *Atlas rysunków diagnostycznych mniej znanych Salticidae 2*. WSRP, Siedlce, Poland.
 SWANN, P. & ROBEY, C. 1975: A redescription of the North American jumping spider *Chalcoscirtus carbonarius* Emerton, 1917. *Bull. Br. arachnol. Soc.* **3**: 101-104.
 THALER, K. 1981: Bemerkenswerte Spinnenfunde in Nordtirol (Österreich). *Veröff. Mus. Ferdinandeum Innsb.* **61**: 105-150.
 ZABKA, M. 1980: Salticidae from the Nepal Himalayas. *Chalcoscirtus* Bertkau 1880 and *Euophrys* C. L. Koch 1834 (Arachnida: Araneae). *Senckenberg. biol.* **60**: 359-369.
 ZABKA, M. 1981: Salticidae from Kashmir and Ladakh (Arachnida: Araneae). *Senckenberg. biol.* **61**: 407-413.