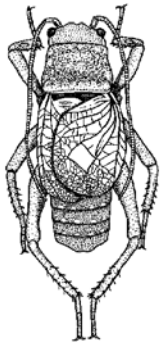

Far Eastern Entomologist

Дальневосточный энтомолог

Journal published by Far East Branch
of the Russian Entomological Society
and Laboratory of Entomology,
Institute of Biology and Soil Science,
Vladivostok

Number 113: 1-16 ISSN 1026-051X May 2002

TO THE KNOWLEDGE OF THE GENUS *CHORTHIPPUS* FIEBER, 1852 AND RELATED GENERA (ORTHOPTERA: ACRIDIDAE)

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A new genus *Schmidtiacris* **gen. n.** (type species - *Stauroderus schmidti* Ikonnikov, 1913) is described. *Glyptobothrus* Chopard, 1951, **stat. n.** and *Megaulacobothrus* Caudell, 1921 are considered as distinct genera. Genus *Chorthippus* Fieber, 1852 is divided into two subgenera only (*Chorthippus* Fieber and *Altichorthippus* Jago, 1971). Forty three new combinations are proposed. *Glyptobothrus maritimus* (Mistshenko, 1951), **stat. n.** is regarded as a distinct species. *G. maritimus jacutus* **subsp. n.** (Yakutia) and *G. maritimus insularis* **subsp. n.** (North Sakhalin) are described.

KEY WORDS: Orthoptera, grasshoppers, taxonomy.

С. Ю. Стороженко. К познанию рода *Chorthippus* Fieber, 1852 и близких родов (Orthoptera: Acrididae) // Дальневосточный энтомолог. 2002. N 113. С. 1-16.

Описывается новый род *Schmidtiacris* **gen. n.** (типовой вид - *Stauroderus schmidti* Ikonnikov, 1913). *Glyptobothrus* Chopard, 1951, **stat. n.** и *Megaulacobothrus* Caudell, 1921 рассматриваются в качестве самостоятельных родов. Род *Chorthippus* Fieber, 1852 подразделяется на два подрода: *Chorthippus* Fieber и *Altichorthippus* Jago, 1971. Предложено 43 новых комбинаций. Таксономический ранг *Glyptobothrus maritimus* (Mistshenko, 1951), **stat. n.** повышен до вида.

Описаны два новых подвида: *G. maritimus jacutus* **subsp. n.** из Якутии и *G. maritimus insularis* **subsp. n.** с Северного Сахалина.

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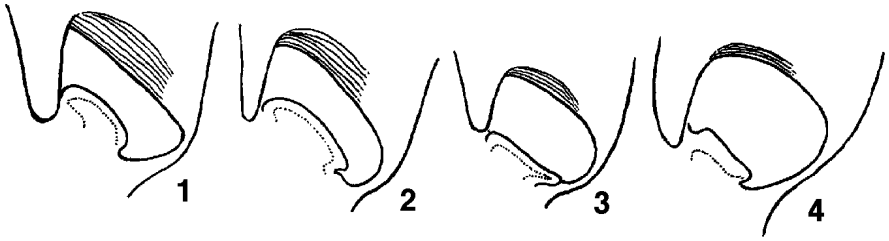
INTRODUCTION

Genus *Chorthippus* Fieber, 1852 belongs to the tribe Gomphocerini Fieber, 1853 (=Stenobothrini Brunner-Wattenwyl, 1893; = Chorthippini Harz, 1975) of the subfamily Acridinae sensu lato (Acridinae + Truxalinae + Gomphocerinae). Until now this genus consists of about 180 species and subdivided into a few subgenera. The subgenus *Glyptobothrus* was established for the species with the angularly incurved lateral carinae of pronotum (Chopard, 1951). Based mainly on the male wing venation N. D. Jago (1971) includes in *Chorthippus* genera *Megaulacobothrus* Caudell, 1921, *Mesasippus* Tarbinsky, 1931, *Dasyhippus* Uvarov, 1930, *Gomphocerripus* Roberts, 1941 as subgenera only, and described a new subgenus *Altichorthippus* Jago, 1971. This point of view was not supported by other orthopterists (Harz, 1975; Xia & Jin, 1982; Vickery & Kevan, 1983; Storozhenko, 1986). K. Harz subdivided *Chorthippus* into 3 subgenera only: *Chorthippus* s. str., *Glyptobothrus* Chopard, 1951 and *Stauroderus* I. Bolivar, 1897 (Harz, 1975). But the *Stauroderus* well differs from *Chorthippus* by the stridulation mechanism in the male hind wing (unique apomorphy in Palaearctic Acridinae, but also occurs in the tribe Bryodemini of the subfamily Oedipodinae), therefore must be regarded as distinct genus (Storozhenko, 1986). The Chinese species of *Chorthippus* are divided into four subgenera: *Megaulacobothrus*, *Chorthippus* s. str., *Glyptobothrus* and *Altichorthippus* (Xia & Jin, 1982), but later *Megaulacobothrus* is considered as distinct genus (Storozhenko, 1986). Undoubtedly, the genus *Chorthippus* is needed of extensive revision (Otte, 1995), therefore an attempt of such work is made below.

One of the most important generic and tribal characters, widely using in other grasshopper subfamilies (for example, Oedipodinae) is the shape of opening of the tympanal organ. *Chorthippus* species may be divided into two large groups: with oval (Figs 3, 4) and slit-like (Figs 1, 2) opening. First group (*Chorthippus* s. str. and *Altichorthippus*) is related to the genera *Gomphocerus* Thunberg, 1815 (=*Gomphocerripus* Roberts, 1941), *Aeropus* Gistel, 1848, *Dasyhippus* Uvarov, 1930, *Phlocerus* Fischer-Waldheim, 1833, *Rammeihippus* Woznessenskij, 1996 (=*Microhippus* Ramme, 1939, nom. praeoccup.), *Aeropedellus* Hebard, 1935, *Mesasippus* Tarbinsky, 1931, *Pezohippus* Bey-Bienko, 1948, *Stauroderus* I. Bolivar, 1897, *Gomphoceridius* I. Bolivar, 1914, and *Euchorthippus* Tarbinsky, 1925. The second group (*Megaulacobothrus* and *Glyptobothrus*) similar with the genera *Stenobothrus* Fischer, 1853, *Omocestus* I. Bolivar, 1878, *Myrmeleotettix* I. Bolivar, 1914, and *Anabothrus* Mistshenko, 1951, which are synapomorthic by the slit-like



Figs 1-4. First tergite with tympanum, female, lateral view. 1) *Glyptobothrus maritimus maritimus*; 2) *Megaulacobothrus aethalinus*; 4) *Chorthipuus albomarginatus caliginosus*; 4) *Schmidtiacris schmidti*.

opening of the tympanal organ. Therefore I think that polyphyletic genus *Chorthippus* must be divided at least into the follow genera: *Glyptobotrus*, *Megaulacobothrus*, *Schmidtiacris* gen. n. and *Chorthippus* (with two subgenera *Chorthippus* and *Altichorthippus*). The diagnoses of these genera are given below.

Present paper is based on collections of the Institute of Biology and Soil Science (Vladivostok), Zoological Institute (St. Petersburg) and Moscow State University. The holotypes and part of paratypes of new subspecies are deposited in the Institute of Biology and Soil Science, the part of paratypes – in the Zoological Institute.

Genus *Glyptobothrus* Chopard, 1951, stat. n.

Glyptobothrus (as subgenus of *Chorthippus*) Chopard, 1951: 192; Harz, 1975: 815, 859 (part.); Xia & Jin, 1982: 210 (part.); Otte, 1995: 117 (part.).

Chorthippus: Bey-Bienko & Mistshenko, 1951: 503 (part.); Jago, 1971: 261 (part.); Storozhenko, 1986: 301 (part.).

Type species - *Gryllus binotatus* Charpentier, 1825, by original designation.

DIAGNOSIS. Head short; face oblique. Fastigium of vertex slightly projecting forward; depression of vertex flat, lacking median carinula. Foveolae well defined, rectangular, narrow, and visible from above. Antennae long, slender, filiform, or in female indistinctly flattened near the base.

Pronotum with strong median carina cut by principal sulcus before, near, or behind the middle of the disc. Lateral carinae of pronotum distinct, complete, angularly incurved. Posterior margin of pronotum obtuse-angulate. Prosternum without a tubercle.

Tegmen and wings well developed, surpassing apex of abdomen (in such case tegmen 4-5.5 times as long as wide), in brachypterous species tegmen not reaching apex of abdomen and wings abbreviated. Anterior margin of tegmen sinuate: precostal area distinctly widening near the base and reaching basal third of tegmen; male costal area wider than subcostal one; *C* and *Sc* straight or slightly sinuated. Hind wings hyaline, or fumigate at apex; *R* newer thickened in apical third.

Male fore tibia slightly widened apically, usually with long hairs on the underside. Upper knee of hind femora with rounded lophi. Inner lower spur of hind tibia slightly longer than inner upper one. First segment of hind tarsus distinctly longer than combined length of second and third ones (without claws). Both claws equal in length.

The opening of tympanal organ slit-like: in male 3.5-6, in female 4-10 times as long as wide. Lateral margins of the male anal plate colored like apex of abdomen, never black. Cerci conical, with rounded apex. Posterior margin of the female subgenital plate triangular. The apical valves of penis (both dorsal and ventral) conical, almost equal in length. Posterior margin of zygoma with broad median emargination or rounded. Lophi of epiphallus bilobate.

Karyotype: 2n♂ = 17, NF = 23.

SPECIES INCLUDED. There are 34 species from Palaearctic Region only: *G. abchasicus* (Ramme, 1939), **comb. n.**; *G. acroleucus* (Müller, 1924), **comb. n.**; *G. albicornis* (La Greca, 1948), **comb. n.**; *G. albonemus* (Cheng et Tu, 1964), **comb. n.**; *G. biguttulus* (Linnaeus, 1758), **comb. n.** with subspecies: *G. b. biguttulus*, *G. b. eximius* (Mistshenko, 1951), *G. b. hedickei* (Ramme, 1942), *G. b. pamiricus* (Ramme, 1930), *G. b. pravdini* (Sytshev, 1969); *G. binotatus* (Charpentier, 1825), **comb. n.** with subspecies: G. *b. binotatus*, *G. b. algoaldensis* (Chopard, 1951), *G. b. atlasi* (Defaut, 1987), *G. b. daimai* (Azam, 1893), *G. b. dilutus* (Ebner, 1941), *G. b. moralesi* (Uvarov, 1954); *G. ariasi* (I. Bolivar, 1908), **comb. n.**; *G. bozdaghi* (Uvarov, 1934), **comb. n.**; *G. brunneus* (Thunberg, 1815), **comb. n.** with subspecies: *G. b. brunneus G. b. brevis* (Klingstedt, 1939), *G. b. mistshenkoellus* (Oliger, 1974); *G. cazurroi* (I. Bolivar, 1898), **comb. n.**; *G. dubius* (Zubowsky, 1898), **comb. n.**; *G. eisentrauti* (Ramme, 1931), **comb. n.**; *G. hemipterus* (Uvarov, 1926), **comb. n.**; *G. hirtus* (Uvarov, 1927), **comb. n.** with subspecies: *G. h. hirtus*, *G. h. kurushiensis* (Mistshenko, 1951), *G. h. riparius* (Mistshenko, 1951), *G. h. tarkiensis* (Mistshenko, 1951), *G. h. debilis* (Uvarov, 1927); *G. hsiai* (Cheng et Tu, 1964), **comb. n.**; *G. jacobsi* (Harz, 1975), **comb. n.**; *G. lagrecai* (Harz, 1975), **comb. n.**; *G. lesinensis* (Krauss, 1888), **comb. n.** with subspecies: *G. l. lesinensis*, *G. l. lastovensis* (Maran, 1965); *G. maritimus* (Mistshenko, 1951), **comb. n.** with four subspecies (see below); *G. marocanus* (Nadig, 1976), **comb. n.**; *G. miramaellus* Woznessenskij, 1996, **comb. n.** (=*Chorthippus miramae* Ramme, 1939, nom. praeoccup.); *G. modestus* (Ebner, 1915), **comb. n.**; *G. mollis* (Charpentier, 1825), **comb. n.** with subspecies: *G. m. mollis*, *G. m. elbrusanus* (Mistshenko, 1951), *G. m. pechevi* (Karaman, 1976), *G. m. reissingeri* (Harz, 1973), *G m. ignifer* (Ramme, 1923); *G. monticola* (Ebner, 1915), **comb. n.**; *G. pulloides* (Ramme, 1926), **comb. n.**; *G. rubratibialis* (Schmidt, 1978), **comb. n.**; *G. sangiorgii* (Finot, 1902), **comb. n.**; *G. satunini* (Mistshenko, 1951), **comb. n.**; *G. saulcyi* (Krauss, 1888), **comb. n.**; *G. savalanicus* (Uvarov, 1933), **comb. n.**; *G. shantungensis* (Chang, 1939), **comb. n.**; *G. sinuatus* (Mistshenko et Woznessenskij, 1996), **comb. n.** (=*Chorthippus biguttulus meridionalis* Mistshenko, 1950, nom. praeoccup.); *G. yersini* (Harz, 1975), **comb. n.**; *G. yulingensis* (Cheng et Tu, 1964), **comb. n.**

***Glyptobothrus maritimus* (Mistshenko, 1951), stat. n.**

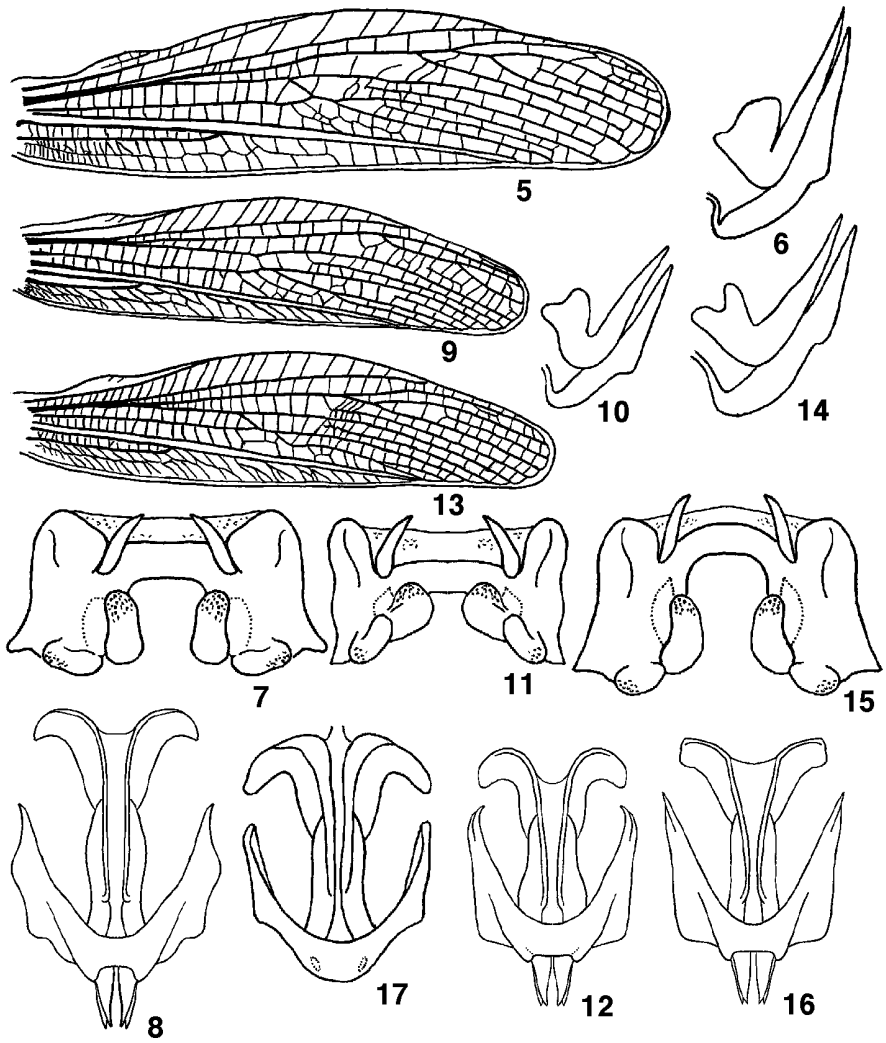
Chorthippus biguttulus maritimus Mistshenko: in Bey-Bienko & Mistshenko, 1951: 514, fig. 1143 (holotype – ♂, Russia: Primorskii krai, Ussuriiskii Reserve, Peishula River, Krivoi Klyuch; in Zoological Institute, St-Petersburg; studied); Storozhenko, 1986: 301, figs. 140, *4*, 143, *2*, 151, *6*; Otte, 1995: 122.

NOTES. Within the genus the *G. biguttulus* group (i.e. *biguttulus* – *brunneus* – *mollis*) consist of closely related species which are difficult to separate on a morphological basis alone (Ingrisch, 1995). The shape of tegmen, the relative widths of the costal, subcostal, medial and cubital fields, the shape of pronotum and mesosternal interspace, as well as the number of the male stridulatory pegs are usually regards as the most relevant morphological characters for identifying species of the *G. biguttulus* group (Bey-Bienko & Mistshenko, 1951; Oliger, 1974; Harz, 1975; Xia & Jin, 1982; Storozhenko, 1986; Sychev, 1987; Ingrisch, 1995).

The males of *Glyptobothrus* from the Russian Far East, Korea and Japan, briefly described in key as *Chorthippus biguttulus maritimus* (Bey-Bienko & Mistschenko, 1951) are characterized as follows: the combined width of the costal and subcostal fields – 0.9-1.1, the index «costal : subcostal field» – 2.0-2.8, the index «combined width of the costal and subcostal fields : tegmen length» – 0.054-0.070, the index « tegmen length : length of apical area» – 3.3-3.6, the index «tegmen length : postfemur length» – 1.30-1.65. Based on these indexes they are well separated from typical *Glyptobothrus biguttulus* from Europe (see: Harz, 1975; Ingrisch, 1995) and closely related to *G. brunneus*. The specimens from Russian Far East are separated from typical European *G. brunneus* by the more numerous male stridulatory pegs (in *maritimus* 108-173, mean 146,84±15,45, in *brunneus* 54-102, mean 74.6±9.2), the male wing venation (in *maritimus* the width of medial area 1.2-1.5 times more than width of cubital area, in *brunneus* – medial area is equal or narrower than cubital area), and the female wing venation (in *maritimus* medial and cubital areas without false vein, in *brunneus* – with more or less distinct one). Therefore *G. maritimus* is considered here as a distinct, very variable species, widely distributed in Eastern Asia, and consists of at least four subspecies, two of them are described below.

Key to subspecies of *G. maritimus*

1(6) Posterior margin of zygoma with broad emargination (Figs 8, 12, 16).
2(5) Larger: mean pronotum length 2.95-3.3 mm in male, 3.9-4.2 mm in female. Mean number of stridulatory pegs more than 140.
3(4) Hind tibia dark red or blackish yellow . . . . . ***G. maritimus maritimus***
4(3) Hind tibia bright yellow or orange . . . . . ***G. maritimus jacutus***



Figs 5-17. *Glyptobothrus maritumus*, male. 5-8) *G. maritimus maritimus* (Ussuriiskii Reserve); 10-12) *G. maritimus insularis*, holotype; 13-16) *G. maritimus jacutus*, holotype; 17) *G. maritimus huabeiensis*. 5, 9, 13) tegmen, 6, 10, 14) apical valves of penis, lateral view; 7, 11, 15) epiphallus, dorsal view; 8, 12, 16, 17) phallic complex (epiphallus and epiphallic membrane removed), dorsal view. (Fig. 17 after Xia & Jin, 1982).

5(2) Smaller: mean pronotum length less than 2.8 mm in male, 3.5 mm in female. Mean number of stridulatory pegs less than 130 . . . . . ***G. maritimus insularis***

6(1) Posterior margin of zygoma broadly rounded (Fig. 17). - Mean number of stridulatory pegs 133 . . . . . ***G. maritimus huabeiensis***

***Glyptobothrus maritimus maritimus* (Mistshenko, 1951)**
Figs 1, 5-8

MATERIAL. More than 690 specimens (including holotype) from all area are studied.

REDECRIPTION. Size relatively large. Tegmen with distinctly sinuated *R*. Hind tibia dark red or blackish yellow. Inner lower keel of male hind femur with 108-173 (mean 146,84±15,45) stridulatory pegs. Posterior margin of zygoma with broad median emargination.

VARIABILITY. *G. maritimus maritimus* is a very variable subspecies. Morphologically the specimens from Kuril Islands (Kunashir and Shikotan), Hokkaido, Honshu, South and Central Sakhalin, Moneron Island, Khabarovskii krai, Amurskaya oblast are almost identical with the typical specimens from Primorskii krai. The specimens from Kyushu Island are very similar with typical *G. maritimus* by measurements of body, but the number of stridulatory pegs in male (N=2) is 108-119 (mean 113.7±3.9) only.

The measurements of the northern populations usually slightly less than in southern ones. For example, in Sakhalin Island there is a gradual cline from south part (21 males from Troitskoe near Yuzhno-Sakhalinsk, 47°N were studied: body length 15.4-15.9 mm, mean 15.68±0.17; tegmen length 13.7-14.1 mm, mean 13,91±0.14; pronotum length 2.9-3.2 mm, mean 3.04±0.10; hind femur length 9.9-10.1 mm, mean 9.92±0.04) to the middle part of island (18 males from Langeri River, 50°30'N: body length 14.9-16.6 mm, mean 15,86±0.63; tegmen length 13.2-13.7 mm, mean 13.42±0.17; pronotum length 3.0-3.3 mm, mean 3.18±0.10; hind femur length 9.2-9.6 mm, mean 9.36±0.16), but the stridulatory pegs are numerous (144-173, mean 159,6±12,1 and 134-154, mean 141,8±7,4 respectively).

MEASUREMENTS (mm). Body length ♂ 14.8-20.4 (mean 16,81±1.31), ♀ 19.1-26.1 (mean 22.04±2.36); pronotum length ♂ 2.9-3.8 (mean 3.29±0.21), ♀ 3.4-5.2 (mean 4.23±0.49); tegmen length ♂ 13.2-17.3 (mean 14.75±1.12), ♀ 15.9-21.6 (mean 18.64±2.03); hind femur length ♂ 9.0-11.2 (mean 10.20±0,59), ♀ 11.4-15.1 (mean 12.88±1.37).

DISTRIBUTION. Russia: Magadanskaya oblast, Kamchatskaya oblast, Amurskaya oblast, Khabarovskii krai, Primorskii krai, Sakhalin (southward to 52°N), Kuril Islands; China: Jilin Province; Korea; Japan: Hokkaido, Honshu, Kyushu.

***Glyptobothrus maritimus huabeiensis* (Xia et Jin, 1982), comb. n.**
Fig. 17

Chorthippus brunneus huabeiensis Xia & Jin, 1982: 221, 228, figs.71-74 (holotype – ♂, China: Heilongjiang Province, mao'r Mountain; in Shanghai Institute of Entomology).

NOTES. This subspecies was described from North-Eastern China as *Ch. brunneus huabeiensis*. Based on male wing venation and number of stridulatory

pegs (mean 133±13) the populations from Heilongjiang Province and Inner Mongolia are considered here as a subspecies of *G. maritimus*.

MEASUREMENTS. Mean (in mm, after Xia & Jin, 1982): body length ♂ 18.2±1.2, ♀ 23.2±1.3; pronotum length ♂ 3.7±0.3, ♀ 4.2±0.2; tegmen length ♂ 15.3±0.7, ♀ 18.9±0.8; hind femur length ♂ 10.8±0.7, ♀ 13.2±0.7.

DISTRIBUTION. China: Heilongjiang Province, Inner Mongolia.

Glyptobothrus maritimus insularis **Storozhenko, subsp. n.**
Figs 9-12

MATERIAL. Holotype - ♂, Russia, Sakhalin Island: 25 km W Okha, Moskal'vo, 13.VIII 2001 (A. Lelej). Paratypes – Moskal'vo, 13.VIII 2001, 5♂, 3♀ (A. Lelej), Moskal'vo, 15.IX 1995, 3♂, 2♀ (P. Vrsansky); Lyuchi River, 11-12.VIII 2001, 9♂, 13♀ (A. Lelej); Schmidt Peninsula, Elisabeth Cape, 7-8.VIII 2001, 9♂, 15♀ (A. Lelej, V. Bogatov, V. Barkalov); Muzma River, 10.VIII 2001, 1♂ (A. Lelej).

DESCRIPTION. Size small for species. Tegmen with straight *R*. Hind tibia brown or brownish yellow. Inner lower keel of male hind femora with 112-149 (mean 127,38±10,27) stridulatory pegs. Posterior margin of zygoma with broad median emargination.

MEASUREMENTS (mm). Body length ♂ 13.0-16.8 (mean 14.78±1.24), ♀ 14.2-21.9 (mean 18.5±2.85); pronotum length ♂ 2.4-3.2 (mean 2.77±0.20), ♀ 3.1-3.8 (mean 3.48±0.25); tegmen length ♂ 11.1-12.7 (mean 12.21±0.72), ♀ 14.0-16.1 (mean 14.98±0.77); hind femur length ♂ 7.9-9.9 (mean 8.84±0.56), ♀ 10.1-11.6 (mean 10.91±0.58).

DISTRIBUTION. Russia: Sakhalin Island (northward to 53°N).

Glyptobothrus maritimus jacutus **Storozhenko, subsp. n.**
Figs 13-16

MATERIAL. Holotype - ♂, Russia, Yakutia: Yakusk, 22.VII 1986 (S. Storozhenko). Paratypes – Yakusk, 22.VII 1986, 10♂, 16♀ (S. Storozhenko); 50 km SW Yakutsk, 20, 21.VII 1986, 7♂, 9♀, (S. Storozhenko).

DESCRIPTION. Size medium for species. Tegmen with slightly, but distinctly sinuated *R*. Hind tibia bright yellow or orange. Inner lower keel of male hind femora with 135-177 (mean 147.91±11.32) stridulatory pegs. Posterior margin of zygoma with broad median emargination.

MEASUREMENTS (mm). Body length ♂ 13.0-17.1 (mean 15.648±1.21), ♀ 18.8-21.5 (mean 20.61±0.96); pronotum length ♂ 2.6-3.2 (mean 2.95±0.20), ♀ 3.7-4.3 (mean 3.90±0.18); tegmen length ♂ 12.1-14.4 (mean 13.36±0.90), ♀ 15.2-18.3 (mean 16.81±0.98); hind femur length ♂ 7.9-9.8 (mean 9.17±0.54), ♀ 11.0-12.9 (mean 11.94±0.67).

DISTRIBUTION. Russia: Yakutia.

Genus *Megaulacobothrus* Caudell, 1921

Megaulacobothrus Caudell, 1921: 27; Storozhenko, 1986: 300.
Chorthippus: Bey-Bienko & Mistshenko, 1951: 503 (part.).
Megaulacobothrus (as subgenus of *Chorthippus*): Jago, 1971: 261, 292; Xia & Jin, 1982: 208; Otte, 1995: 117.

Type species - *Megaulacobothrus fuscipennis* Caudell, 1921, by original designation.

DIAGNOSIS. Head short; face oblique. Fastigium of vertex slightly projecting forward; depression of vertex flat, lacking median carinula. Foveolae well defined, rectangular, narrow, visible from above. Antennae long, slender, filiform.

Pronotum with strong median carina cut by principal sulcus slightly before or near the middle of the disc. Lateral carinae of pronotum distinct, complete, angularly incurved. Posterior margin of pronotum obtuse-angulate. Prosternum without a tubercle.

Tegmen and wings well developed, surpassing or reaching apex of hind femora; tegmen in male 3.2-3.5, in female 3.5-4.5 times as long as wide. Anterior margin of tegmen sinuate: precostal area sligthly widening near the base and reaching basal third of tegmen; male costal and subcostal areas widened, almost equal in width, *C* and *Sc* strongly sinuate. Hind wings in male black, in female blackish; *R* newer thickened in apical third.

Male fore tibia slightly widened apically, without long hairs on the underside. Upper knee of hind femora with rounded lophi. Inner lower spur of hind tibia slightly longer than inner upper one. First segment of hind tarsus distinctly longer than combined length of second and third ones (without claws). Both claws equal in length.

The opening of tympanal organ in male 3.5-6, in female 4-10 times as long as wide. Lateral margins of the male anal plate colored like apex of abdomen, without black stripe. Cerci conical, with rounded apex. Posterior margin of the female subgenital plate triangular. The apical valves of penis (both dorsal and ventral) conical, almost equal in length. Posterior margin of zygoma with deep median triangular emargination. Lophi of epiphallus bilobate.

Karyotype: 2n♂ = 17, NF = 23.

SPECIES INCLUDED. There are 11 species from China, Russia (Siberia and Far East), Mongolia, Korea and Japan: *M. aethalinus* (Zubowsky, 1899); *M. chinensis* (Tarbinsky, 1927); *M. flexivenus* (Liu, 1981), **comb. n.**; *M. fuscipennis* Caudell, 1921; *M. latipennis* (I. Bolivar, 1898); *M. liaoningensis* (Zheng, 1989), **comb. n.**; *M. maerkangensis* (Zheng, 1980), **comb. n.**; *M. minutus* (Zhang, 1990), **comb. n.**; *M. rufitibis* (Zheng, 1989), **comb. n.**; *M. xiangchengensis* (Liu, 1985), **comb. n.**; *M. yuanshangensis* (Zheng, 1980), **comb. n.**

Genus *Chorthippus* Fieber, 1852

Chorthippus Fieber in Kelch, 1852: 1, 4; Kirby, 1910: 184, 185 (part.); Bey-Bienko & Mistshenko, 1951: 503 (part.); Jago, 1971: 261, 292 (part.); Harz, 1975: 815, 859 (part.); Xia & Jin, 1982: 207, 210 (part.); Storozhenko, 1986: 301 (part.); Otte, 1995: 117 (part.).

Type species - *Acridium albomarginatum* De Geer, 1773, by subsequent designation (Kirby, 1910).

DIAGNOSIS. Head short; face oblique. Fastigium of vertex slightly projecting forward; depression of vertex flat, lacking median carinula. Foveolae well defined, rectangular, narrow, and visible from above. Antennae long or relatively short, filiform, or in female indistinctly flattened near base.

Pronotum with strong median carina cut by principal sulcus before, near, or behind the middle of the disc**.** Lateral carinae of pronotum distinct, complete or absent near the middle, parallel, slightly or angularly incurved. Posterior margin of pronotum rounded or obtuse-angulate. Prosternum without a tubercle.

Tegmen and wings well developed, reaching or surpassing apex of abdomen and in this case tegmen not more than 4 times as long as wide; in brachypterous species tegmen not reaching apex of abdomen and wings abbreviated. Anterior margin of tegmen sinuate: precostal area widening near the base and reaching basal third of tegmen; male costal area wider than subcostal one; *C* and *Sc* almost straight. Hind wings hyaline; *R* newer thickened in apical third.

Male fore tibia slightly widened apically, without long hairs on the underside. Upper knee of hind femora with rounded lophi. Inner lower spur of hind tibia slightly longer than inner upper one. First segment of hind tarsus distinctly longer than combined length of second and third ones (without claws). Both claws equal in length.

The opening of tympanal organ in male 1.7-3, in female 2.2-3 times (only in female of *Ch. bornhalmi* and *Ch. cypriotus* 3.5-4 times) as long as wide. Lateral margins of the male anal plate colored like apex of abdomen, never black. Cerci conical, with rounded apex. Posterior margin of the female subgenital plate triangular. The apical valves of penis (both dorsal and ventral) conical, almost equal in length, or ventral slightly shorter than dorsal. Posterior margin of zygoma almost straight, rounded, or with deep median triangular emargination, rare with short median projection. Lophi of epiphallus bilobate or trilobate.

Karyotype: 2n♂ = 17, NF = 23 (only in *Ch. hammarstroemi* 2n♂ = 21, NF = 23).

SUBGENERA INCLUDED. There are a few groups within genus: *albomarginatus* species group, *fallax* species group, *apricarius* species group, *hammarstroemi* species group, *uvarovi* species group, and others. The main characters for separating of these groups are the shape of lateral carinae of pronotum, the wing venation, the shape of apical valvae of penis and posterior margin of zygoma, the bilobate or trilobate lophi of epiphallus, and karyotype. Probably some of these groups may be regards as subgenera, but until now only two subgenera are described: *Chorthippus* and *Altichorthippus*.

Subgenus *Chorthippus* Fieber, 1852

DIAGNOSIS. Lateral carinae of pronotum strongly evident along entire length, parallel, slightly or angularly incurved.

SPECIES INCLUDED. There are 128 species, mainly from Palaearctic Region, but with a few species from India, Tibet and Nepal, and one species from North America: *Ch.* (*Ch.*) *albomarginatus* (De Geer, 1773) with subspecies: *Ch. a. albomarginatus*, *Ch. a. caliginosus* Mistshenko, 1951, *Ch. a. hakkaricus* Demirsoy, 1979, *Ch. a. karelini* Uvarov, 1910; *Ch.* (*Ch.*) *almoranus* Uvarov, 1942; *Ch.* (*Ch.*) *alticola* Ramme, 1921; *Ch.* (*Ch.*) *amplintersitus* Liu, 1981; *Ch.* (*Ch.*) *angulatus* Tarbinsky, 1927; *Ch.* (*Ch.*) *anomopterus* Caudell, 1921; *Ch.* (*Ch.*) *antennalis* Umnov, 1931; *Ch.* (*Ch.*) *apicalis* (Herrich-Schaffer, 1840) with subspecies: *Ch. a. apicalis*, *Ch. a. abbreviatus* (I. Bolivar, 1914); *Ch.* (*Ch.*) *apricarius* (Linnaeus, 1758) with subspecies: *Ch. a. apricarius*, *Ch. a. asiaticus* Mistshenko, 1951, *Ch. a. caucasicus* Mistshenko, 1951, *Ch. a. ciscaucasicus* Mistshenko, 1951, *Ch. a. major* (Pylnov, 1914); *Ch.* (*Ch.*) *aroliumulus* Xia et Jin, 1982; *Ch.* (*Ch.*) *atridorsus* Jin et Liang, 1993; *Ch.* (*Ch.*) *badachshani* Bey-Bienko, 1963; *Ch.* (*Ch.*) *badius* Mistshenko, 1951; *Ch.* (*Ch.*) *bellus* Zhang et Jin, 1985; *Ch.* (*Ch.*) *bilineatus* Zhang, 1984; *Ch. biroi* (Kuthy, 1907); *Ch.* (*Ch.*) *bornhalmi* Harz, 1971; *Ch.* (*Ch.*) *brachypterus* (Werner, 1932); *Ch.* (*Ch.*) *brevipterus* Yin, 1982; *Ch.* (*Ch.*) *bucharicus* Bey-Bienko, 1948; *Ch.* (*Ch.*) *caffer* Ramme, 1923; *Ch.* (*Ch.*) *caporiaccoli* Salfi, 1934; *Ch.* (*Ch.*) *cavilosus* Mistshenko, 1951with subspecies: *Ch. c. cavilosus*, *Ch. c. ornatus* Mistshenko, 1951; *Ch.* (*Ch.*) *changbaishanensis* Liu, 1987; *Ch.* (*Ch.*) *changtunensis* Yin, 1982; *Ch.* (*Ch.*) *chapini* Chang, 1939; *Ch.* (*Ch.*) *chloroticus* I. Bolivar, 1908; *Ch.* (*Ch.*) *cialancensis* Nadig, 1986; *Ch.* (*Ch.*) *conicaudatus* Xia et Jin, 1982; *Ch.* (*Ch.*) *crassiceps* (Ramme, 1926); *Ch.* (*Ch.*) *curtipennis* (Harris, 1835) with subspecies: *Ch. c. curtipennis*, *Ch. c. caliphornicus* Vickery, 1967; *Ch.* (*Ch.*) *cypriotus* Uvarov, 1936; *Ch.* (*Ch.*) *dahinganlingensis* Lian & Zheng, 1987; *Ch.* (*Ch.*) *darvazicus* Mistshenko, 1951; *Ch.* (*Ch.*) *davatchii* Descamps, 1967; *Ch.* (*Ch.*) *deqinensis* Liu, 1984; *Ch.* (*Ch.*) *dessyi* Jannone, 1936; *Ch.* (*Ch.*) *dichrous* (Eversman, 1859); *Ch.* (*Ch.*) *dierli* Ingrisch, 1990; *Ch.* (*Ch.*) *dorsatus* (Zetterstedt, 1821) with subspecies: *Ch. d. dorsatus*, *Ch. d. garganicus* Jannone, 1937, *Ch. d. orientalis* Bey-Bienko, 1941, *Ch. d. palaestinus* Uvarov, 1933; *Ch.* (*Ch.*) *eckerleini* Harz, 1975; *Ch.* (*Ch.*) *elbrusianus* Bey-Bienko, 1948; *Ch.* (*Ch.*) *erythropus* Faber, 1958; *Ch.* (*Ch.*) *fallax* (Zubowsky, 1899) with subspecies: *Ch. f. fallax*, *Ch. f. kurilensis* Bey-Bienko, 1948, *Ch. f. saltator* Bey-Bienko, 1949, *Ch. f. strelkovi* Bey-Bienko, 1949, *Ch. f. yamato* Yamasaki, 1968, *Ch. f. yatsuanus* Yamasaki, 1968; *Ch.* (*Ch.*) *ferghanensis* Umnov, 1931; *Ch.* (*Ch.*) *flavabdomenis* Liu, 1981; *Ch.* (*Ch.*) *foveatus* Xia et Jin, 1982; *Ch.* (*Ch.*) *giganteus* Mistshenko, 1951; *Ch.* (*Ch.*) *gongbuensis* Liang et Zheng, 1991; *Ch.* (*Ch.*) *grahami* Chang, 1937; *Ch.* (*Ch.*) *hammarstroemi* (Miram, 1906) with subspecies: *Ch. h. hammarstroemi*, *Ch. h. peipingensis* Chang, 1939; *Ch.* (*Ch.*) *heilongjiangensis* Lian et Zheng, 1987; *Ch.* (*Ch.*) *himalayanus* Balderson et Yin, 1987; *Ch.* (*Ch.*) *huchen-*

gensis Xia et Jin, 1982; *Ch.* (*Ch.*) *hunangensis* Wei et Yin, 1982; *Ch.* (*Ch.*) *hyrcanus* Bey-Bienko, 1960; *Ch.* (*Ch.*) *ilkazi* Uvarov, 1934; *Ch.* (*Ch.*) *incertus* Chopard, 1923; *Ch.* (*Ch.*) *indus* Uvarov, 1942; *Ch.* (*Ch.*) *ingenitzkii* (Zubowsky, 1898); *Ch.* (*Ch.*) *intermedius* Bey-Bienko, 1926; *Ch.* (*Ch.*) *jachontovi* Mistshenko, 1951; *Ch.* (*Ch.*) *johnseni* Harz, 1982; *Ch.* (*Ch.*) *jucundus* (Fischer, 1853); *Ch.* (*Ch.*) *karatavicus* Bey-Bienko, 1936; *Ch.* (*Ch.*) *karateghinicus* Mistshenko, 1951; *Ch.* (*Ch.*) *keshanensis* Zhang, Zheng et Ren, 1993; *Ch.* (*Ch.*) *ketmenicus* Bey-Bienko, 1949; *Ch.* (*Ch.*) *kirghizicus* Mistshenko, 1979; *Ch.* (*Ch.*) *kiyosawai* Furukawa, 1950; *Ch.* (*Ch.*) *kusnetzovi* Bey-Bienko, 1948; *Ch.* (*Ch.*) *labaumei* Ramme, 1926; *Ch.* (*Ch.*) *lacustris* La Greca, 1976; *Ch.* (*Ch.*) *loratus* (Fischer-Waldheim, 1846); *Ch.* (*Ch.*) *louguanensis* Cheng et Tu, 1964; *Ch.* (*Ch.*) *luminosus* Mistshenko, 1951; *Ch.* (*Ch.*) *macrocerus* (Fischer-Waldheim, 1946) with subspecies: *Ch. m. macrocerus*, *Ch. m. assimilis* Mistshenko, 1951, *Ch. m. ponticus* Mistshenko, 1951, *Ch. m. purpuratus* (Vorontsovskii, 1928); *Ch.* (*Ch.*) *maracandicus* Mistshenko, 1979; *Ch.* (*Ch.*) *markamensis* Yin, 1982; *Ch.* (*Ch.*) *molinicornis* Umnov, 1931; *Ch.* (*Ch.*) *montanus* (Charpentier, 1825); *Ch.* (*Ch.*) *muktinathensis* Balderson et Yin, 1987; *Ch.* (*Ch.*) *multipedus* Wei et Yin, 1986; *Ch.* (*Ch.*) *nakazimai* Furukawa, 1950; *Ch.* (*Ch.*) *neipopennis* Xia et Jin, 1982; *Ch.* (*Ch.*) *nemus* Liu, 1984; *Ch.* (*Ch.*) *nepalensis* Balderson & Yin, 1987; *Ch.* (*Ch.*) *nevadensis* Pascual, 1976; *Ch.* (*Ch.*) *occidentalis* Xia et Jin, 1982; *Ch.* (*Ch.*) *oreophilus* Bey-Bienko, 1948; *Ch.* (*Ch.*) *oschei* Helversen, 1986; *Ch.* (*Ch.*) *parallelus* (Zeterstedt, 1821) with subspecies: *Ch. p. parallelus*, *Ch. p. sebicus* Karaman, 1958, *Ch. p. tenuis* (Brulle, 1832), *Ch. p. aemulus* Mistshenko, 1951, *Ch. p. geminus* Mistshenko, 1951, *Ch. p. geriberti* Harz, 1962; *Ch.* (*Ch.*) *pascuorum* (Chopard, 1923); *Ch.* (*Ch.*) *pascuus* Umnov, 1931; *Ch.* (*Ch.*) *pavlovskii* Mistshenko, 1951; *Ch.* (*Ch.*) *planidentis* Xia et Jin, 1982; *Ch.* (*Ch.*) *plotnikovi* Umnov, 1931with subspecies: *Ch. p. plotnikovi*, *Ch. p. variatus* Mistshenko, 1951; *Ch.* (*Ch.*) *pullus* (Philippi, 1830); *Ch.* (*Ch.*) *pygmaeus* (Bey-Bienko, 1931); *Ch.* (*Ch.*) *qingzangensis* Yin, 1982; *Ch.* (*Ch.*) *rammei* (Ebner, 1928); *Ch.* (*Ch.*) *robustus* Mistshenko, 1979; *Ch.* (*Ch.*) *rubensabdominalis* Liu, 1981; *Ch.* (*Ch.*) *rufipennis* Jia et Liang, 1993; *Ch.* (*Ch.*) *sampeyrensis* Nadig, 1986; *Ch.* (*Ch.*) *saxatilis* Bey-Bienko, 1948; *Ch.* (*Ch.*) *separatanus* Liu, 1981; *Ch.* (*Ch.*) *shantariensis* Mistshenko, 1951; *Ch.* (*Ch.*) *shumakovi* Bey-Bienko, 1963; *Ch.* (*Ch.*) *similis* Umnov, 1930; *Ch.* (*Ch.*) *songoricus* Bey-Bienko, 1936; *Ch.* (*Ch.*) *squamopennis* Zheng, 1980; *Ch.* (*Ch.*) *supranimbus* Yamasaki, 1968 with subspecies: *Ch. s. supranimbus*, *Ch. s. hakusanus* Yamasaki, 1968, *Ch. s. norikuranus* Yamasaki, 1968, *Ch. s. shiroumanus* Yamasaki, 1968; *Ch.* (*Ch.*) *szijji* Harz, 1982; *Ch.* (*Ch.*) *tadzhicus* Mistshenko, 1951; *Ch.* (*Ch.*) *tatrae* Harz, 1971; *Ch.* (*Ch.*) *tianshanicus* Umnov, 1930; *Ch.* (*Ch.*) *transalajicus* Mistshenko, 1979; *Ch.* (*Ch.*) *turanicus* Tarbinsky, 1925; *Ch.* (*Ch.*) *unicubitus* Xia et Jin, 1982; *Ch.* (*Ch.*) *vagans* (Eversman, 1848) with subspecies: *Ch. v. vagans*, *Ch. v. africanus* Nadig, 1981; *Ch.* (*Ch.*) *vicinus* Mistshenko, 1951with subspecies: *Ch. v. vicinus*, *Ch. v. alajicus* Mistshenko, 1951, *Ch. v. abusivus* Mistshenko, 1951, *Ch. v. amplus* Mistshenko, 1951, *Ch. v. directus* Mistshenko, 1951; *Ch.* (*Ch.*) *willemsei* Harz, 1971;

Ch. (*Ch*.) *yuanmowensis* Cheng, 1977; *Ch.* (*Ch*.) *yuanshanensis* Zheng, 1980; *Ch.* (*Ch*.) *yunnanensis* Cheng, 1977; *Ch.* (*Ch*.) *zaitzevi* Mistshenko, 1979.

Subgenus *Altichorthippus* Jago, 1971

Altichorthippus (as subgenus of *Chorthippus*) Jago, 1971: 260, 292; Xia & Jin, 1982: 211 (part.); Otte, 1995: 117.

Type species – *Chorthippus* (*Stauroderus*) *uvarovi* Bey-Bienko, 1929, by original designation.

DIAGNOSIS. Lateral carinae of pronotum absent near the middle, angularly incurved.

SPECIES INCLUDED. There are five species from Kazakhstan and China: *Ch.* (*A*.) *chayuensis* Yin, 1982; *Ch*. (*A*.) *latilifoveatus* Xia et Jin, 1982; *Ch*. (*A*.) *pilipes* Bey-Bienko, 1933; *Ch*. (*A*.) *tibetanus* Uvarov, 1935; *Ch*. (*A*.) *uvarovi* Bey-Bienko, 1929.

Genus *Schmidtiacris* Storozhenko, gen. n.

Type species - *Stauroderus schmidti* Ikonnikov, 1913.

DESCRIPTION. Head short; face oblique. Fastigium of vertex slightly projecting forward; depression of vertex flat, lacking median carinula. Foveolae well defined, rectangular, narrow, and visible from above. Antennae very long, slender, filiform.

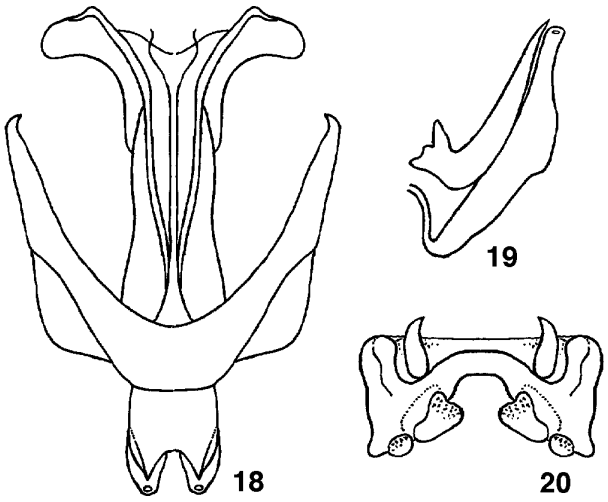
Pronotum with strong median carina cut by principal sulcus behind the middle of the disc. Lateral carinae of pronotum distinct, complete, slightly incurved. Posterior margin of pronotum rounded. Prosternum without a tubercle.

Tegmen and wings well developed, surpassing apex of hind femur; tegmen in male 4.75-5.2, in female 5.0-5.9 times as long as wide. Anterior margin of tegmen sinuate: precostal area slightly widening and reaching basal third of tegmen; male costal area wider than subcostal one; *C* and *Sc* straight. Hind wings hyaline; *R* newer thickened in apical third.

Male fore tibia not widened apically, with long white hairs on the underside. Upper knee of hind femora with rounded lophi. Inner lower spur of hind tibia slightly longer than inner upper one. First segment of hind tarsus distinctly longer than combined length of second and third ones (without claws). Both claws equal in length.

The opening of tympanal organ 1.7-1.9 times as long as wide in both sexes. Lateral margins of the male anal plate colored like apex of abdomen, never black. Cerci conical, with rounded apex. Posterior margin of the female subgenital plate triangular. The apical dorsal valves of penis conical, with pointed apex, ventral valves of penis widened apically, with broadly rounded apex. Posterior margin of zygoma straight or broadly rounded. Lophi of epiphallus bilobate.

Karyotype: 2n♂ = 23, NF = 23.



Figs 18-20. *Schmidtiacris schmidti*, male. 18) phallic complex (epiphallus and epiphallic membrane removed), dorsal view; 19) apical valves of penis, lateral view; 20) epiphallus, dorsal view.

DIAGNOSIS. *Schmidtiacris* well distinguished from all known Palaearctic genera of Acridinae by widened near the apex ventral valvae of penis. New genus similar with *Chorthippus*, but separated from it by long and narrow tegmen and by the number of chromosomes. By karyotype (Sergeev & Bugrov, 1988) and male wing venation (Jago, 1971) the type species of new genus is related to *Masasippus*, but latter includes the brachypterous species only and characterised by prosternum with distinct conical tubercule, the male anal plate with black margins, and hind margin of female subgenital plate weakly emarginate near the middle.

SPECIES INCLUDED. Two species from East Asia.

ETYMOLOGY. New genus dedicated to P. P. Schmidt who firstly collected type species.

***Schmidtiacris schmidti* (Ikonnikov, 1913), comb. n.**
Figs 18-20

Stauroderus schmidti Ikonnikov, 1913: 12 (lectotype – ♂, Korea: Choanso; in Zoological Museum of the Moscow State University; designated by Storozhenko, 1990: 76).

Chorthippus schmidti: Bey-Bienko & Mistschenko, 1951: 534; Storozhenko, 1986: 303, figs 133, 153, *4*, *10*, 154, *6*; Sergeev & Bugrov, 1988: 52.

Chorthippus (*Mesasippus*) *shmidti*: Jago, 1971: 257.

MATERIAL. China (first record): Jilin Province, Mt Changbaisan, 3.VIII 2000, 3 ♂ (Sai Ho Jung); Russia: more then 200 specimens from different localities; Korea: more than 30 specimens (including lectotype).

DISTRIBUTION. Russia: Tuva, Transbaicalia (Buryatia, Chitinskaya oblast), southern part of Far East (Amurskaya oblast, Khabarovskii krai, Primorskii krai); Mongolia; China; Korea.

***Schmidtiacris longdongensis* (Zheng, 1984), comb. n.**

Chorthippus longdongensis Zheng, 1984: 193, figs 29-34 (holotype – ♂, China: Gansu, Hauting; in Shaanxi Teachers University); Otte, 1995: 130.

NOTES. Well distinguished from *S. schmidti* by more narrow and long apical valves of penis.

DISTRIBUTION. China: Gansu Province.

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Editor-in-Chief: S.Yu. Storozhenko
Editorial Board: A.S. Lelej, Yu.A. Tshistjakov, N.V. Kurzenko
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