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Taxonomic Status and Subspecies Structure of *Cicindela altaica* (Coleoptera, Carabidae)

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Abstract—*Cicindela* (s. str.) *altaica* Eschscholtz, 1829 is reestablished as a distinct species on the basis of a study of museum collections and the author's data, and two its subspecies are separated. The nominotypical form inhabits the Altai piedmont plain, the valley of Teletskoe Lake, and SE Khakassia. *Cicindela altaica koschagachensis* subsp. n. occurs only in the Chu Steppe (the Altai). Within the *hybrida* group, *C. altaica* is the most closely related to *C. maritima* Dej. and *C. restricta* F.-W. The ranges of the two last species almost do not overlap, and that of *C. altaica* is transitional between them. A key to these species is given. The lectotypes of *Cicindela altaica* Eschscholtz, 1829 and *Cicindela songorica* Motschulsky, 1845 are distinguished. The synonymy of *Cicindela songorica* Motschulsky, 1845 = *Cicindela albopilosa* Dokhtouroff, 1885 is established.

In the nominotypical subgenus of the Palaearctic, the *hybrida* group (sensu Mandl, 1935–1936) is the most species-rich. Its taxonomy is rather complicated because of the considerable variability of morphological characters. The status and nomenclature of some taxa remain open to question. Among these is *Cicindela* (s. str.) *altaica* Eschscholtz, 1829.

The authorship of this taxon had long been ascribed to Gebler, who pointed out the distinctness of the *C. maritima* Dej. inhabiting the environs of Barnaul and Loktevsk (namely, its coarser, rugose-granulate sculpture of the elytra) and proposed for it the name "*altaica*" (Gebler, 1830). Nearly in all subsequent publications, Gebler was considered the author of this taxon (Dejean, 1833, 1837; Chaudoir, 1863; Horn and Roeschke, 1891; Mandl, 1935–1936; Rivalier, 1950; Cassola and van Nidec, 1984; Werner, 1991; Wiesner, 1992). Only Horn (1915, 1926, 1930) gave priority to Motschulsky, who redescribed in detail *C. altaica* (Motschulsky, 1844). The last checklist of the ground-beetles of Russia and adjacent territories (Kryzhanovskij *et al.*, 1995), however, indicated that the name "*altaica*" had been used by Eschscholtz before Gebler (Eschscholtz, 1829). Therefore, Eschscholtz was recognized as the author of this taxon (Cherkasov in Kryzhanovskij *et al.*, 1995 : 26).

The position of *C. altaica* in the genus has been unclear up to now. For example, Dejean (1837) considered it a form of *C. maritima* and Chaudoir (1863), a variety of *C. hybrida* L. Motschulsky (1844) treated *C. altaica* [sensu Gebler, 1830] as a form of *C. maritima* and *C. altaica* [sensu Motschulsky, 1844] as a distinct species spread in Western Siberia and Kirgiz steppes (Motschulsky, 1846). In addition, Motschulsky pointed out that Mannerheim had proposed the name *C. songorica* for the black specimens collected by Karelin in Dzhungaria (Motschulsky, 1845). Mannerheim himself (1946) and, later, Motschulsky treated *C. songorica* as only a dark variety of *C. altaica* [sensu Motschulsky, 1844]. Later, this concept was accepted by many authors disagreeing only on the names, "*songorica*" (Horn and Roeschke, 1891; Horn, 1905; Schilder, 1952; Wiesner, 1992) or "*altaica*" (Horn, 1915, 1926, 1930; Jacobson, 1905–1916; Luchnik, 1928; Mandl, 1935–1936; Rivalier, 1950; Cassola and van Nidec, 1984; Werner, 1991), to which priority should be given. In a checklist of the ground-beetles of Russia and adjacent territories (Kryzhanovskij *et al.*, 1995), *C. altaica* and *C. songorica* were also presented as different taxa. It was additionally shown that *C. songorica* Mnnh. should be treated as "nomen nudum," since Mannerheim (1846) provided no diagnosis. The authorship was given to Roeschke, who redescribed this taxon (Horn and Roeschke, 1891), and *C. songorica* Roeschke, 1891 was considered a junior synonym of the previously described *C. albopilosa* (Dokhtouroff, 1885) occurring in Tien Shan and Pamirs-Alai. The name "*altaica*" was used to designate a form of *C. hybrida sahlbergi* F.-W. (Cherkasov in Kryzhanovskij *et al.*, 1995 : 26–27). Note that the last revision of the *hybrida* group in the

Palaearctic made no mention of *C. altaica* at all (Gebert, 1995).

The current controversial interpretations of this taxon cannot be considered satisfactory. Therefore, the main aim of the present work was to clarify the taxonomic status of *C. altaica* and its position in the genus system.

MATERIALS AND METHODS

The material used in the paper is deposited in the collections of the following museums: Zoological Institute, Russian Academy of Sciences, St. Petersburg (ZIN); Zoological Museum, Moscow State University, Moscow, (ZMM); Siberian Zoological Museum, Novosibirsk (SZM); Faculty of Zoology and Ecology, Moscow Pedagogical State University, Moscow (MPSU); Deutsches Entomologisches Institut, Eberswalde, Germany, (DEI). Also, material from the private collections by Dmitrii Fedorenko (DF) and Dmitrii Lomakin (DM) was examined.

The pale elytral pattern was described using the standard terminology (Willis, 1968; Acciavatti and Pearson, 1989). The sculpture of elytral disc was examined using an MBC-1 binocular microscope under 56× magnification. Morphometrical parameters were measured with a standard eyepiece micrometer. The following main parameters were measured: overall body length (from posterior margin of labrum along suture to apical declivity of elytra), length of labrum (along the middle), width of labrum (at the widest place), length of pronotum (along midline), width of pronotum (at the widest place), length of elytra (from humeri along suture to apical declivity), width of elytra (at the widest place), length of mandibles (from base of retinaculum to apex), width of mandibles (at the widest place), length of femur, tibia, tarsus, aedeagus (all parameters are given in mm). The material was statistically processed using the program "STATISTICA 5.0."

Along with the external morphology, the structure of genitalia was examined in both sexes (the nomenclature follows those by Freitag, 1972, for female genitalia, and by Spanton, 1988, for male genitalia). Also, characters of the male inner sac of aedeagus are studied. The inner sac was gradually blown out and dried in a hot air flow.

RESULTS AND DISCUSSIONS

As noted above, the name "*songorica*" was first applied by Motschulsky to the black specimens of *C. altaica* collected by Karelin in Dzhungaria (Motschulsky, 1845). According to the International Code of Zoological Nomenclature (1988), the authorship of *C. songorica* belongs to Motschulsky, as he not only was the first to use this name, but also indicated a concrete character, the black coloration. In the collection by V.I. Motschulsky (ZMM), two black damaged specimens have been found—a male with the labels: "Song", "Songoria", "*Cicindela altaica* Motsch. Sib. occ.", designated by me as a lectotype; and a female with the labels "Songoria. *monticola*", designated by me as a paralectotype of *C. songorica* Motschulsky, 1845. Comparison of these specimens with the descriptions (Motschulsky, 1845; Dokhtouroff, 1885; Horn and Roeschke, 1891) and specimens of *C. albopilosa* Dokht. has shown their complete identity. Thus, the following synonymy is established: *Cicindela songorica* Motschulsky, 1845 = *Cicindela albopilosa* Dokhtouroff, 1885.

An examination of the specimens from Gebler's (ZIN) and Motschulsky's collections and their comparison with the original descriptions (Eschscholtz, 1829; Gebler, 1830; Motschulsky, 1844) and with other species of the group has shown that all the three descriptions of the listed authors refer to the same species, *Cicindela altaica*, which is taxonomically independent. In studying the collections, the specimens collected near Kosh-Agach (Chu Steppe, the Altai) were found to differ in the darker coloration, smaller body, gentle sculpture of elytral disc, wider pale pattern, and shorter labrum and penis. During the expeditions of 1997–1998, an additional series of 55 specimens was collected. The indicated morphological distinctions of the Kosh-Agach form and isolation of its locality from the species range give grounds to separate this form as a distinct subspecies. A redescription of *Cicindela altaica* and a description of the new subspecies are given below.

Cicindela altaica Eschscholtz, 1829, bona spec., stat. rest.

Description. Body length (without labrum) 12.0–15.0 mm.

Head metallic blue-green or green-bronzed with distinct brassy tint on frons, vertex, and occiput. Area of anterior supraorbital setae and narrow band running along anterior margin of eyes to clypeus, intensely blue. In some specimens, head brassy green with intense bronzed shine and brightly green band. Four

basal antennal segments green or blue-green, 1st occasionally blue, 3rd and 4th with brassy tint. Labrum white, with narrow dark brown anterior margin. Basal segment of maxillary palpi brown, other segments metallic blue-green or green with paler apex. 1st and 2nd segments of labial palpi dark brown with pale apices, 3rd light yellow, 4th metallic green. Mandibles metallic blue-green or green, often with brassy shine, denticles dark brown or black. Pronotum blue-green with brassy tint, occasionally brassy-bronzed with faint green shine. Narrow band extending along lateral margin and also anterior and posterior sutures of pronotum blue-green or intensely blue. Proepipleura and proepisterna brassy-bronzed with faint brassy tint. Meso- and metathorax green or blue-green; mes- and metepisterna with distinct brassy tint, brightly brassy-bronzed in some specimens. Abdomen blue or blue-green. Femora green, with distinct blue tint along anterior margin and brassy tint along posterior one. Tibiae pale with brassy-bronzed tint along anterior margin. Tarsi green. Elytra green or blue-green with distinct brassy tint and regularly scattered blue punctures. Scutellum and suture with brassy-bronzed tint. Pale elytral pattern consisting of isolated humeral spot complete or divided in two; curved, wide or narrow median band often forming short lateral bordering along outer margin of elytra; and always complete apical semi-lunate spot. In females, small rounded dark depression present in basal third of elytra near suture (Fig. 1, *19–24*).

Head delicately rugulose, with narrow fine longitudinal striae along anterior margin and coarse deep grooves along posterior margin of eyes. Genae glabrous, with deep long longitudinal rugae. Frons weakly pubescent, with 3–8 fine soft hairs. Anterior eye margin with 3–5, posterior one with 2–3 supraorbital setae. Vertex glabrous, each side of occiput with short transverse row of 2–3 white setae. Basal antennal segment glabrous, except for apical tuft of 4 setae. Labrum smooth, 2.25–3.00 times as wide as long, with distinct denticle at apex and 6–14 setae in submarginal area (Fig. 1, *1–4*). Mandibles long, slender; their length 7.0–8.0 times their width in males and 6.0–7.0 times, in females. Pronotum delicately rugulose, transverse, 1.3–1.4 times as wide as long. Lateral margins slightly rounded, somewhat converging to base beyond anterior third (Fig. 1, *15–18*). Pronotal disc weakly convex, glabrous except along lateral margin bearing sparse white setae. Midline fine. Elytra distinctly widening in apical third, 1.5–1.7 times as long as wide. Sculpture of elytral disc rather coarse, formed by numerous, regularly spread flat fine spines densest in humeral area. Hind tarsus noticeably shorter (0.75–0.85 times) than tibia. Hind coxa with 14–18 (in males) or 6–8 (in females) white setae along anterior margin (Fig. 1, *9–10*).

Aedeagus asymmetrical, distinctly swollen in right apical third. Its apex in the form of an asymmetrical spearhead with shorter and sharper left lobe (Fig. 2, *1–4*). Inner sac arranged transversely relative to aedeagus, without long medial tooth. Basal tubercle strongly turned to the left. Absence of ventral tubercle and presence of dorsal drop-shaped process (Fig. 3, *1–8*) represent a characteristic feature of the species.

Female sternite VIII wide, with 3–4 stout setae on each apex and 10–17 long setae along outer margin, without setae in median emargination (Fig. 4, *2, 6*). Tergite IX elongate-oval, with 14–16 long apical setae. Tergite X with 10–20 long setae along outer margin and 3 long setae along inner one (Fig. 4, *1, 5*). Second gonapophyses weakly curved, with slightly widening apex (Fig. 4, *4, 8*). Accessory sclerite between gonocoxites distinct (Fig. 4, *3, 7*).

Distribution. Cisaltai Plain; Central, NE, and SE Altai; SW Khakassia.

Cicindela altaica altaica Eschscholtz, 1829.

Zool. Atlas, 1829, 2 : 4.

Type locality. Altai.

Gebler, 1830: 27, 1847: 266; Dejean, 1831: 3 (*maritima* var.), 1833: 3, 1837: 3; Motschulsky, 1844: 24 (*altaica)*, 1845: 9, 1846: 396, 1850: 1; Chaudoir, 1863: 202 (*hybrida* var.); Horn, Roeschke, 1891: 35 (*maritima* var.), 46 (*songorica* syn.); Eleutiaux, 1892: 102 (*maritima* var.), 105 (*hybrida* var.); Dubatolov *et al.*, 1994: 4 (*restricta* [part.]); Shilenkov, 1994: 9 (*restricta*); Kryzhanovskij *et al.*, 1995: 26 (*hybrida sahlbergi* f.).

Material. Lectotype (designated here): 1 ♀, golden quadrate label; "Sibir.," "*altaica* Gebl. *maritima* Dej. var. Sibir," "Lectotypus, *Cicindela altaica* Gebl., Shilenkov det., 1995, "Lectotypus, *Cicindela altaica* Eschscholtz, 1829, det. A.V. Matalin, 1998" (ZIN).

2 ♂—"Chirya River, Lake Teletskoe, Tomsk Prov., 30.VI.09, Emeljanov"; 1 ♂—"Eilyu, Lake Teletskoe, Tomsk Prov., 19.VI.09, Emeljanov"; 1 ♂—"Kirsai, Lake Teletskoe, Tomsk Prov., 22.VII.09, Emeljanov"; 1 ♂—"Tomsc Conv., Flusa Ona, A. Jacobson, 20.VI";

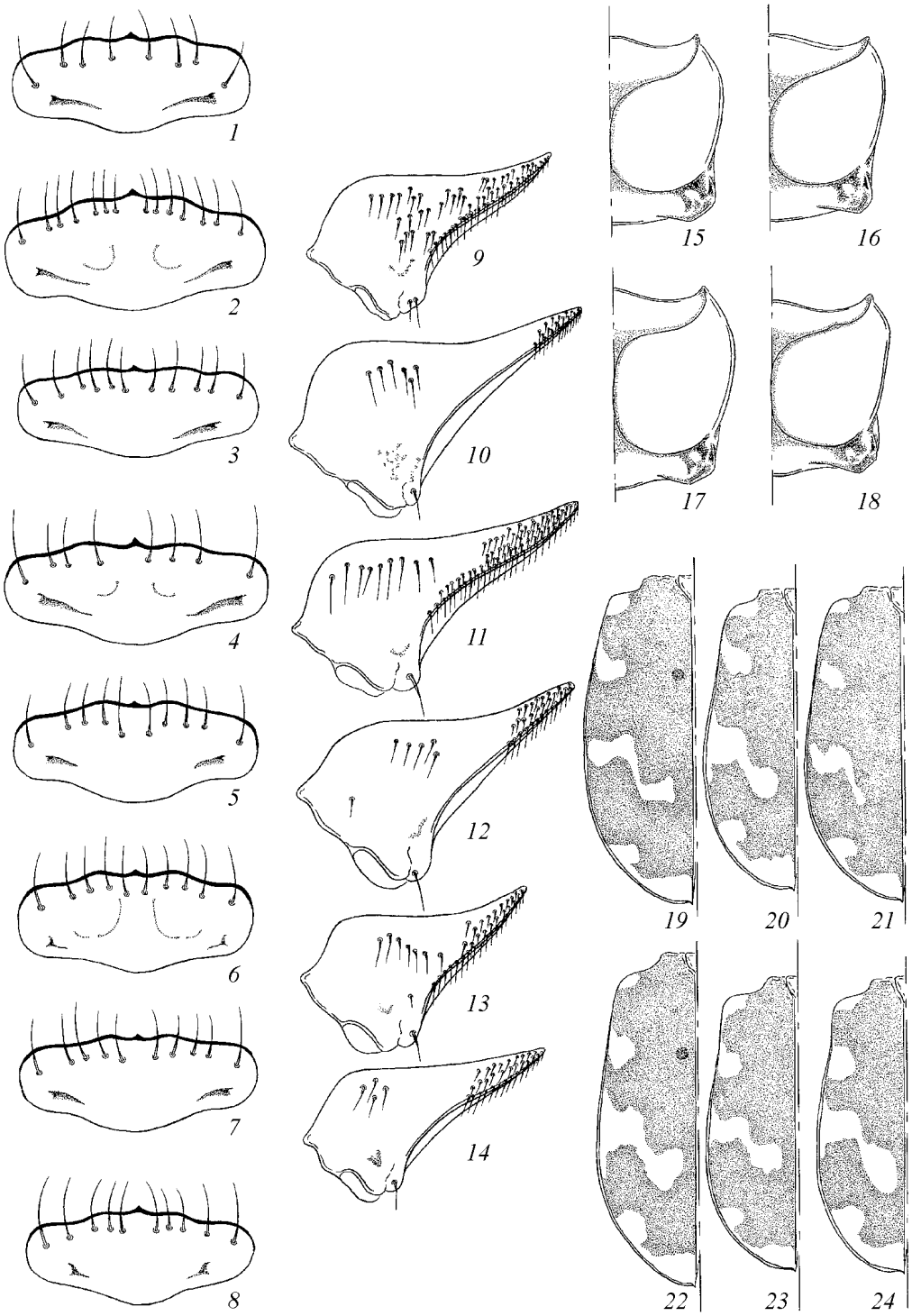

Fig. 1. *Cicindela* (s. str.), the *maritima* group: (*1–8*) labrum, (*9–14*) hind coxae, (*15–18*) pronotum, (*19–24*) left elytron; (*1*, *2*, *9*, *10*, *15*, *19–21*) *C. altaica altaica* Eschsch.; (*3*, *4*, *16*, *22–24*) *C. altaica koschagachensis* subsp. n.; (*5*, *6*, *11*, *12*, *17*) *C. restricta* F.-W.; (*7*, *8*, *13*, *14*, *18*) *C. maritima* Dej.; (*1*, *3*, *5*, *7*, *9*, *11*, *13*, *20*, *21*, *23*, *24*) males; (*2*, *4*, *6*, *8*, *10*, *12*, *14*, *19*, *22*) females.

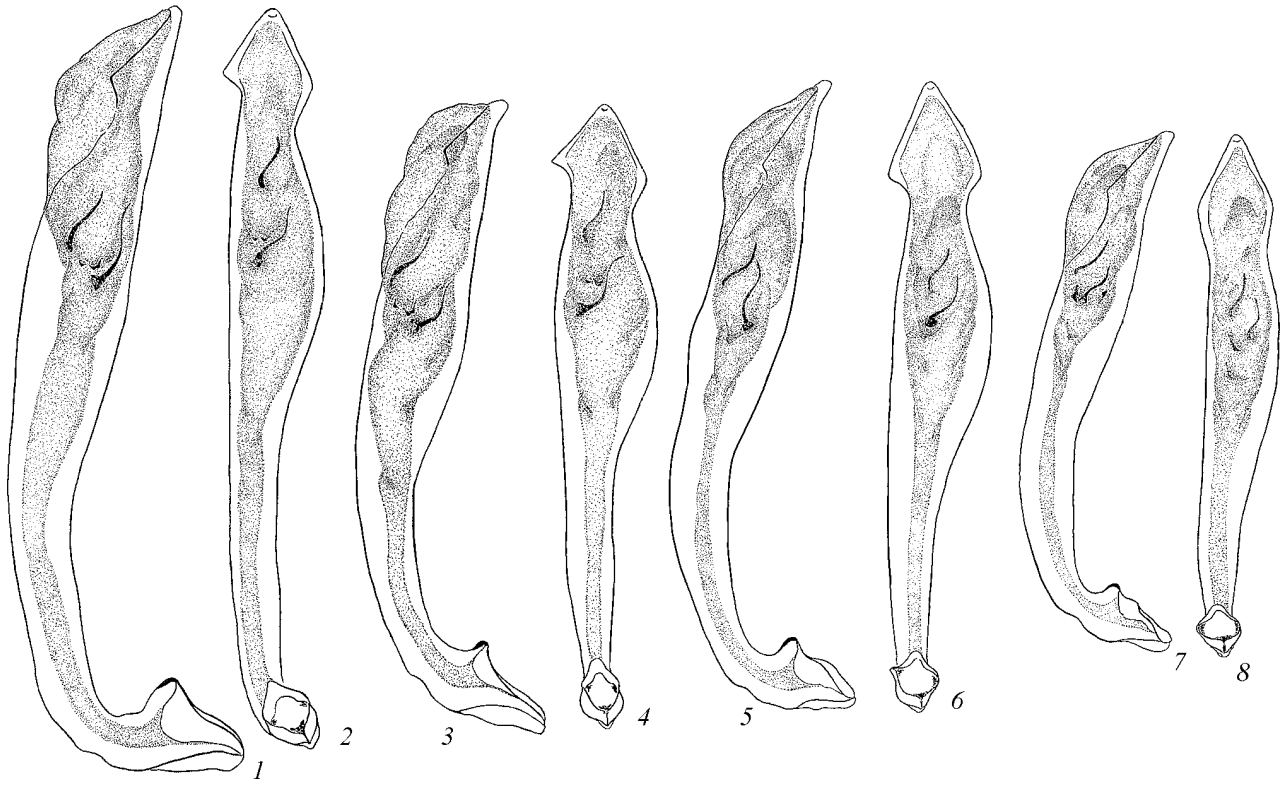

Fig. 2. *Cicindela* (s. str.), the *maritima* group, aedeagus: (*1*, *2*) *C. altaica altaica* Eschsch.; (*3*, *4*) *C. altaica koschagachensis* subsp. n.; (*5*, *6*) *C. restricta* F.-W.; (*7*, *8*) *C. maritima* Dej.

1 ♂—"Novonikolaevsk, Tomsk uezd, 11.VII.910, Kopylov"; 1 ♀—"Verkhniii Uimon, Biiskii uezd, Altai, 9.VII.97, Silantiev;" 1 ♀—"Altai" (ZIN); 1 ♀—"*Cicindela altaica* m. Gebl., Kolivan, Altai"; 1 ♂—"Altai, Altai Reservat, Kyga-Tshiri, 5.VIII.931" (ZMM); 1 ♂—"Altai Nature Reserve, Kamga River, 26.06.1959, V. P'yankov"; 1 ♀—" Altai Nature Reserve, near Yailyu settl., Ok-Porok River, 21.07.1959, V. P'yankov," 2 ♂, 5 ♀—"Khakassia, Tashtip District, valley of Bol. On River, near Bol. On settl., 52°03′N 89°46′E, 21–24.VII.1998, leg. A. Brinev" (MPSU) 1 ♂—"E Altai, Ulagan District, valley of Biya River, on stones, 20.V.1968, A. Ermolenko"; 1 ♂—"NE Altai, bank of Kyga River, 15 km from the mouth, *h* ~ 600 m, 12.07.1994, A. et R. Dudko coll" (SZM); 2 ♂, 1 ♀—the same label, D.E. Lomakin coll (DL).

Description. The nominotypical subspecies characterized by paler dorsum and narrow white elytral pattern often with broken humeral spot (Fig. 1, *19–21*); larger body (13.4–15.0 mm), labrum (2.25–2.55 times as wide as long [Fig. 1, *1*, *2*, *5*]), and aedeagus (0.55–0.59 times as long as elytra [Fig. 5]); longer apex of aedeagus with moderately drawn-out left lobe (Figs. 2, *1*, *2*; 3, *2*); pubescence of sternite VIII (bearing 10–12 long setae along each outer margin [Fig. 4, *2*]) and tergite X in females (with 18–20 long setae along each outer margin [Fig. 4, *1*]); and smaller accessory sclerite between second gonocoxites (Fig. 4, *3*).

Genitalia examined in 13 ♂ and 6 ♀.

Distribution. Cisaltai Plain from Lokot (Loktevsk), Rubtsovsk, and Kolyvan to Barnaul (Gebler, 1830; Motschulsky, 1844, 1850), Central and NE Altai, SW Khakassia (basins of Bolshoi On and Ona Rivers). Along Biya River as far upstream as valley of Lake Teletskoe (Dudko and Lomakin, 1996), right bank of the lake from Artybash to Chulyshman River (Fig. 6).

The collection of Zoological Institute (ZIN) contains 1 specimen of *C. altaica* from Gebler's collection. It is provided with a golden quadrate label: "Sibr.", "*altaica* Gebl. *maritima* Dej. var. Sibir.", "Lectotypus, *Cicindela altaica* Gebl. Shilenkov det, 1995". I designated this specimen as a lectotype of *Cicindela altaica* Eschscholtz, 1829, because, describing the taxon, Eschscholtz referred to Gebler's communication (Eschscholtz, 1829) and this means that both the authors described the same specimens.

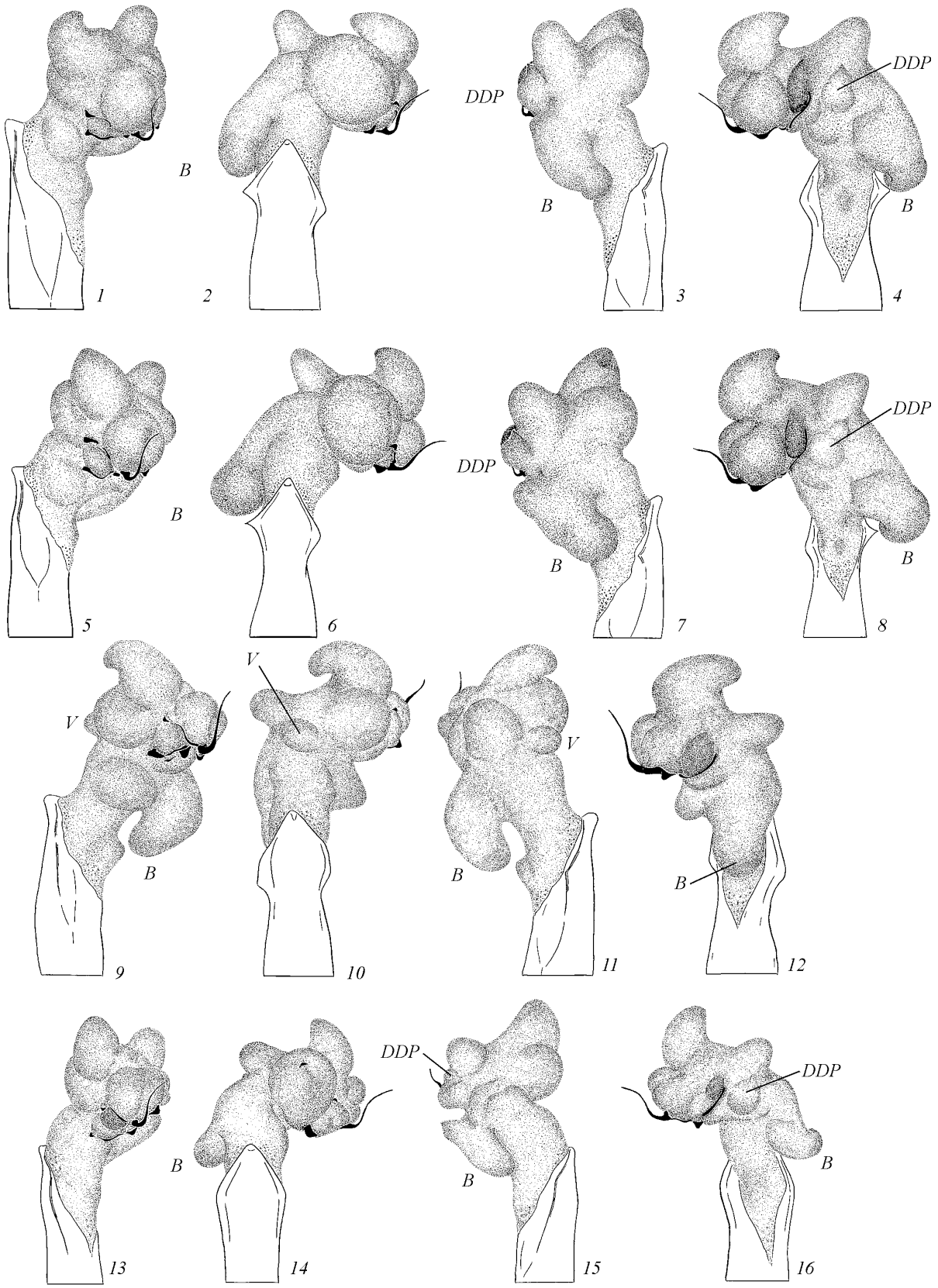

Fig. 3. *Cicindela* (s. str.), the *maritima* group, inner sac of aedeagus: (*1–4*) *C. altaica altaica* Eschsch.; (*5–8*) *C. altaica koschagachensis* subsp. n.; (*9–12*) *C. restricta* F.-W.; (*13–16*) *C. maritima* Dej.; (*1*, *5*, *9*, *13*) right view; (*2*, *6*, *10*, *14*) dorsal view; (*3*, *7*, *11*, *15*) left view; (*4*, *8*, *12*, *16*) ventral view. *B*—Basal tubercle, *DDP*—dorsal drop-shaped process, *V*—ventral tubercle.

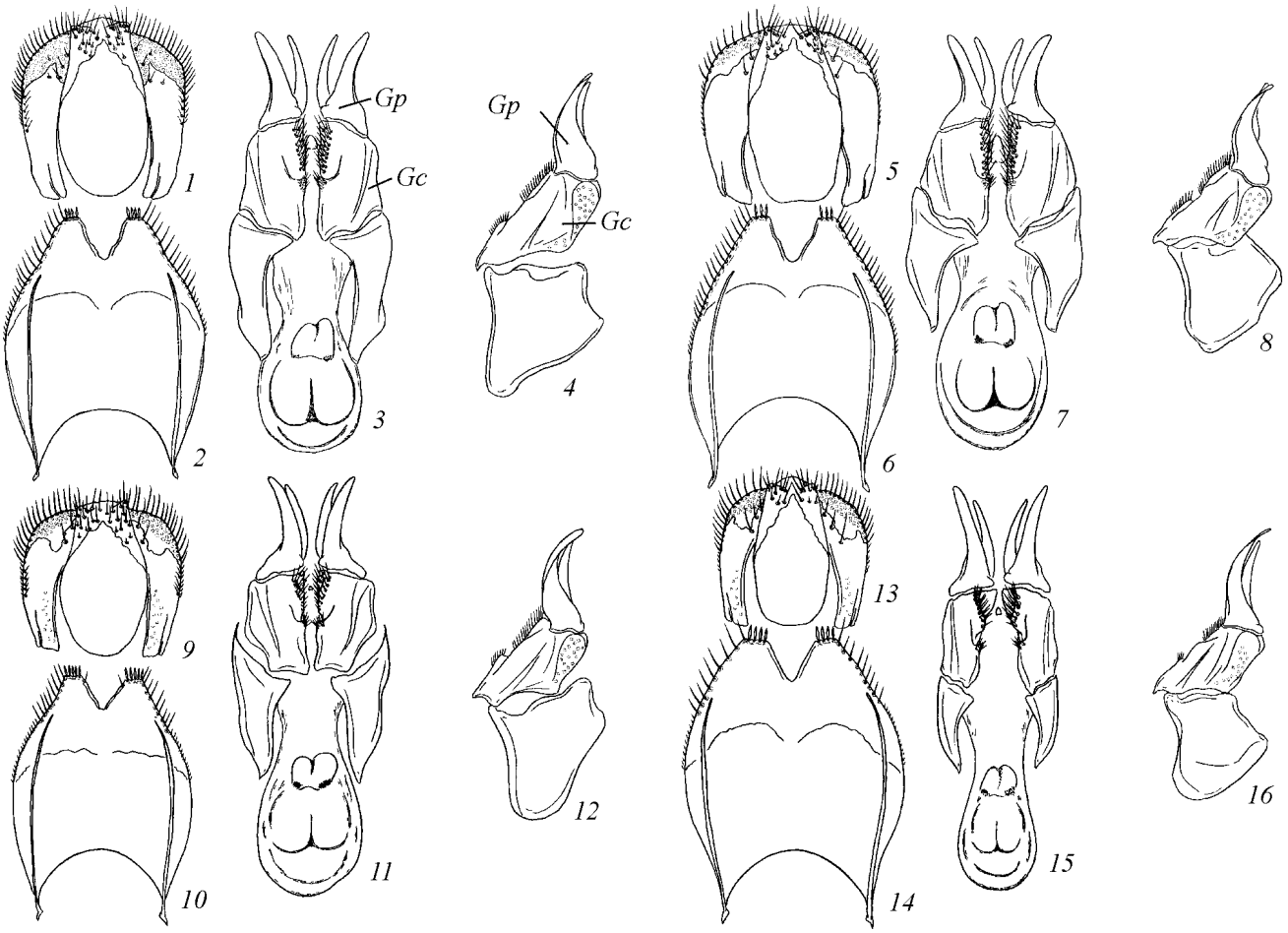

Fig. 4. *Cicindela* (s. str.), the *maritima* group, female genitalia: (*1*, *5*, *9*, *13*) syntergites IX and X, dorsal view; (*2*, *6*, *10*, *14*) sternite VIII, ventral view; (*3*, *7*, *11*, *15*) gonocoxites and gonapophyses, ventral view; (*4*, *8*, *12*, *16*) left gonocoxites and gonapophysis, lateral view; (*1–4*) *C. altaica altaica* Eschsch.; (*5–8*) *C. altaica koschagachensis* subsp. n.; (*9–12*) *C. restricta* F.-W.; (*13–16*) *C. maritima* Dej. *Gp*—second gonapophyses, *Gc*—gonocoxites.

Cicindela altaica koschagachensis Matalin, subsp. n.

Dubatolov *et al.*, 1994 : 4 (*restricta* [part.]); Gebert, 1995 : 24 (*maritima tschemalensis* [part.]).

Material. Holotype: 1 ♂—"Chu Steppe, Kosh-Agach, 8.VII.1907, E.G. Rodd", "*Cicindela maritima* Dej." (ZIN).

Paratypes: 2 ♂, 1 ♀—as holotype (ZMM); 3 ♂, 1 ♀—"Chu Steppe, Kosh-Agach, 27.VI.1907, E.G. Rodd", "*Cicindela hybrida* L.", "*Cicindela restricta* Sahlb., det. Dubatolov II.84", "Collection of Siberian Zoological Museum, Novosibirsk" (SZM); 1 ♂—"Chu Steppe, Kosh-Agach, 27.VI.1907, E.G. Rodd", "Tschuiski Steppe: Koschagatsch", "coll. W. Horn, DEI Eberswalde", "*Cicindela* (s. str.) m. *tshemalensis* nom. nov., det. J. Gebert 1995" (DEI); 5 ♂, 15 ♀—"S Altai, Chu Steppe, near Kosh-Agach settl., dry sandy dunes along bank of Lake Uchtelets, 21.VII.1997, leg. D.N. Fedorenko" (DF); 11 ♂, 11 ♀—the same label, leg. A.V. Matalin; 4 ♂, 11 ♀—the same label, 10.VI.1998, leg. A.V. Matalin" (MPSU).

Description. The described subspecies differs in darker dorsum and wide pale elytral pattern always with complete humeral spot (Fig. 2, *22–24*); smaller body (12.0–13.8 mm); short labrum (2.3–3.0 times as wide as long [Figs. 1, *3*, *4*; 5]) and short aedeagus (0.50–0.55 times as long as elytra [Fig. 5]); shorter aedeagus apex with sharply drawn-out left lobe (Fig. 2, *3*, *4*; 3, *6*); denser pubescence of lateral margins of sternite VIII (bearing 15–17 long setae [Fig. 4, *6*]) and sparse pubescence of lateral margins of female tergite X (with 10 long setae [Fig. 4, *5*]); and

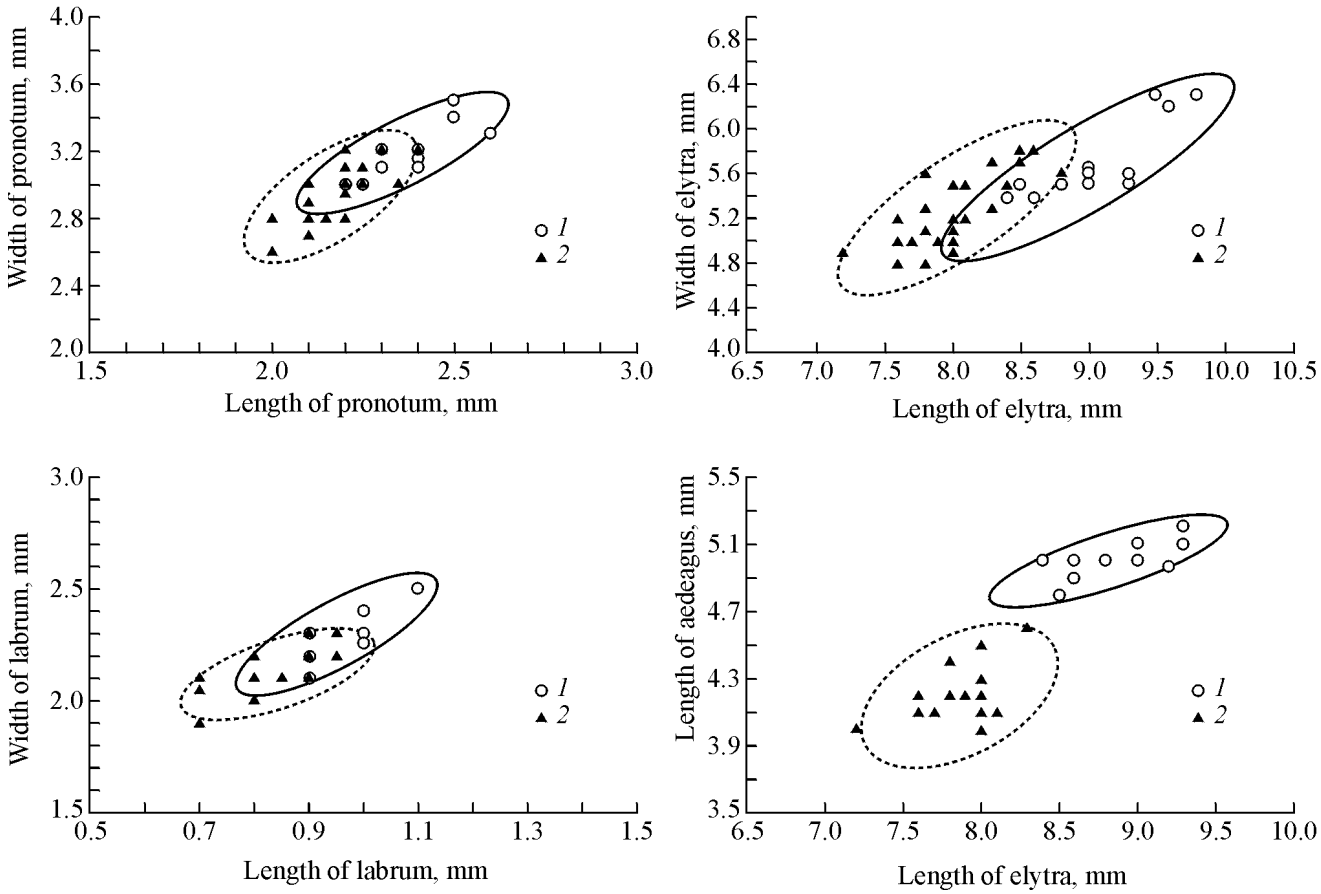

Fig. 5. *Cicindela altaica*, spread in morphometric characters of the subspecies: (*1*) *C. altaica altaica* Eschsch., (*2*) *C. altaica koschagachensis* subsp. n.

large accessory sclerite between second gonocoxites (Fig. 4, *7*).

Genitalia examined in 25 ♂ and 10 ♀.

Distribution. S Altai, Chu Steppe. Local form, occurs only near Kosh-Agach settlement (Fig. *6*), inhabiting there banks of fresh-water lakes and dry sandy dunes with sparse cereals. Among insects collected by me and D.N. Fedorenko in July 1997, some specimens had a soft, not completely hardened integument. Reproduction is most likely to occur in May–July. Both adults and larvae overwinter.

Etymology. The name of the new subspecies is derived from the name of the type locality.

COMPARATIVE NOTES

Comparison of *C. altaica* with species of the *hybrida* group in a broad sense (sensu Mandl, 1935–1936) gives all grounds to place it in the *maritima* group (sensu Rivalier, 1950). This concept is supported by the following characters: long slender mandibles which are 7–8 times as long as wide in males, and 6.5–7.0 times, in females (in the *hybrida* group, this ratio does not exceed 6.5 in males and 6.0 in females), short hind tarsus 0.75–0.85 times 1.2–1.3 times as long as tibia (against 0.9–1.1 times in the *hybrida* group), sharply asymmetrical aedeagus with apically widening lateral lobes (in contrast to the symmetrical aedeagus without apically widening lateral lobes in the *hybrida* group).

In the *maritima* group, *C. altaica* occupies a transitional position between *C. maritima* and *C. restricta* F.-W. It is similar to the former species in the shape of pronotum (Fig. 1, *15*, *16*, *18*), leading some authors to identify it as *C. maritima* (Dejean, 1831, 1833; Gebert, 1995); and also in the transverse arrangement of the inner sac of aedeagus, bifurcate basal tubercle, absence of ventral tubercle and presence of dorsal drop-

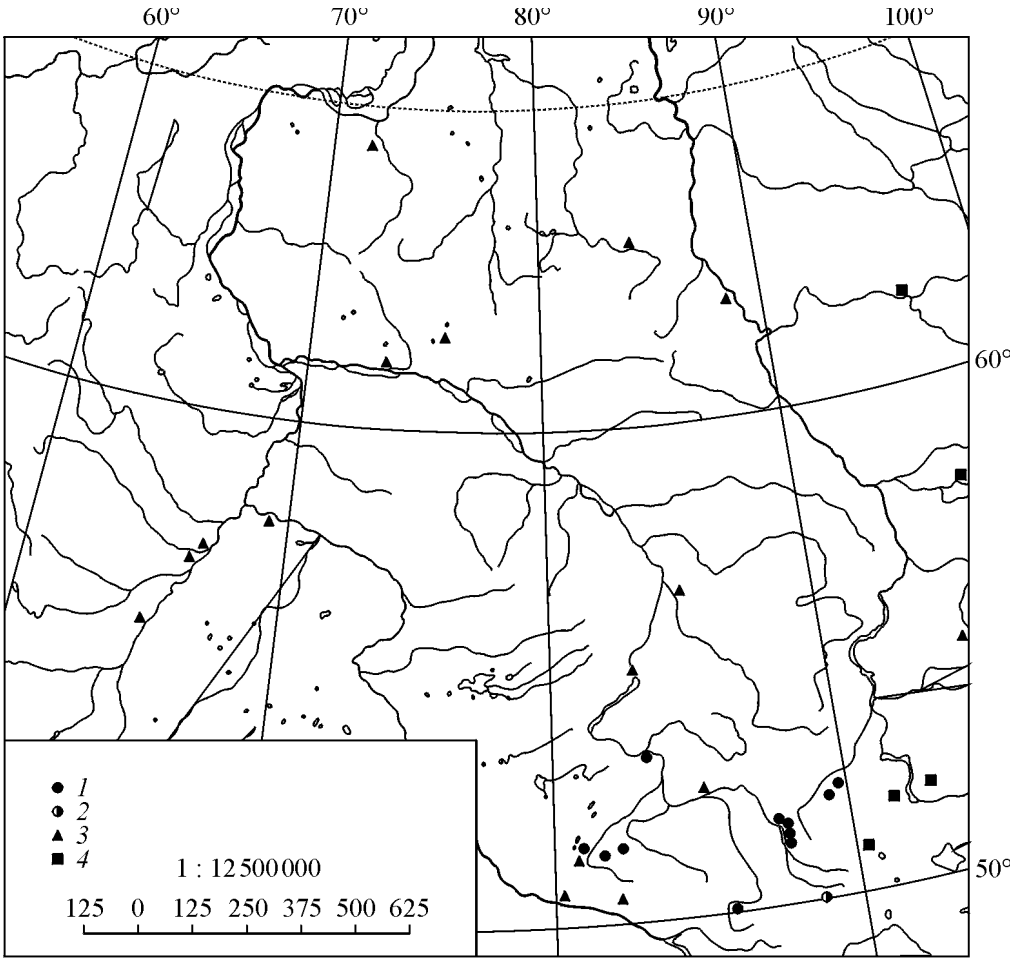

Fig. 6. *Cicindela* (s. str.), the *maritima* group, distribution: (*1*) *C. altaica altaica* Eschsch.; (*2*) *C. altaica koschagachensis* subsp. n.; (*3*) *C. restricta* F.-W.; (*4*) *C. maritima* Dej.

shaped process (Fig. 3, *1–8*, *13–16*), glabrous median emargination of sternite VIII in females (Fig. 4, *2*, *6*, *14*), and weakly curved and slightly widening apices of the second gonapophyses (Fig. 4, *4*, *8*, *16*). *C. altaica* resembles *C. restricta* in large size, long mandibles and labrum (Fig. 1, *1–6*), wide tergite IX in females (Fig. 4, *1*, *5*, *9*), and sharply asymmetrical aedeagus with a distinctly lanceolate apex (Figs. 2, *1–6*; 3, *1–12*). The last character was responsible for occasional identification of *C. altaica* as *C. restricta* (Dubatolov *et al.*, 1994; Shilenkov, 1994). Such a combination of morphological distinctions is of interest because the ranges of *C. maritima* and *C. restricta* practically do not overlap, with that of *C. altaica* being transitional between them (Fig. 6).

It should be noted that all the previous records of *C. altaica* (Horn, 1905, 1915, 1926, 1930; Jacobson, 1905–1916; Luchnik, 1928; Mandl, 1935–1936; Rivalier, 1950; Cassola and van Nidec, 1984; Werner, 1991; Wiesner, 1992) actually refer to *C. songorica*.

KEY TO THE SPECIES LISTED

1(2) Hind tarsus slightly shorter than, or as long as, and only occasionally longer than tibia (length ratio 0.9–1.1). Male mandibles stout, no more than 6.0 times as long as wide. Inner sac of aedeagus with distinct medial tooth .... species of the *hybrida* group (3)

2(1) Hind tarsus noticeably shorter than tibia (length ratio 0.75–0.85). Male mandibles slender, no less than 6.5 times as long as wide. Inner sac of aedeagus without medial tooth .... species of the *maritima* group (5)

3(4) Scape pubescent, with numerous (> 5) setae in addition to apical tuft. Labrum without longitudinal carina ..... *C. songorica* Motsch.

4(3) Scape glabrous, with only apical tuft, rarely with 1–2 additional setae. If number of additional setae exceeding 3, labrum with longitudinal carina ..... other species of the *hybrida* group

5(6) Elytral disc with gentle sculpture, at most delicately granulate. Occiput densely pubescent, with numerous white setae forming nearly regular transverse row at the level of posterior eye margin. Apex of aedeagus with wide lateral lobes smoothly converging basally (Figs. 2, *7, 8*; 3, *13–16*). Female tergite IX narrower (Fig. 4, *13*). 9.5–13.5 mm ..... *C. maritima* Dej.

6(5) Elytral disc distinctly granulate, more strongly on humeri. Occiput sparsely pubescent, at most with short transverse row of 2–5 white setae along each margin. Apex of aedeagus distinctly lanceolate (Figs. 2, *1–6*; 3, *1–12*). Female tergite IX wider (Fig. 4, *1, 5, 9*) 7

7(8) Pale pattern less developed, spots and bands narrower. Lateral margins of pronotum slightly rounded. Male hind coxa with 6–12 white setae along anterior margin (Fig. 1, *11*). Apex of aedeagus in the form of a long symmetrical spearhead (Fig. 2, *5, 6*). Inner sac of aedeagus longitudinal; basal tubercle not bifurcate, longitudinal; ventral tubercle distinct; dorsal drop-shaped process absent (Fig. 3, *9–12*). Female sternite VIII with 4–5 stout setae on each apex and 8–10 long setae along outer margin, its median emargination with pair of setae (Fig. 4, *10*). 9.0–14.5 mm ..... *C. restricta* F.-W.

8(7) Pale pattern more developed, spots and bands wider. Lateral margins of pronotum nearly straight. Male hind coxa with 14–18 white setae along anterior margin (Fig. 1, *9*). Apex of aedeagus in the form of a short asymmetrical spearhead (Fig. 2, *5, 6*); its left lobe shorter, sharply drawn-out (Fig. 2, *1–4*). Inner sac of aedeagus transverse; basal tubercle bifurcate, transverse; ventral tubercle absent; dorsal drop-shaped process distinct (Fig. 3, *1–8*). Female sternite VIII with 3–4 stout setae on each apex and 10–17 long setae along outer margin; its median emargination without setae (Fig. 4, *2, 6*). 12.0–15.0 mm ..... *C. altaica* Eschsch. (a)

a(b) Larger and lighter. Elytral disc coarser granulate. Labrum longer (*W*/*L* = 2.25–2.50), with 8–14 submarginal setae (Fig. 1, *1, 2*). Aedeagus 0.55–0.59 times as long as elytra, with long apex and moderately drown out left lobe (Figs. 2, *1, 2*; 3, *1–4*). Female sternite VIII with 4 stout setae on each apex and 10–12 long setae along outer margin (Fig. 4, *2*). Tergite X with 18–20 long setae along outer margin (Fig. 4, *1*). 13.4–15.0 mm .... *C. altaica altaica* Eschsch.

b(a) Smaller and darker. Elytral disc granulate less coarsely. Labrum shorter (*W*/*L* = 2.3–3.0), with 6–12 submarginal setae (Fig. 1, *3, 4*). Aedeagus 0.50–0.55 times as long as elytra, with short apex and sharply drawn-out left lobe (Figs. 2, *3, 4*; 3, *5–8*). Female sternite VIII with 3 stout setae on each apex and 15–17 long setae along outer margin (Fig. 4, *6*). Tergite X with 9–11 long setae along outer margin (Fig. 4, *5*). 12.0–13.8 mm ..... *C. altaica koschagachensis* subsp. n.

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