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A Contribution to the Knowledge of the Longicorn Beetles (Coleoptera, Cerambycidae) of the Caucasus: 6. Notes on the Distribution of Some Species with New Data of Their Biology

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Abstract—The distribution of 18 longicorn-beetle species of the Caucasus Isthmus and adjacent regions is discussed. New records of some species are given enlarging their known distribution area in the Caucasus (in some cases, even beyond its limits). The modern knowledge of the distribution of *Chlorophorus herbstii*, *Leptorhabdium caucasicum*, and *Brachyta caucasica* does not confirm occurrence of the first species in the Caucasus and the others, in northern Iran. *Stenocorus meridianus* occurs only in the northernmost plains of the Ciscaucasia, bordering on Rostov Province. New data on the biology of two little known Caucasian species are given.

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Based on the examination of material from various collections, results of the author's field investigations, and analysis of numerous published data, the modern knowledge of the distribution of some longicorn beetle species over and beyond the Caucasian Isthmus has been supplemented and changed. In addition, in the course of research on the Markotkh Mt. Range near Novorossiisk, the author not only found two species poorly studied in the Caucasus, but also obtained new data on their biology.

The material examined is deposited in the following scientific institutions and private collections: ZIN, the Zoological Institute, Russian Academy of Sciences (St. Petersburg); ZMMU, Zoological Museum, Moscow State University (Moscow); AM, collection of the author (Krasnodar); and ASh, collection of A.V. Shamaev (Moscow).

Xylosteus caucasicola Plavilstshikov, 1936

This species is distributed in the Northwestern Caucasus and the Western Transcaucasia. All the known records were listed by the author earlier (Miroshnikov, 1998). A recent record of *X. caucasicola* near Mt. Shessi moves slightly westwards the border of the Caucasian part of the species range. The distribution of the species beyond the Caucasus, namely, in northern Turkey, has not been clarified due to the following circumstances. On the one hand, *X. kadleci* Miroshnikov, 2000 described from Bolu Province in northwestern Anatolia is very similar to *X. caucasicola* and may be its subspecies (which was also mentioned in the original description). On the other hand, some authors (Sama, 2002) consider *X. caucasicola* a subspecies of *X. spinolae* Frivaldszky, 1838, whose populations were found in the European part of Turkey (Demirköy) and in Bolu Province. The solution of the problems of the taxonomy and the specification of the range of the considered forms requires additional studies of a large territory of northern Anatolia between the Ilgaz and Lazistan Mt. Ranges, aimed at finding still unknown populations of *Xylosteus* species.

Material. 2 ♀ (ZMMU), Krasnodar Territory, eastern slope of Mt. Shessi, 1500–1600 m a.s.l., 17.VI.2006, A. Gusakov.

Leptorhabdium caucasicum Kraatz, 1879

The record of this species from Elburs (Bodemeyer, 1930) requires a reliable confirmation. All the subsequent records of *L. caucasicum* in Iran are based on B. Bodemeyer's publication. Villiers (1967) even did not mention this species in his paper on Cerambycidae of Iran, though he widely used there material from Bodemeyer's collection. *Leptorhabdium caucasicum* was not found in voluminous collections from Elburs, made by a number of entomologists. In the Caucasus, the southeasternmost record of this species is that from the environs of Tbilisi; and in the south, the species range extends slightly beyond the Pambakskii Mt.

Range (I found in the ZIN collection a specimen with the label: "Erivan Prov., Zanga, environs of Chirchir [now Varser]"). Reliable records of *L. caucasicum* beyond the Caucasus are known only from northern Anatolia, where it is distributed at least as far westwards as the area of Boyabad (Demelt, 1963; Gfeller, 1972; Özdikmen, 2007).

Stenocorus meridianus (Linnaeus, 1758)

The distribution of this species in the Caucasus has not been ascertained until now. Sama's (2002) statement that the Euro-Siberian *S. meridianus* is replaced by *S. insitivus* (Germar, 1824) in northern Turkey and the Caucasus is most probably correct, but requires some specification. All the specimens of *Stenocorus* examined by me, which were collected from various territories of the Northern Caucasus, including the environs of Krasnodar, Gelendzhik, Maikop, Stavropol, Kislovodsk, Zheleznovodsk, Teberda, Groznyi, and Khasavyurt, some areas of the Caucasian Nature Reserve, the Bolshaya Laba River valley, and many other localities, belong to *S. insitivus*. The only record of *S. meridianus* in the territory of the Caucasian Isthmus is known from the northwesternmost part of Krasnodar Territory (Arzanov et al., 1993: Dolzhanskaya Station, 8.VI.1940, 1 ♀). Recently D.G. Kasatkin confirmed the reliability of this record in his personal communication. These data suggest that *S. meridianus* inhabits the northern territories of the plain Ciscaucasia, at least, those adjoining the southern part of Rostov Province, where the species seems to be widespread (Arzanov et al., 1993: Millerovo, Donleskhoz, Volgodonsk, Pukhlyakovskaya, Lenin Forestry).

Brachyta caucasica Rost, 1891

Analysis of the distribution of *B. caucasica* in the Caucasus shows that this species is most likely endemic to this region. *Brachyta caucasica* is distributed from the lowlands of the Northwestern Caucasus (approximately from the Ubinskaya–Gelendzhik line: Miroshnikov, 1990a, 2004, 2007), inhabits the Western Transcaucasia obviously as far as the Rachinskii Mt. Range, and reaches the area of Borzhomi in the south. According to Plavilstshikov (1936), the record of the species from Borzhomi requires confirmation. However, having examined the specimens from Borzhomi, deposited in the State Museum of Georgia and mentioned by N.N. Plavilstshikov (Miroshnikov, 1990a), I consider these labels correct. An important supplement to the data on the distribution of *B. caucasica* in the eastern part of the range is my record of the species in the vicinity of Muzhava Village near Dzhvari. It should be noted that the second of the two eastern (southeastern) records of the species, "Racha"[1] (Plavilstshikov, 1936), has not been confirmed by the material. It is also noteworthy that the features of individuals belonging to the population from the area of Muzhava are characteristic of the nominotypical subspecies, and the taxonomic status of the form from Borzhomi is not quite clear. In the light of the recent data on the distribution of *B. caucasica* in the Caucasus, the record of this species from Elburs (Bodemeyer, 1930) seems to be improbable. In addition, Villiers (1967), though he recorded this species for Iran based on the same publication by Bodemeyer, did not list the material from the corresponding collection.

Material. 38 ♂, 26 ♀ (AM), Western Georgia, Tsalendzhikhskii District, near Muzhava Vill., 1300–1500 m a.s.l., 8–9.V.1991, on flowers of *Paeonia wittmanniana*, A. Miroshnikov.

Brachyta interrogationis (Linnaeus, 1758)

Previously, the northwesternmost record of this species in the Caucasus was the area of Arkhyz (Miroshnikov, 1990a). I have recently found *B. interrogationis* on the Lagonaki Plateau, which considerably expands the Caucasian range of the species.

Material. 1 ♂, 2 ♀ (AM), Adygea, Lagonaki Plateau, eastern environs of Abadzesh Mt., 2000–2100 m a.s.l., 13.VII.2004, sweeping subalpine herbage, A. Miroshnikov.

Cortodera holosericea (Fabricius, 1801)

This species was first recorded from the Caucasus by Schneider and Leder (1879) [(*Grammoptera holosericea*): "Zalka; Mamudly"] and Koenig (1899): "Zalka". However, according to Plavilstshikov (1927) and Zaitsev (1954), these data are based on misidentification. A female of *C. holosericea* with the label "Stauropol" was found by Kasatkin (1998) in the ZIN collection. I also found in the same collection a specimen of *C. holosericea* from Stavropol, but it was a male with the labels "environs of Stavropol, Lutshnik" and "*Cortodera reitteri* Pic." I failed to find the speci-

[1] In Georgia, "Racha" is the name of the Rachinskaya Hollow situated in the upper course of the Rioni River (the former Rachinskii Uezd [= District—Transl.] with the administrative center in Oni).

men reported by Kasatkin (1998). The absence of this specimen in the ZIN collection was confirmed by A.L. Lobanov, who, at my request, made one more attempt to find it. According to Kasatkin's personal communication, he had not kept any notes which could help to estimate the reliability of the published text of the label. Allowing that sex of the specimen examined by Kasatkin was erroneously indicated in the publication, this specimen might be the male collected by Lutshnik in Stavropol. In 2008, *C. holosericea* was collected by me in the environs of Novorossiisk, which, in my opinion, together with the records in Stavropol and Eastern Anatolia (Özdikmen and Çaglar, 2004), suggests that the records of the species from Georgia by Schneider, Leder, and Koenig are reliable. The correctness of this point of view is substantiated by the fact that *C. kaphanica* Danilevsky in Danilevsky et Miroshnikov, 1985, described from southern Armenia, is rather similar to *C. holosericea* and, according to M.L. Danilevsky (http://www.cerambycidae.narod.ru/), may be a subspecies of the latter species.

The modern publications (Bense, 1995; Kasatkin, 1998; Sláma, 1998; Sama, 2002) mention only some species of the genus *Centaurea* L. as the plants, on the flowers of which the beetles of *Cortodera holosericea* occur. According to Heyrovský (1955), the adults occur on flowers of various plants, in particular, on *Viburnum*.

My observations have shown that in the environs of Novorossiisk *C. holosericea* inhabits steppefied areas of the Markotkh Mt. Range slopes at altitudes of 430–450 m, co-occurring there with *Cortodera villosa circassica* Reitter, 1890. The beetles visit the flowers of *Rosa pimpinellifolia* L., *Jurinea arachnoidea* Bunge, and *Psephellus declinatus* (M. Bieb.) C. Koch (= *Centaurea declinatus*).

Material. 1 ♀ (AM), Krasnodar Terr., environs of Novorossiisk, Markotkh Mt. Range near Gaiduk Vill., 430–450 m a.s.l., 21.V.2008, on flowers of *Rosa pimpinellifolia*, A. Miroshnikov; 1 ♂ (AM), same locality, 23.V.2008, sweeping herbs, A. Miroshnikov; 2 ♂ (AM), same locality, 1.VI.2008, on flowers of *Psephellus declinatus*, A. Miroshnikov; 1 ♂ (AM), same locality, 1.VI.2008, on flowers of *Jurinea arachnoidea*, A. Miroshnikov; 1 ♂ (ZIN), "environs of. Stavropol, Lutshnik," "*Cortodera reitteri* Pic," "*Cortodera holosericea* (F.), det. A. Miroshnikov 2005."

Leptura* (*Macroleptura*) *thoracica
(Creutzer, 1799)

This species was first recorded for the Caucasus by Plavilstshikov (1932), who gave the following specification in "*The Fauna of the USSR*": "The Central Caucasus (a very rare species)" (Plavilstshikov, 1936). All the subsequent records of *L. thoracica* from the Caucasus were until recently based on his data, without precise indication of localities. I have succeeded in obtaining more information on the statement that the species "is known from Krasnodar Territory" (Nikitskii et al., 2008). According to Nikitskii's personal communication (based on his field notes; the specimen was unfortunately lost), one specimen of *L. thoracica* was collected by him near Ubinskaya Vill. in early July 1972.

Pachytodes cerambyciformis (Schrank, 1781)

The only record of this species in the Caucasus was that by Plavilstshikov (1925): "Transcaucasie: Abas-Tuman, V (Zhicharev! coll. mea)". Numerous attempts to find this material in the ZMMU collection were unsuccessful. In "*The Fauna of the USSR*" Plavilstshikov (1936) only reported that *P. cerambyciformis* "sometimes occurs in the Transcaucasia." The following data on this species were recently published: "is known from Krasnodar Territory (Dolzhanskaya Station, 25.VI.1954, Kasatkin, www.zin.ru) and Karachay-Cherkessia (Daut Gorge, 23.VI.1992, www.zin.ru)" (Nikitskii et al., 2008). However, in "An Annotated List of the Longicorn Beetles (Cerambycidae) of the Steppe Zone and Foothills of the Northern Caucasus" (the author: D.G. Kasatkin), the site http://www.zin.ru/Animalia/Coleoptera/rus/—"Beetles (Coleoptera) and Coleopterologists," the above data are attributed to *Pachytodes erraticus* Dalman in Schoenherr, 1817, which was also noticed by N.B. Nikitskii (personal communication). Similar data on *P. erraticus* were reported earlier (Arzanov et al., 1993). *P. cerambyciformis* is not included in the above list; according to Kasatkin's personal communication, he has never recorded this species for the Caucasus. However, in my opinion, the reliability of the record of *P. cerambyciformis* in Abastumani and the data on its distributions at least in the Western and Southwestern Transcaucasia are substantiated by numerous collections of this species in the neighboring areas of Turkey (Tozlu et al., 2002; Özdikmen, 2007).

Stictoleptura rufa (Brullé, 1832)

All the known findings of this species in the Caucasus are concentrated in its eastern part. Plavilstshikov's (1936) assumption that *S. rufa* "seems to be distributed westwards over the entire Transcaucasia, because of being found in the environs of Artvin," has not been proved until now. The recent statement that the species "is known from Krasnodar Territory, near the border with [the Kavkazskii] Nature Reserve" (Nikitskii et al., 2008) is doubtful and may refer to *Stictoleptura erythroptera* (Hagenbach, 1822).

Drymochares starcki Ganglbauer, 1888

This species is distributed over the territory from the lowlands of the Northwestern Caucasus (beginning from the area of Krymsk: Miroshnikov, 1980) to the environs of Tbilisi (1 female from Tskhneti in the ZIN collection) and Dilizhan in the Transcaucasia (Sama and Rapuzzi, 1993), inhabiting northern Anatolia at least as far westwards as Bolu Province; the species is subdivided into three subspecies (Sama and Rapuzzi, 1993). However, the extensive material of *D. starcki*, mostly collected by me in various regions of the Northwestern Caucasus and Western Transcaucasia, and also collections of my colleagues, made in several areas of Anatolia, show that the data on the morphology and distribution of these subspecies (Sama and Rapuzzi, 1993) require serious specifications. This is supposed to be a subject of a separate publication.

Purpuricenus caucasicus Th. Pic, 1902

The infraspecific structure of *P. caucasicus* was considered by Danilevsky (2007). Records of this species from the Caucasus are not numerous, and only one record has been known until now in the northwestern part of the region: the Black Sea coast, near Krinitsa Vill. (Miroshnikov, 2007). I have found in the ZIN collection a specimen of this species, which originates from the Belaya River valley in the Republic of Adygea. I have presumed the presence of *P. caucasicus* in this territory of the Northwestern Caucasus (Miroshnikov, 2000). The record of "*Purpuricenus budensis productus* Plavilstshikov, 1940" for the environs of Osmanie in southern Anatolia (Adlbauer, 1992: "Nurdagi Geçidi E Osmaniye, 6.8.1988, 1 W [♀], leg./coll. N. [Dr. M. Niehuis]") most likely refers to *P. caucasicus*, previously unknown from this part of Turkey (Danilevsky, 2007; Özdikmen, 2007).

The author of the species name (Th. Pic) is indicated by me in the present and the preceding publications (Miroshnikov, 2007) on the basis of the original description (Th. Pic, 1902) and also on the following excerpt of Pic (1912): "Pour l'aberration *caucasicus* (de *Purpuricenus budensis* Götz) il faut lire Th. Pic et non Pic, comme nom d'auteur."

Material. 1 ♀ (ZIN), "prov. Kuban, fl. Belaja, Chamyshki, 6.08.[19]33, Arnoldi," "*Purpuricenus budensis* Gotz, det. N. Plavilstshikov," "*Purpuricenus caucasicus* Th. Pic, det. A. Miroshnikov 2008."

Ropalopus lederi Ganglbauer, 1882

In the Caucasus, this species is distributed southwards as far as northern Armenia (Plavilstshikov, 1948), and northwestwards (as it has been considered until now) as far as the area of Mezmai Vill. (Arzanov et al., 1993) and the area of Mt. Zhitnaya and Mt. Bukva (collections of the author). In 2008, *R. lederi* was found by me and N.V. Okhrimenko in the environs of Gelendzhik on the Pshadskii Pass. I also examined a specimen of this species, collected by N.B. Nikitskii near Ubinskaya Vill. These records significantly expand the Caucasian part of the species range. An important character of the new localities is their rather low altitude above the sea level, while records of *R. lederi* in the Western Caucasus are mainly known from the highlands.

Material. Krasnodar Terr.: 1 ♂ (AM), environs of Gelendzhik, Pshadskii Pass, 150 m a.s.l., 23.VII–7.VIII.2008, trap with a food attraction, A. Miroshnikov, N. Okhrimenko; 1 specimen, Severskii District, Ubinskaya Vill., 9–10.VI.1971, N. Nikitskii.

Chlorophorus herbstii (Brahm, 1790)

The first data on the distribution of this species in the Caucasus (without taking into account indications of some authors who considered the typical form of *Ch. faldermanni* Faldermann, 1837 and *Ch. faldermanni* var. *caucasicus* Pic, 1897 as varieties of *Ch. herbstii*) were published by N.N. Plavilstshikov. In "A List of Longicorn Beetles of the USSR," included in his monograph "*Longicorn Beetles–Wood Pests*" (Plavilstshikov, 1932), *Ch. herbstii* is listed with an indication "Kavk." ["Cauc." in Cyrillic], which means that "the species occurs over the entire Caucasus (i.e., in both the Ciscaucasia and the Transcaucasia)." In "*The Fauna of the USSR*," Plavilstshikov (1940) describes the distribution of *Ch. herbstii* in the Caucasus

as follows: "The Northern Caucasus (rarely), the western part of the Major Caucasus Range (slopes of Elbrus, Teberda, mountains of Kuban, approximately as far as the environs of Krasnaya Polyana)." However, these two studies were preceded by Plavilstshikov's publication (which specially dealt with the longicorn beetles of the Caucasus), where he indicated for *Ch. herbstii*: "I have seen no Caucasian specimens of this species, but it is very likely that it occurs somewhere in the Northern Caucasus, e.g., in Kuban, since it could pass there from the Don Province, being very widely distributed in the latter area" (Plavilstshikov, 1931). I think that in "*The Fauna of the USSR*" Plavilstshikov (1940) also described only a presumable distribution of *Ch. herbstii* in the Caucasus. The subsequent records of this species in the Caucasus (Heyrovský, 1955; Panin and Săvulesku, 1961; Villiers, 1978; Lobanov et al., 1982; Danilevsky and Miroshnikov, 1985, etc.) are undoubtedly based on Plavilstshikov's (1932, 1940) publications. None of the collections examined by me, including the ZMMU, contains specimens of *Ch. herbstii* from the Caucasus. In addition, I have failed to find this species during my 35-year investigations in the Western Caucasus, despite the fact that *Ch. herbstii* attacks many species of deciduous trees belonging to at least ten families, and the beetles visit flowers of various plants. Thus, I consider that *Ch. herbstii* should be excluded from the list of the Caucasian fauna until reliable data on its records in the region are obtained. Plavilstshikov's (1940) data on the distribution of this species in the Crimean Peninsula (Bartenev, 1989; Zagaikevich, 1991) have also not been yet confirmed.

Clytus schneideri Kiesenwetter in Schneider et Leder, 1879

The distribution of this species in the Caucasus has been poorly studied, although Plavilstshikov (1940) indicated that "the species is widespread over the entire Transcaucasia." I know from the collection material only the following sites of *C. schneideri*: Borzhomi, Atskuri, and the Khosrovskii Nature Reserve. Koenig (1899) and Zaitsev (1954) also recorded *C. schneideri* for Tbilisi and Tetri-Tskaro. According to Plavilstshikov (1940, 1948), this species is known from Gyumri (= Leninakan) and the Araks River valley and reaches at least Pitsunda in the north. The recently published data on *C. schneideri*: "it is known from Krasnodar Territory (e.g., Ubinskaya Vill., Goryachii Klyuch, Krinitsa" (Nikitskii et al., 2008) are erroneous and, according to Nikitskii's personal communication, should be attributed to *Clytus stepanovi* Danilevsky et Miroshnikov, 1985.

Parmenopsis caucasica (Leder, 1880)

This species described from "Suram" (Leder, 1880) has long been considered to occur only in the Transcaucasia, reaching northwestwards the environs of Anapa along the Black Sea coast (Plavilstshikov, 1958; material from various collections, including that by the author). It was recorded rather recently from the Pseashkho Pass (Kasatkin and Arzanov, 1997). I have examined two specimens of *P. caucasica* from the northern macroslope of the Major Caucasus Range, Pshekha River valley, near Otdalennyi Vill. Beyond the Caucasus, this species was found only in the northeasternmost part of Anatolia in the area of Artvin (Sama, 1994; Özdikmen, 2007).

Material. 1 ♂, 1 ♀ (ASh), Krasnodar Terr., Apsheronskii Distr., near Otdalennyi Vill., 10.VI.1989, A. Shamaev.

Acanthocinus elegans Ganglbauer, 1884

In the Caucasus, this species is known from Talysh, based on the only record near Nabran Vill. in northern Azerbaijan (Danilevsky and Miroshnikov, 1985). According to A.V. Petrov's personal communication, he found *A. elegans* in southern Daghestan in the Samur River delta (30 km S of Derbent), which substantiates the first record of the species beyond Talysh.

Phytoecia* (*Pilemia*) *tigrina Mulsant, 1851

This species was first recorded for the Caucasus on the basis of the only old record in Darachichag (Miroshnikov, 1990b). The record of *Ph. tigrina* in Derbent (Becker, 1871) has remained overlooked until now.

Agapanthia* (*Homoblephara*) *maculicornis Gyllenhal in Schoenherr, 1817

This species was first recorded for the Caucasus based on the only finding in the Nogaiskaya steppe in northern Dagestan (Miroshnikov, 1990). In 2008, I found the species in the environs of Novorossiisk.

A. maculicornis infests *Campanula glomerata* and *Helianthemum* in Europe (Švácha, 2001; Sama, 2002), and *Dianthus superbus* in Siberia (Tcherepanov, 1984). According to my observations, this species

inhabits the steppefied areas of the Markotkh Mt. Range at altitudes of 370–450 m above the sea level. The beetles occur on *Tragopogon tuberosus* C. Koch, the larvae develop in stems of this plant; oviposition has been repeatedly observed to occur in the upper part of a stem. According to M.L. Danilevsky (http://www.cerambycidae.narod.ru/), he also collected a series of the beetles on *Tragopogon* sp. in Volgograd Province. It is of interest that *Agapanthia orbachi* Sama, 1993 (described from Israel), one of the species closely related to *A. maculicornis*, is also associated with *Tragopogon*.

Material. 2 ♂, 6 ♀ (AM), Krasnodar Terr., environs of Novorossiisk, Markotkh Mt. Range near Gaiduk Vill., 370–450 m a.s.l., 23.V.2008, on *Tragopogon tuberosus*, A. Miroshnikov; 26 ♂, 19 ♀ (AM), same locality, 1.VI.2008; 10 ♂, 11 ♀ (AM), same locality, 5.VI.2008.

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