

Purpuricenus kaehleri (Linnaeus, 1758) and *P. caucasicus* Pic, 1902 (Coleoptera, Cerambycidae) in Caucasus

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Abstract. All Caucasian populations of *Purpuricenus kaehleri* belong to *P. kaehleri menetriesi* Motschulsky, 1845 described from North Iran. The subspecies is characterized first of all by partly red prothorax. It is known from North Caucasus, Georgia, Azerbaijan and Turkey, but seems to be absent in Armenia. *P. caucasicus baekmanni* ssp. n. is described from Crimea. The distribution of *P. caucasicus caucasicus* in Caucasus with Transcaucasia is described in details. The area includes North-West Caucasus, Georgia, Armenia and Azerbaijan; in Turkey it is recorded from seven provinces: Erzerum, Gülmüşhane, Kastamonu, Tokat, Bolu, Denizli and Mugla. The subspecies level of *P. caucasicus graecus* Sláma, 1993 and *P. caucasicus renjvonae* Sláma, 2001 is supposed, as well as subspecies status of certain Turkish populations.

INTRODUCTION

Five species of the genus *Purpuricenus* Dejean, 1821 are known from Caucasus with Transcaucasia. *P. budensis* (Götz, 1783), which is widely distributed and rather common, is regarded to be represented in the area by the nominative subspecies. *P. talyshensis* Reitter, 1891 is very rare in south-eastern corner of Transcaucasia in Talysh forests in south-east Azerbaijan. *P. wachanrui* Levrat, 1858 is known after only one godsend near Negram in Nakhichevan Republic of Azerbaijan (Plavilstshikov, 1948, 1940); a posterior half of one specimen is preserved in Erevan Institute of Zoology with the label: "Arax vall., Negram, 16.V, Exped. Mus. Armen., 1924". Other two species are widely distributed in Caucasus, but are everywhere rather rare. *P. kaehleri*, known from many localities in Caucasus, was traditionally regarded as being represented here by the nominative subspecies only. Recently (Danilevsky et al., 2007) its populations from Talysh area were recognized as *P. k. menetriesi* Motschulsky, 1845, though the distinguishing characters of that form from the nominative subspecies were not described. The actual species status of *P. caucasicus* Pic, 1902 was discovered by A. Miroshnikov (1984) in his list of Cerambycidae from North-West Caucasus. The treatment of *P. caucasicus* as a distinct species was supported by many authors (Danilevsky & Miroshnikov, 1985; Sláma, 1993, 2001; Sláma & Slámová, 1996; Althoff & Danilevsky, 1997; Sama, 2002; Özdikmen & Çağlar, 2004), though up to now no localities in Russia or Caucasus were recorded with the exception of the typical one. A wrong interpretation of the status of *P. caucasicus* populations as a form of *P. budensis*

also exists (Bernhauer, 1976; Sabbadini & Pesarini, 1992). Two Balkanian "*P. caucasicus*" were described as another species: *P. graecus* Sláma, 1993 (the wrong spelling of that name "graceus" in the title of the original description and in its text was just a misprint as correct spelling "graecus" was also used in the original description) and *P. renyvonae* Sláma, 2001.

The taxonomy of *P. kaehleri* and *P. caucasicus* in Caucasus is discussed.

Six abbreviations are used in the text:

- AM collection of Alexandr Miroshnikov (Krasnodar, Russia);
MD author's collection (Moscow, Russia);
PK collection of Petr Kabátek (Prague, Czechia);
PR collection of Pierpaolo Rapuzzi (Prepotto, Italy);
ZIN collection of Zoological Institute of the Russian Academy of Sciences;
ZMM collection of Zoological Museum of Moscow University.

RESULTS

Purpuricenus kaehleri menetriesi Motschulsky, 1845

(Figs 1-8, 13)

Purpuricenus menetriesi Motschulsky, 1845: 87 (Astrabad).

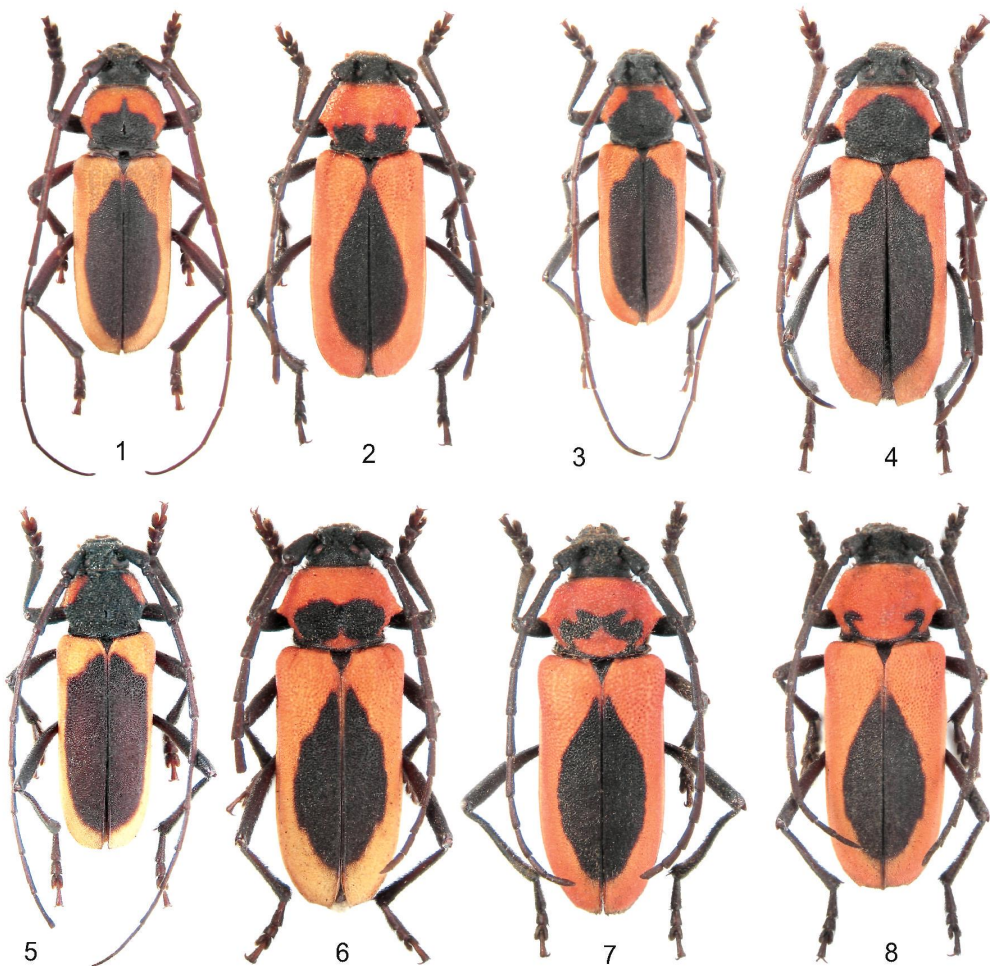
Purpuricenus kaehleri var. *astrabadensis* Pic, 1915: 6 (Astrabad).

Purpuricenus globulicollis astrabadensis: Bruneau de Miré, 1990: 5.

Purpuricenus kaehleri menetriesi: Danilevsky et al, 2007: 68.

Type locality. Iran, Gorgan ("Astrabad" - according to the original description).

Material studied. *P. k. menetriesi*: 1 ♂ (elytra only - the photograph was published by Danilevsky et al., 1977), holotype, Iran, "Persia, Astrabad", (ZMM); 1 ♂, Iran, "Kazvin, 5.vi.1945" (ZMM); 4 ♂♂, „Astrabad, 19.iv.1917“ and „Astrabad IV“, (ZMM); 1 ♀, "Astrabad, 15.VI", (ZMM); 7 ♂♂, 3 ♀♀, „Iran, Gilan, 10km E Tutkabon, E Rostam Abad, 350m, 22.vi-2.vii.2003, I. Rapuzzi leg.“, (PR); 1 ♂, 1 ♀, „Mazandaran, 40km E Chalus, ex *Paliurus* sp., 600m, 6.v.2002, P. Rapuzzi leg.“, (PR); 1 ♀, Azerbaijan, "Talysh, Nuvady, 23.6.1929, K. Arnoldi leg.", (ZMM); 1 ♀, Azerbaijan, "Talysh, Alekseevka, 25.vi.1930, T. Safarov leg.", (ZMM); 2 ♂♂, 1 ♀, "Azerbaijan, Talysh, Avrora (about same locality), ex *Paliurus spina-christi*, 18.vi.1980, M. Danilevsky leg.", (MD); 1 ♂, "Transcaucasia, Samusch"[?], (ZMM); 2 ♂♂, Georgia, "Transcaucasia, Mtzheta, 17.vii.1915, Banjkovsky leg.", (ZMM); 1 ♀, same locality (ZMM); 1 ♀, Georgia, "Suram, 18.vii.1919", (ZMM); 1 ♀, Georgia, "Gori", (ZMM); 1 ♀, Georgia, "Tiflis", (ZMM); 2 ♀♀, "Tiflis, 17.vii.1904, K. Satunin leg.", (ZIN); 1 ♀, "Tiflis, 1909, A. Tutunov leg.", (ZIN); 1 ♂, 1 ♀, "Dagestan, Talgi, 2.vii.1929, V. Bogachev leg.", (ZMM); 1 ♀, "Cauc. centr., Svanetia, 23.vii.1930" - ZMM; 2 ♂♂, Russia, "Kuban, Anapa, 2.7.1919, Zavilejssky leg.", (ZMM); 4 ♀♀, Russia, N Caucasus, "Maikop" 20.vii.1937, 12.vii.1938, 29.vi.1939, (ZMM); 1 ♂, Russia, "Krasnodar reg., Kaluzhskaja, vi.1977", (AM); 1 ♀, Russia, "Krasnodar reg., Goriachij Kliuch, 25.vi.1971, N.Chumak leg., (AM); 1 ♂ (with totally black thorax), Russia, "Krasnodar reg., Goriachij Kliuch, 30.vi.1982, I. Berezhevskaya leg., (AM); 1 ♂, Krasnodar region, Gelendzhik,



Figs 1-8. *Purpuricenens kaehleri menetriesi*: 1- ♂, “Persia, Astrabad”; 2- ♀, “Talysh Avrora”; 3- ♂, Dagestan, Talgi; 4 - ♀ the same; 5- ♂ “Mtzheta; 6- ♀ “Maikop; 7- ♀ the same; 8- ♀ the same.

N.Vorobiev leg., (ZIN); 1 ♂, Dagestan, Khasaviurt, 1925, Krasovsky leg., (ZIN); 1 ♀, Turkey, “Batumi reg., Ardanuch [about 20km eastwards Artvin], 19.vii.1900”, (ZIN); 1 ♀, Turkey, “Kutais, Ardanuch, eastwards, Artvin, 4.vii.1898, Deriugin leg.”, (ZIN).

P. k. kaehleri: 1 ♂, 1 ♀, Moldavia, Orhei reg., Kurki, 7.vii.1954, (ZMM); 6 ♀♀, Moldavia, Orhei reg., Vatic, 2.vii.1953, P. Stepanov leg., (ZMM); 1 ♀, Ukraine, Volyn reg., Ovruch, 29.6.1925, (ZMM); 2 ♂♂, 5 ♀♀, Ukraine, Kharkov reg., Merefa, 28.vi.1952, 19-26.vi.1953, 1956, (ZMM); 1 ♀, Ukraine, Kharkov reg., Zmiev, 28.vi.1919, Arnoldi leg., (MD); 1 ♀, Ukraine, Kharkov reg., Tatianovka, Sviatogorsk, 12.vi.1938, Arnoldi leg., (MD); 5 ♀♀, Ukraine, Poltava reg., Mirgorod distr., Yareski, 28.vi.1912, 16.viii.1922, vi.1925, 1929,

(ZMM); 2 ♂♂, 3 ♀♀, Ukraine, Sumy reg., Konotop, 1911, (ZMM); 1 ♀, Russia, Rostov reg., Krymskij, vi.2006, Yu. Arzanov leg., (MD); 5 ♂♂, 4 ♀♀, Russia, Volgograd reg. Filonovskaya, 15-26.vi.1912, A. Iliinsky leg., (ZMM); 2 ♂♂, 2 ♀♀, Russia, Stalingrad (now Volgograd), Beketovka, 19.vi.1951, G. Mazokhin leg., (ZMM); 1 ♂, Russia, Saratov, 14.vi.1987, S. Khvylya leg., (ZMM); 1 ♂, Russia, Saratov reg., Volok, 6.viii.1930, (ZMM); 1 ♂, Russia, Voronezh reg., Khrenov Bor, (ZMM); 1 ♀, Russia, Kuibyshev (now Samara), 24.vi.1952, V. Grechkin leg., (ZMM); 1 ♀, Russia, Moscow reg., Lesnoj Gorodok, 12.5.1976, Dolzhansky leg., (MD); 1 ♀, Russia, West Siberia, „Tomsk region, upper level of Tom river, 1913“, (ZMM); numerous available series from West Europe (ZMM) are not mentioned here.

Description. Body length in males: 12.5-18.0 mm, in females: 11.2-17.3 mm; body width in males 4.3-5.9 mm, in females: 3.8-5.8 mm.

Body a little narrower, than in the nominative subspecies, specially in females: in females elytra from 2.0 to 2.3 times longer than wide, but usually about 2.2 times, while in females of *P. k. kaehleri* elytra from 2.0 to 2.2 times longer than wide, but usually about 2.1 times and look more narrowed posteriorly; antennae usually very long, sometimes in males about two times longer than body protruding beyond elytral apices with four apical joints, or less longer surpassing elytral apices by about half their length with three apical joints; in females antennae a little longer than body or a little shorter; lateral thoracic tubercles always well developed; prothorax never totally black (I know only one male with totally black prothorax from NW Caucasus: “Goriachij Kliuch, 30.vi.1982, Berezhevskaya leg.”, but the label may be wrong ?), usually with more or less wide anterior red band, with basal black area protruding anteriorly along middle; or pronotum nearly totally red (usually in females from north-west Caucasus) with a pair of small black spots near base; very rare pronotum black with a pair of anterior lateral red spots; elytral black area from relatively small pear-shaped or oval, moved from scutellum; or more or less protruding anteriorly, touching scutellum, or strongly widened, covering nearly whole elytral surface, nearly parallelsided; elytral apices usually truncate, with indistinct outer and inner angles, but sometimes a little emarginated with well developed apical angles.

The taxon differs from populations of *P. k. kaehleri* from Russia and Ukraine first of all by always bicolored pronotum. In *P. k. kaehleri* from European part of Russia and from Siberia the prothorax is nearly always totally black or with small lateral anterior red spots. *P. k. kaehleri* from West Europe (according to available materials - ZMM) are also usually with black prothorax. Specimens with predominantly red pronotum must be very rare in West Europe. The largest red pronotal area in the available specimens of nominative subspecies (about 100 spec.) is represented by narrow transverse anterior band.

Distribution. (Fig. 13). *P. k. menetriesi* is distributed from North Iran (Gorgan, Mazandaran, Zinzhān, Gilan), through Azerbaijan to Georgia, Dagestan republic of Russia and Krasnodar region and in north-east Turkey. *P. kaehleri* is not definitely known from Armenia, though it was recorded by Plavilstshikov (1948) for the whole territory of the republic. Only one specimen with the label “Araxestal” is preserved in the Armenian Institute of Zoology

(Erevan), but it could be from the territory of Azerbaijan or Iran. The records of *P. kaehlerii* for Turkey were summarized by H. Özdikmen (2007). The species is known from the west of the country (Kırklareli prov., İstanbul prov.), where it must be represented by the nominative subspecies and from the east (Rize prov., Artvin prov.), where it must be represented by *P. k. menetriesi*. I know only two specimens of *P. k. menetriesi* from Artvin province.

Known localities are: Azerbaijan: Talysh, Avrora (or Alekseevka), (ZMM, MD); Talysh, Nyuvady, (ZIN); Georgia: Tbilisi, (ZMM, ZIN); Mtskheta, (ZMM); Gori, (ZMM); Svanetia, (ZMM); Surami, (ZMM); Iran: Gorgan (Astrabad) env. - type locality, (ZMM); Kazvin (about 150km NW Teheran), (ZMM); Gilan prov., 10km E Tutkaban, E Rostam Abad, (PR); Mazandaran prov., 40km E Chalus, (PR); Russia: Dagestan, Talgi, (ZMM); Dagestan, Khasavjurt, (ZIN); Krasnodar region, Anapa, (ZMM); Krasnodar region, Kaluzhskaja, (AM); Krasnodar region, Goriachij Kliuch, (AM); Krasnodar region, Gelendzhik, (ZIN); Adygeja, Maikop, (ZMM); Turkey: Pazar (Ilica forest), Rize - (Özdikmen, 2007); Ardandush, about 20km E Artvin, (ZIN).

P. k. kaehlerii is distributed in Asia from West Siberia (Tom river valley) to Orenburg region and North Kazakhstan; in European part of Russia it is known from central and south regions; here north borderline of the area nearly coincide with south borders of Kirov and Nizhnij Novgorod regions, Chuvashia and Mari El republics (Esterberg, 1935); it is also known from central areas of Moscow region; whole territory of Ukraine, known from Belorussia, absent in Baltic republics, but widely distributed in centre and south of West Europe.

Remark. A single known male with totally black thorax from North-West Caucasus looks like typical *P. kaehlerii kaehlerii*. If its label is right, it could be the sign, that Caucasian populations represent another species *P. menetriesi*, and Krasnodar region is a zone of allopatry of two species.

Purpuricenus caucasicus Pic, 1902

(Figs. 9-12, 14)

Purpuricenus budensis var. *caucasicus* Pic, 1902: 37 ("Caucasus").

Purpuricenus budensis ab. *caucasicus*: Plavilstshikov, 1940: 568, 569, 759; Bernhauer, 1976: 126-127 ("n. w. Gümüşhane").

Purpuricenus budensis m. (ab.) *productus* Plavilstshikov, 1940: 569, 759, not available name; Bernhauer, 1976: 124-127 (Denizli, Tokat).

Purpuricenus budensis ab. *productissimus* Plavilstshikov, 1940: 569, 759, not available name.

Purpuricenus caucasicus: Miroshnikov, 1984: 7, 9; Danilevsky & Miroshnikov, 1985: 214; Sláma, 1993: 56; 2001: 226; Sláma & Slámová, 1996: 123; Althoff & Danilevsky, 1997: 21; Sama, 2002: 55; Özdikmen & Çağlar, 2004: 57 (Mugla).

Purpuricenus budensis caucasicus: Sabbadini & Pesarini, 1992: 56.

Type locality. Armenia, "Helendorf" (= Elenovka, now Sevan), according to the holotype label (Sabbadini & Pesarini, 1992).

Description. Body length in males: 14.7-17.5 mm, in females: 13.0-18.7 mm; body width in males 4.4-5.2 mm, in females: 4.0-6.0 mm.

Body narrow; elytra in males from 2.3 to 2.4 times longer than wide, in females - from 2.2 to 2.3 times longer than wide; antennae relatively short, in males protruding beyond elytral apices with 2 or 3 apical joints, in females a little shorter than body; lateral thoracic tubercles very small or nearly indistinct; dorsal pronotal tubercles more or less obliterated; elytral black area similar to black area of *P. budensis*, but more protruding anteriorly, often touching scutellum; black transverse elytral basal stripe always absent; elytral apices usually truncate with distinct outer and inner angles, or slightly emarginated, or rounded with indistinct apical angles.

The species has no connections with *P. budensis* and seems to be close to *P. globulicollis*.

Distribution. (Fig. 14: 1-19). Ukraine - south of Crimean Peninsula; Russia - North and North-West Caucasus from Krasnodar to Stavropol regions; Georgia; Armenia; Azerbaijan; Turkey - from Erzerum to Gümüşhane, Tokat, Kastamonu, Bolu, Denizli and Mugla.

Bionomy. According to personal message (2007) by P. Kabátek the mode of life of *P. caucasicus* is similar to *P. globulicollis* Dejean in Mulsant, 1839: females deposit their eggs in living twigs near their bases, larvae cause the drying of the twig, and yellow dead leaves indicate larval presence. Life cycle must be two years. *Quercus* and *Acer* are known as food plants.

Remark. *Purpuricenus wredii* Fischer von Waldheim, 1824: 238 (“Georgiefsk”) described from North Caucasus (Stavropol region, about 30km NE Piatigorsk) is definitely a synonym of *P. budensis*, as it was reliably stated by Plavilstshikov (1940). The original description was equipped with excellent color drawing.

Purpuricenus caucasicus caucasicus Pic, 1902

(Figs 9-10, 14: 16-19)

Material studied. 1 ♂, paratype of *P. budensis* m. *productus* Plav., “Transcauc., Lagodechi, 9.vii.1913, [the name of collector is not readable]”, (ZMM); 1 ♀, same locality, 17.vii.1926, Mlokoseva leg., (AM); 1 ♂, “Georgia, Tzagvery, 900m, 15.viii.1981, V. Dolin leg., (AM); 1 ♀, Georgia, “Mzhet, 1879” (ZIN); 1 ♂, paratype of *P. budensis* m. *productus* Plav., Azerbaijan, “Caucasus, Geok-Tapa [= Aresh, now Agdash], A. Shelkownikow leg.”, (ZMM); 1 ♀, Russia, Krasnodar reg., “Dzhubga env., Krinitsa, 8.vii.1975, A. Zamotajlov leg.”, (AM); 1 ♀, Russia, “Caucas. bor., Kislovodsk”, (ZMM); 3 ♀♀, Turkey, Bolu, Abant, 25.vii.2001, N. Auvray leg., (PR); 2 ♀♀, with same label, (PK); 2 ♂♂, Turkey, Kastamonu, Mt. Yarılgos, P. Kabátek leg., (PK).

Description. Body length in males: 14.7-16.5 mm, in females: 10.5-14.0 mm; body width in males 4.4-5.1 mm, in female: 3.0-4.5 mm.

Prothorax always bicolored; no specimens with totally black prothorax are known from Turkey or Caucasus; pronotum is predominantly red with a narrow black basal transverse stripe; elytral black area usually narrow with parallel sides near middle.



9



10

Figs 9-10. *Purpuricemus caucasicus caucasicus*: 9- ♂, “Geok-Tapa”; 10- ♀, “Lagodechi”.

Distribution. (Fig. 14: 16-19). Caucasus with Transcaucasia, Anatolia. Known localities are: Armenia: Sevan-city env. (type locality); Azerbaijan: Agdash, (ZMM); Georgia: Mtzheta, (ZIN); Tzagveri, (AM); Gori - personal message by A. Miroshnikov, 2006; Lagodekhi, (ZMM, AM); Russia: Stavropol region, Kislovodsk, (ZMM); Krasnodar region, Dzhubga Mt. (between Tuapse and Gelendzhik), (AM); Turkey: Tokat (Bernhauer, 1976); Denizli (Bernhauer, 1976); north-west Gümüşhane (Bernhauer, 1976); Erzerum env. (Sabbadini & Pesarini, 1992); Mt. Yaraligöz north-eastwards Kastamonu, (PK); Abant south-westwards Bolu, (PK); Datça south-westwards Mugla (Özdikmen & Çağlar, 2004).

Remark. According to the published photographs by D. Bernhauer (1976, Abb. 1-10) I've preliminary identified as *P. c. caucasicus* 3 his specimens: Abb. 7 (Tokat), Abb. 8 (Denizli), Abb. 10 (n.w. Gümüşhane).

Purpuricenus caucasicus baeckmanni ssp. n.

(Figs. 11-12, 14: 16-19)

"*Purpuricenus budensis tauricus* Baeckm., in litt.", Plavilstshikov, 1940: 569, not available name.

Type locality. Ukraine, Crimea, Mt. Karadag near Koktebel.

Type material. Holotype (♂) (holotype of *P. budensis* m. *productus* Plav.), "Crimea, Karadag, 25.vi.1928, (via V. Karpov)", (ZMM); Paratypes: (1 ♀) from same locality, 2.vii.1917, (ZMM); (1 ♀) with 4 labels: (1) "Sudak, 22.vi.1904, D. Glazunov leg."; (2) "*P. budensis tauricus* Bkhm."; (3) "typus"; (4) "*Purpuricenus budensis* Götz m. *productus* m. N. Plavilstshikov det.", (ZIN); (1 ♀), "Crimea, Nizhnij Kastropol, 30.vi.1902, N. Kuznetzov leg.", (ZIN); (1 ♀) (paratypes of *P. budensis* m. *productus* Plav.), "Tauria", (ZIN); (1 ♀) (paratype of *P. budensis* m. *productus* Plav.), "Crimea, Koktebel, vi.1919, ex. coll. I. Parfentiev", (ZMM); (1 ♀), same locality, 1966, A. Tzvetaev leg., (MD); (1 ♀) (paratype of *P. budensis* m. *productus*



11



12

Figs 11-12. *Purpuricenus caucasicus baeckmanni* ssp. n.: 11- ♂, holotype; 12- ♀, paratype, "Krim Koktebel".

Plav.), “Krym, 2.vii.1917, Trigoni”, (ZMM); (1 ♀), “Crimea, south bank, 1911”, (AM); (1 ♀), Crimea, “Sevastopol env., 5.vii.1021, Kizeritsky”, (AM).

Description. Body length in males: 14.8-17.5 mm, in females: 13.9-18.7 mm; body width in male 4.4-5.2 mm, in females: 4.3-6.0 mm.

Prothorax always totally black; elytral black area usually more or less cone-shaped, gradually enlarged posteriorly. Fine morphological differences (such as were used for the description of *P. graecus* Sláma, 1993 or *P. renyvonae* Sláma, 2001) seem to be present, but the number of available specimens is too small, so observed subtle distinguishing characters can be connected with individual variability.

Distribution. (Fig. 14: 16-19). South of Crimean Peninsula, Ukraine. Known localities are: Mt. Karadag (near Koktebel) - type locality, (ZMM); Koktebel, (ZMM); Sudak, (ZIN); Nizhnij Kastropol (between Baidary and Simeiz), (ZIN); Sevastopol env., (AM).



Fig. 13. The area of *Purpuricenus kaehleri menetriesi*: 1-4 - Iran; 5-6 - Azerbaijan; 7-11 - Georgia; 12 - Turkey; 13-18 Russia. Iran: 1 - Gorgan (Astrabad), 2 - Mazandaran prov., 40km E Chalus, 3 - Kazvin (about 150km NW Tegeran), 4 - Gilan prov., 10km E Tutkabon, E Rostam Abad; Azerbaijan: 5 - Talysh, Avrora (or Alekseevka), 6 - Talysh, Nyuvady; Georgia: 7 - Tbilisi, 8 - Mtzheta, 9 - Gori, 10 - Surami, 11 - Svanetia; Turkey: 12 - Ardanush, about 20km E Artvin; Russia: 13 - Dagestan, Talgi, 14 - Dagestan, Khasavjurt, 15 - Adygeja, Maikop, 16 - Krasnodar region, Goriachij Kliuch, 17 - Krasnodar region, Kaluzhskaja, 18 - Krasnodar region, Anapa, 19 - Gelendzhik.



Fig. 14. The area of the taxons of “*P. caucasicus*-group”: 1-15 - *P. caucasicus caucasicus*; 16-19 - *P. caucasicus baeckmanni* ssp. n.; 20-22 - *P. renyvoniae*; 23-25 - *P. graecus*. Armenia: 1 - Sevan-city (type locality of *P. caucasicus*); Azerbaijan: 2 - Agdash; Georgia: 3 - Lagodekhi, 4 - Mtzheta; 5 - Gori; 6 - Tzagveri; Russia: 7 - Kislovodsk, 8 - Dzhubga Mt.; Turkey: 9 - Erzerum, 10 - Gümüşhane, 11 - Tokat, 12 - S Yaraligoz, 13 - Abant, Bolu, 14 - Denizli, 15 - Mugla; Ukraine, Crimea: 16 - Karadag Mt. (type locality of *P. c. baeckmanni* ssp. n.) and Koktebel, 17 - Sudak, 18 - Nizhnij Kastropol, 19 - Sevastopol; Bulgaria: 20 - Primorsko, 21 - Ropotamo (type locality of *P. renyvoniae*); Macedonia: 22 - Titov Veles; Greece: 23 - Gerania Mts near Lutrakion (type locality of *P. graecus*), 24 - Athens, 25 - Taygetos Mts near Trypi.

Remark. Possibly all taxa of *P. caucasicus*-group of species are in same relations: all can be regarded as subspecies including *P. caucasicus graecus* Sláma, 1993 (described from South Greece; type locality - Gerania Mts. near Lutrakion; Fig. 14: 20-22) and *P. caucasicus renyvoniae* Sláma, 2001 (described from Bulgaria and Macedonia; type locality - Ropotamo; Fig. 14: 23-25). In fact several small differences (if they really exist) used for the descriptions of *P. graecus* and *P. renyvoniae* are the evidence of more or less strong geographical isolation of certain groups of relative populations (which could be the pretext for the description of subspecies, but not the evidence of the species status).

Populations of *P. caucasicus* from different parts of Turkey are rather distant from each other (Erzerum, Gümüşhane, Kastamonu, Tokat, Bolu, Denizli, Mugla) and most of them are geographically closer to Balkan populations, than to Caucasus. They must represent separate different subspecies.

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