

Species of *Sigara* s. str. in the fauna of Russia and adjacent countries (Heteroptera: Corixidae)

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A key to the 4 species of the subgenus occurring in the former USSR is given and their distinguishing characters and distributions are discussed.

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Introduction

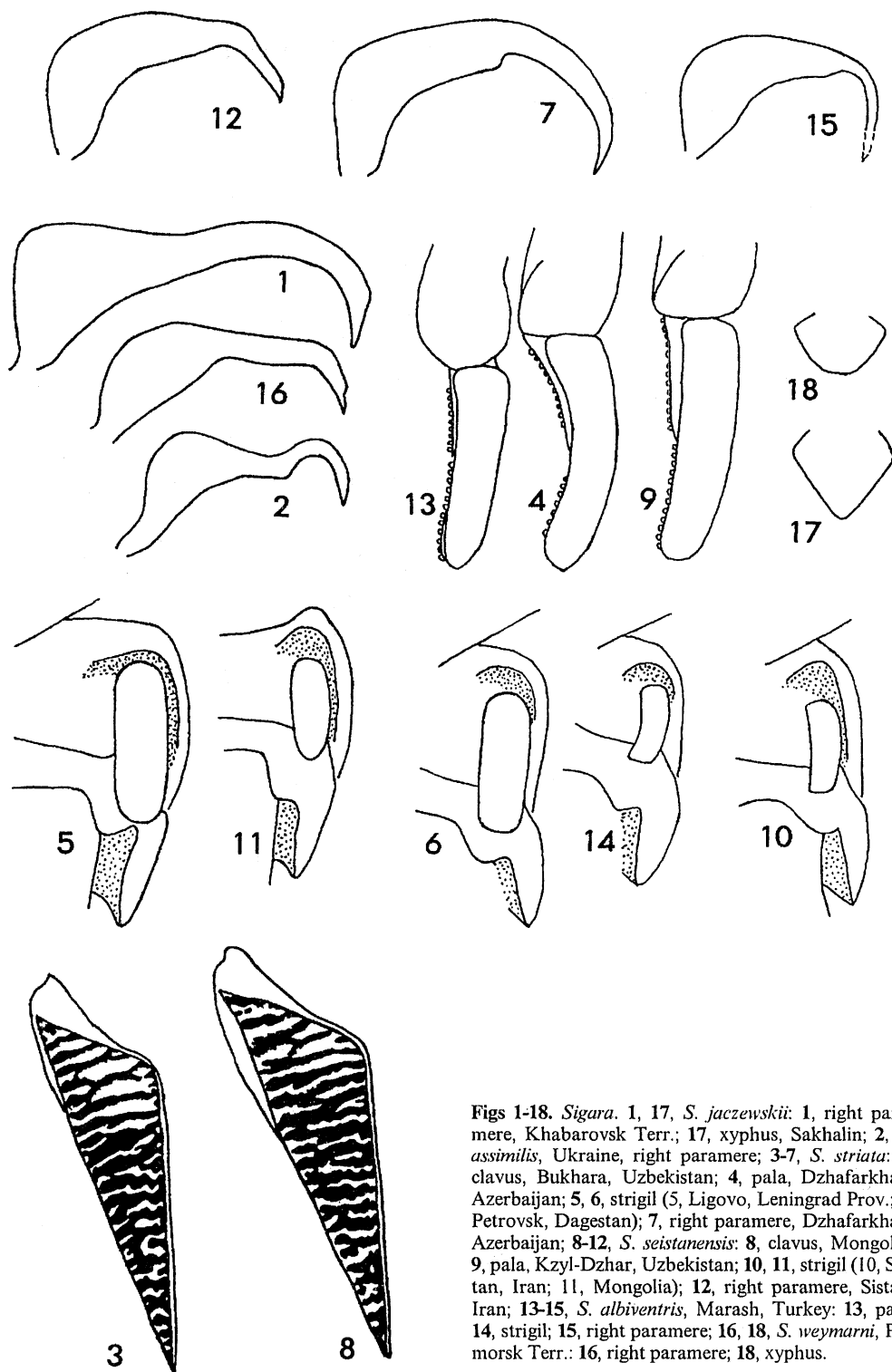
Four species of the subgenus *Sigara* Fabricius, 1775 are known from the territory of the former USSR: *S. assimilis* (Fieber, 1848), *S. jaczewskii* Lundblad, 1928, *S. striata* (Linnaeus, 1758) and *S. seistanensis* (Distant, 1920). Poisson (1939) and Jansson (1986) recorded also *S. albiventris* (Horváth, 1911) from Azerbaijan and Dagestan, but careful examination of respective specimens (Kanyukova, 1995) showed that they belong to *S. striata*.

The present study is based on the extensive material in the collection of the Zoological Institute, St.Petersburg (including preparations made by the late Prof. T. Jaczewski) and additional material in the collection of the Zoological Museum, Moscow University. The distribution of species in the former USSR is refined, and their distinguishing characters discussed, with the emphasis on the geographic variability of *S. striata*.

In the species of *Sigara* s. str. from the former USSR, the hind femora bear on the upper side near apex a row of 3, sometimes 4 short, easily rubbed off spinules, metathoracic xyphus is as long as wide or slightly longer than wide, male fore tarsus (pala) with 2 peg rows (distal and proximal), and the strigil is large. The species differ mainly in the shape of the right paramere. Comparison of the female genitalia of *S. albiventris*, *S. striata* and *S. seistanensis* did not reveal any differences of these closely related species; females of these species can be distinguished only by the coloration and not in all cases.

Key to the species of *Sigara* s. str. of the former USSR

- 1(2). Larger, body length 8-9 mm. Male: paler pegs in the distal row increase in size apically; projection on hind margin of abdominal tergite VII obtuse, short, without a tuft of long hairs at apex, only with some hairs on its right side. Right paramere as in Fig. 1 *S. jaczewskii* Lundblad
- 2(1). Smaller, body length 8 mm (in *S. striata*) or less. Male: paler pegs in the distal row of equal sizes throughout; projection on hind margin of tergite VII relatively acute and long, with a tuft of long hairs at apex.
- 3(4). Embolium often with a smoky dark spot on both sides of nodal furrow. Middle tarsi shorter than claws, brown at apex; apices of hind tarsi often smoky brown. Body length 7-7.5 mm. Male: frontal depression deep; fore margin of head angulately projecting between eyes; distal end of proximal peg row of pala reaching beyond proximal end of distal peg row; strigil almost square, with 5-6 combs; right paramere as in Fig. 2 *S. assimilis* (Fieber)
- 4(3). Embolium pale, without a dark spot along nodal furrow. Middle tarsi as long as claws; apices of middle and hind tarsi pale. Male: frontal depression less distinct; fore margin of head evenly rounded; paler peg rows not overlapping; strigil oval; right paramere of differing shape.
- 5(6). Area at base of clavus with 3-4 widened internally pale lines reaching beyond the level of inner corner of clavus (Fig. 3). Body length 7-8 mm in the northern populations and 6.6-7 mm in the southern ones (North Caucasus and Transcaucasia, Kazakhstan, Uzbekistan). Male: pala more concave, its apex more incurved in dorsal view (Fig. 4); strigil large, with 10-11 combs, its distal end neared to the notch on hind margin of abdominal tergite VII in northern populations (Fig. 5), or smaller, with 8-10 combs in southern populations (Fig. 6); right paramere as in Fig. 7 *S. striata* (Linnaeus)



Figs 1-18. *Sigara*. 1, 17, *S. jaczewskii*: 1, right paramere, Khabarovsk Terr.; 17, xyphus, Sakhalin; 2, *S. assimilis*, Ukraine, right paramere; 3-7, *S. striata*: 3, clavus, Bukhara, Uzbekistan; 4, pala, Dzhaifarkhan, Azerbaijan; 5, 6, strigil (5, Ligovo, Leningrad Prov.; 6, Petrovsk, Dagestan); 7, right paramere, Dzhaifarkhan, Azerbaijan; 8-12, *S. seistanensis*: 8, clavus, Mongolia; 9, pala, Kzyl-Dzhar, Uzbekistan; 10, 11, strigil (10, Sistan, Iran; 11, Mongolia); 12, right paramere, Sistan, Iran; 13-15, *S. albiventris*, Marash, Turkey: 13, pala; 14, strigil; 15, right paramere; 16, 18, *S. weymarni*, Primorsk Terr.: 16, right paramere; 18, xyphus.

6(5). Area at base of clavus with 3-4 wider pale lines not reaching beyond the level of inner corner of clavus (Fig. 8); sometimes the lines very weakly widened. Body length 6.5-7 mm. Male: pala flatter, its apex weakly incurved (Fig. 9); strigil small, with 5, rarely 6 combs, its distal end not reaching the middle of abdominal tergite VII (Figs 10, 11); right paramere as in Fig. 12.
 *S. seistanensis* (Distant)

***Sigara assimilis* (Fieber, 1848)**

(Fig. 2)

Diagnosis. Pronotum with 9-10 wide (wider than dark background), irregular pale lines, thus looking yellow. Embolium with a dark spot on both sides of nodal furrow. Pale pattern of hemelytra (see Jansson, 1986: Fig. 25, *a*) formed by interrupted pale lines, those at base of clavus more regular and less widened than in *S. striata*. Middle tarsi shorter than claws. Apices of middle tarsi brown, apices of hind tarsi often smoky brown. Body length 7-7.5 mm. Male: frontal depression deep; fore margin of head angularly projecting between eyes; distal end of proximal peg row of pala reaching beyond proximal end of distal peg row; strigil smaller than in *S. striata*, more rectangular, with 5-6 combs; right paramere as in Fig. 2.

Distribution. South of European Russia (Jansson, 1986: map 43), W Siberia (basin of Irtysh), Ukraine, Moldavia, Georgia, Azerbaijan, Kazakhstan, Kirgizia, Tajikistan, Uzbekistan, Turkmenistan; W Europe (Hungary, Romania, Bulgaria?, Croatia), from Turkey to N China and Mongolia (Jaczewski & Wróblewski, 1975; Kanyukova, 1976, 1990; Jansson, 1986, 1995).

Biology. In W Siberia, I collected this species in salt lakes.

***Sigara jaczewskii* Lundblad, 1928**

(Figs 1, 17)

Diagnosis. Larger than other species, body length 8-9 mm. Male: palar pegs in the distal row increase in size apically. In the original description (Lundblad, 1928: Fig. 10), was mentioned an intermediate peg between the two palar peg rows. However, examination of specimens from the Russian Far East shows that in some specimens this peg is absent, its distance from the distal row may differ in the left and right pala of the same specimen and often it merges with the distal row. According to Nieser (1982: Fig. 188), an intermediate peg is sometimes present also in *S. striata*. Projection on hind margin

of the male abdominal tergite VII obtuse, short, without a tuft of long hairs at apex, only with some hairs on the right side. Right paramere as in Fig. 1.

Distribution. Russia (Irkutsk, Amur Prov., Khabarovsk and Primorsk Terr., Sakhalin), Mongolia (Jaczewski, 1960b; Kanyukova, 1981a, 1981b, 1990).

Remarks. In Primorsk Terr. and Mongolia, *S. jaczewskii* occurs together with *S. (Subsigara) weymarni* Hung., the latter is distributed in Russia from Chita Prov. to Amur Terr. The males of the two species readily differ in the shape of pala, position of palar peg rows, size of strigil and structure of paramere (Fig. 16; see also Jaczewski, 1960a; Kanyukova, 1988, 1990). The females differ in the sizes (body length 6-7 mm in *S. weymarni*) and the shape of xyphus: in *S. jaczewskii*, it is larger, of equal length and width (Fig. 17); in *S. weymarni*, it is longer than wide, obtuse (Jaczewski, 1960a), often slightly asymmetrical (Fig. 18; see also Hungerford, 1940, pl. 2, fig. 7) or with a small notch at apex. Large females of *S. weymarni* differ from females of *S. jaczewskii* only in the structure of xyphus, the coloration of hemelytra is identical.

Both Hungerford in the original description and Jaczewski (1960a) indicated that *S. weymarni* belongs to the subgenus *Subsigara*, as evidenced by the shape of the male pala and its size as compared to the size of tibia, diagonally running peg rows apparently originating from one initial peg row, short and obtuse xyphus, and small strigil. Also the lateral lobe of prothorax in *S. weymarni* is characteristic of *Subsigara*. The only difference from other species of the subgenus *Subsigara* and similarity with those of *Sigara* s. str. is the presence of 3-4, not 6-12 spinules on the upper side of hind femora.

***Sigara seistanensis* (Distant, 1920)**

(Figs 8-12)

Diagnosis. Pronotum and hemelytra usually with pale lines wider than the dark background, therefore the bugs looking paler than *S. striata*. Pronotum crossed with 6-7 pale lines sometimes divided in two in their middle. Base of clavus with 3-4 widened pale lines usually not reaching beyond the inner corner of clavus (Fig. 8); sometimes these lines are less widened, and such specimens differ clearly from those of *S. striata*. Pale pattern of corium usually not interrupted by dark longitudinal stripes of background,

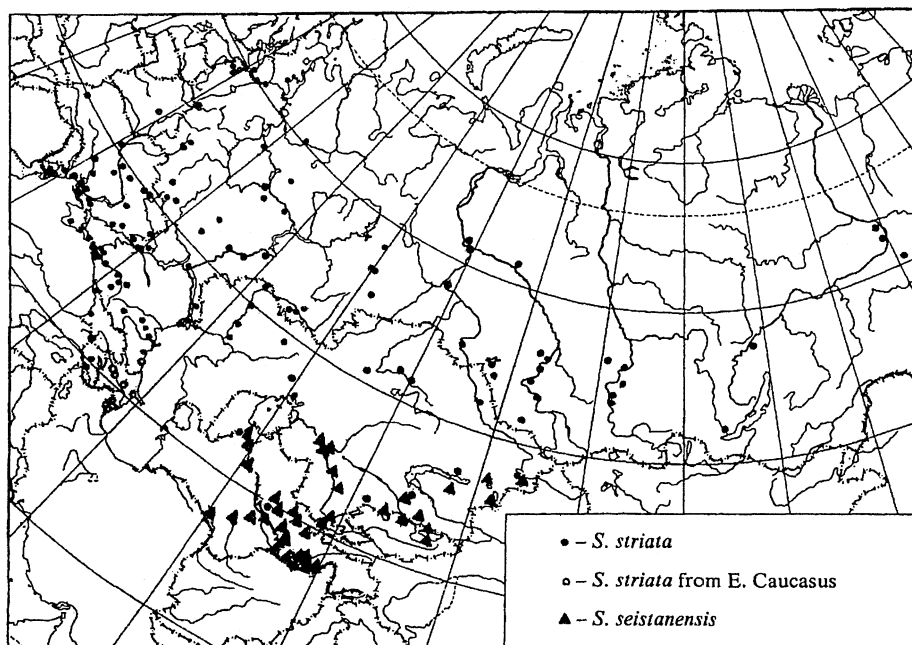


Fig. 19. Distribution of *Sigara striata* and *S. seistanensis* in the former USSR.

rarely one dark stripe along outer margin is present. Male pala flatter than in *S. striata*; its apex weakly incurved (Fig. 9). Strigil smaller than in *S. striata*, with 5, rarely 6 combs, its distal end not reaching the middle of tergite VII (Figs 10, 11). Right paramere more rounded in the basal part, compared to *S. striata*, with shorter apical part and without angular projection on inner margin (Fig. 12). Body length 6.5-7 mm.

Distribution. SE Kazakhstan, Kirgizia, Uzbekistan, Tajikistan, Turkmenistan; Iran, Mongolia, Oriental Region (Hutchinson, 1933, 1940; Lansbury, 1966; Jaczewski & Wróblewski, 1975; Kanyukova, 1976, 1990; Jansson, 1995).

***Sigara striata* (Linnaeus, 1758)**
(Figs 3-7)

Diagnosis. The distinguishing characters of this common species in the main part of its distribution area are given in many keys to European Corixidae. Pronotum (see Jansson, 1986, Fig. 25, b) with dark and pale lines of subequal width. Pale lines of hemelytra usually narrower than the dark background; 3-4 lines at base of clavus strongly widened internally, and the area occupied by

these lines reaching beyond the level of inner corner of clavus. Body length 7-8 mm. In males, strigil (Fig. 5) large, with 10-11 combs, its distal end is close to the excision on hind margin of tergite VII. Right paramere (Fig. 5) more angular in basal part; its apex curved down at an obtuse angle; its inner margin with an angular projection which is sometimes incurved and seen on one side only; this projection is absent in related species (Lansbury, 1966, Figs 25, 28, for *S. seistanensis*, as *S. astrita*).

Specimens from European Russia south of the rivers Kuban' and Terek and from Asia between SE corner of the Aral Sea and Zaisan Lake are smaller, usually paler, with slightly shorter strigil in male. But the structure of the right paramere and male pala is typical of the species and the apical part of pala (to examine in dorsal view!) is more strongly incurved than in related species.

Populations of *S. striata* from Dagestan and Azerbaijan showing some differences from the typical northern form were erroneously described by Poisson (1939) as belonging to *S. albiventris*. T. Jaczewski in 1964 identified specimens from Dagestan and Azerbaijan in the collection of Zoological Institute, St. Petersburg as *S. albiventris*, but later

(Jaczewski, 1968) suspected that *S. albiventris* is merely a synonym of *S. striata*, an idea which could not be verified by me for the lack of representative material.

The specimens of *S. striata* from Dagestan and Azerbaijan are larger (6.5-7.6 mm) than specimens of *S. albiventris* from Turkey and usually paler: pronotum with 6-7 pale lines which are wider than in *S. albiventris* and not rarely divided in two in their middle; pale lines on clavus and corium more regular; pale pattern of corium often interrupted only by one or two longitudinal dark stripes (along its inner corner and outer margin). Male pala (Fig. 4) concave, with a diagonal carina and incurved apex (in dorsal view). Strigil relatively large, with 8-10 combs, its distal end reaching beyond middle of tergite VII. Right paramere (Fig. 7) with angular projection on inner margin (Poisson, 1939, fig. 1 in his "re-description" of *S. albiventris* from Geok-Tapa illustrated this projection characteristic of *S. striata*).

In Uzbekistan and SE Kazakhstan, *S. striata* occurs together with *S. seistanensis*, but apparently in different habitats, as specimens of the two species from the same locality were collected on different dates. The males of *S. striata* can be differentiated by the strongly concave pala, larger strigil and structure of the right paramere. The distinguishing of females is more difficult; usually *S. striata* can be separated by the widened pale lines at base of clavus reaching beyond its inner corner (Fig. 3), but this character is not always reliable due its variability.

Distribution. In European Russia and in W Siberia to Yenisey, the species is common throughout, except for the north. In E Siberia, it is rare, reaching Lena River in Yakutia, but not recorded from Transbaikalia. It inhabits also nearly the whole Europe (Jansson, 1986, 1995) and Transcaucasia (Georgia, Armenia, Azerbaijan), and scattered records are known from Uzbekistan and SE Kazakhstan (see map). The records from China (based on females) and Iran need confirmation.

***Sigara albiventris* (Horváth, 1911)** (Figs 13-15)

I examined 1 ♂ and 1 ♀ from Turkey (Asia min., Marasch, 15.-19.6.52, leg. Seidenstücker), both identified as *S. albiventris* by G. Seidenstücker, and compared them with specimens from Dagestan and Azerbaijan identified as *S. albiventris* by T. Jaczewski in 1964, the lo-

calities of the latter were mapped by Jansson (1986: map 42). I concluded (Kanyukova, 1965) that the specimens from Dagestan and Azerbaijan belong to *S. striata* (see discussion above).

The Turkish specimens of *S. albiventris* are smaller than *S. striata* (6 mm) and on the average darker. Pronotum with 6-7 pale lines, which are narrower than in *S. striata* and not bifurcated. The pale pattern on corium formed of very narrow lines interrupted by 2-3 dark stripes of background, thus the corium looking darker. The pala of male (Fig. 13) is shorter than in *S. striata*, straight and flat, without medial diagonal carina, with apex not incurved in dorsal view. Strigil (Fig. 14) distinctly shorter, with 7 combs. Right paramere (Fig. 15) more rounded in its basal part, its apex curved ventrally nearly at right angle (in the dissected specimen, the very apex was broken off), inner margin wavy but without angular projection, as distinct from *S. striata*.

Distribution. SE Turkey, Iraq, Syria, Israel (Jansson, 1995).

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References

- Hungerford, H.B. 1940. New Corixidae from China, Manchuria and Formosa. *J. Kansas entomol. Soc.*, **13**(1): 8-14.
- Hutchinson, G.E. 1933. A revision of the Distantian and Paivaian types of Notonectidae and Corixidae in the Indian Museum. *Rec. Indian Mus.*, **35**: 393-408.
- Hutchinson, G.E. 1940. A revision of the Corixidae of India and adjacent regions. *Trans. Connecticut Acad. Arts Sci.*, **33**: 339-476.
- Jaczewski, T. 1960a. Contributions to the knowledge of aquatic Heteroptera of the Asiatic territories of the USSR. *Ann. zool.*, **18**(16): 277-296. (In Russian).
- Jaczewski, T. 1960b. Corixidae (Heteroptera) from the Mongolian People's Republic and some adjacent regions. *Fragm. faun.*, **8**(20): 305-314.
- Jaczewski, T. 1968. *Check-list of the aquatic and semiaquatic Heteroptera of the Holarctic*: 1-54. Warszawa.
- Jaczewski, T. & Wróblewski, A. 1975. Further notes on aquatic Heteroptera from Mongolia. *Polskie Pismo entomol.*, **45**: 51-61.

- Jansson, A.** 1986. The Corixidae (Heteroptera) of Europe and some adjacent regions. *Acta entomol. fenn.*, **47**: 1-94.
- Jansson, A.** 1995. Family Corixidae Leach, 1815 – water boatmen. In: B. Aukema & Chr. Rieger (eds). *Catalogue of the Heteroptera of the Palaearctic Region*, 1: 26-56. The Netherlands Entomological Society.
- Kanyukova, E.V.** 1976. Aquatic and semiaquatic bugs (Heteroptera) of the Mongolian People's Republic. *Nasekomye Mongolii*, **4**: 11-20. (In Russian).
- Kanyukova, E.V.** 1981a. Aquatic bugs (Heteroptera) from the Khabarovsk Territory. In: G.O. Krivolutsкая (ed.). *Novye svedeniya o nasekomykh Dal'nego Vostoka* [New data on the insects of the Far East]: 18-20. Vladivostok. (In Russian).
- Kanyukova, E.V.** 1981b. Aquatic bugs (Heteroptera) of Sakhalin. *Trudy zool. Inst. Akad. Nauk SSSR*, **92**: 14-16. (In Russian).
- Kanyukova, E.V.** 1988. Family Corixidae. In: P.A. Lehr (ed.). *Opredelitel' nasekomykh Dal'nego Vostoka SSSR* [Keys to the insects of the Far East of the USSR], **2**: 739-745. (In Russian).
- Kanyukova, E.V.** 1990. Keys to aquatic and semiaquatic bugs (Heteroptera) of the Mongolian People's Republic. *Nasekomye Mongolii*, **11**: 10-24. (In Russian).
- Kanyukova, E.V.** 1995. *Sigara albiventris* (Horváth) does not occur in Daghestan and Azerbaijan (Heteroptera: Corixidae). *Zoosyst. ross.*, **3**(2), (1994): 234.
- Lansbury, I.** 1966. The aquatic and semi-aquatic Hemiptera-Heteroptera of the Mongolian-German biological expedition, 1964. *Mitt. zool. Mus. Berlin*, **42**: 211-218.
- Lundblad, O.** 1928. Beitrag zur Kenntnis der Corixiden. *Entomol. Tidskr.*, **48**(4): 219-243.
- Lundblad, O.** 1934. Schwedisch-chinesische wissenschaftliche Expedition nach den nordwestlichen Provinzen Chinas. 28. Hemiptera. 1. Wasserhemipteren. *Ark. Zool.*, **27A**(14): 1-31.
- Nieser, N.** 1982. De Nederlandse water- en oppervlaktewantsen (Heteroptera: Nepomorpha en Gerromorpha). *Wet. Meded. k. natuurhist. Ver.*, **155**: 1-103.
- Poisson, R.** 1939. Notes biogéographiques. Sur quelques Corixidae du Caucase (Hemiptera-Heteroptera). *Bull. Soc. entomol. France*, **44**: 22-24.

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