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Taxonomy and faunistics of some species of *Quedius* STEPHENS, 1829 from the Caucasus and Asia Minor (Coleoptera: Staphylinidae)

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Abstract

The paper provides taxonomic, diagnostic, distributional and bionomic data for eight species of *Quedius* STEPHENS, 1829 (subgenera *Distichalius* CASEY, 1915 sensu SMETANA 1971, *Microsaurus* STEPHENS, 1835 sensu SMETANA 1971 and *Raphirus* STEPHENS, 1835 sensu SMETANA 1971) distributed in the Caucasus and Asia Minor. Type material of the following taxa was revised: *Quedius abkazicus* COIFFAIT, 1963; *Q. distincticolor* GRIDELLI, 1924; *Q. grouziacus* COIFFAIT, 1969; *Q. grouziacus* var. *borjoniensis* COIFFAIT, 1969; *Q. grouziacus* var. *rizensis* COIFFAIT, 1977; *Q. ledouxi* COIFFAIT, 1977; *Q. limbatus erdcyasicus* KORGE, 1971; *Q. limbatus ponticus* KORGE, 1964; *Q. minor* HOCHHUTH, 1849; *Q. obscuriceps* COIFFAIT, 1967; *Q. omissus* COIFFAT, 1977; *Q. plagifer* EPPELSHEIM, 1889; *Q. potockajae* COIFFAIT, 1967; *Q. rubripennis* BERNHAUER, 1901; *Q. suramensis* EPPELSHEIM, 1880; *Q. umbripennis* GRIDELLI, 1924. A lectotype is designated for *Q. distincticolor*. The previously accepted synonymy, *Q. vulneratus* GEMMINGER & HAROLD, 1868 (senior synonym) = *Q. plagifer* (junior synonym) is confirmed. The following nine new synonymies are established (senior synonym listed first): *Q. minor* = *Q. distincticolor*; *Q. puncticollis* THOMSON, 1867 = *Q. rubripennis*; *Q. suramensis* = *Q. grouziacus*; *Q. umbrinus* ERICHSON, 1839 = *Q. umbripennis*; *Q. vulneratus* = *Q. abkazicus*; *Q. suturalis* KIESENWETTER, 1845 = *Q. obscuriceps*; *Q. limbatus* HEER, 1834 = *Q. limbatus ponticus* = *Q. limbatus erdcyasicus* = *Q. potockajae* = *Q. ledouxi*. The problem of the proper subgeneric placement of *Q. suramensis* and allied species of the *Q. lateralis* species group is discussed.

Key words: Coleoptera, Staphylinidae, Staphylininae, Quediina, *Quedius*, *Distichalius*, *Microsaurus*, *Raphirus*, type revision, lectotype designation, new synonyms, variability, distribution, bionomics.

Introduction

The *Quedius* fauna of the West Palaearctic region is very rich and, according to the latest summary (COIFFAIT 1978) includes more than 250 species. Compared to data from other parts of the world, it is the best documented fauna. However, our current knowledge of Western Palaearctic *Quedius* mainly consists of a significant amount of scattered descriptive work by various authors (displaying different, often outdated, systematic approaches), thus pending a thorough revision. COIFFAIT's (1978) recent publication on the subject, although being an important and helpful compilation, is not a taxonomic revision and leaves a lot of problems unsolved.

This paper deals with a few species of *Quedius* distributed in the mountains of the Caucasus and northern and eastern Turkey, the neighboring and faunistically related mountain areas of the Western Palaearctic. This montane fauna is rather peculiar but poorly sampled and known very fragmentarily. The identity of the respective species is largely confused or ambiguous. Some of the species treated here, namely *Q. minor* HOCHHUTH (*Distichalius*), *Q. suramensis* EPPELSHEIM (*Microsaurus*); *Q. vulneratus* GEMMINGER & HAROLD and *Q. omissus* COIFFAIT (*Raphirus),* are more or less endemic to this region and were hitherto either poorly known, or misidentified. The others, *Q. puncticollis* THOMSON (*Microsaurus*), *Q. umbrinus* ERICHSON, *Q. suturalis* KIESEN-

WETTER, *Q. limbatus* HEER (*Raphirus*), are generally widely distributed taxa whose identity, distribution and bionomics in the Caucasus and Asia Minor were unknown or misinterpreted. For all these taxa there already exist more or less recent diagnoses and illustrations of the aedeagi in a variety of papers. Also, they are keyed and reviewed in COIFFAIT (1978). Although it is clear that these hitherto published treatments do not meet the requirements of modern taxonomic standards, it is not intended in this paper to provide new, more detailed and precise diagnoses and illustrations. Instead, the reader is referred to the published diagnoses and illustrations because they are satisfactory for identification once the associated taxonomic confusion is revealed. The aim of this contribution is to eliminate such confusions and misidentifications, which largely discard even recently published data. In addition to the types, material available from various museums and the author's private collection is examined. This provides a better idea about identity, distributions and bionomics of the treated species. Also, where possible, their intraspecific variability is discussed.

Revisions of particular natural groups of *Quedius* are indeed better opportunities for providing renewed diagnoses and illustrations. But, in a big group like *Quedius*, with such a complicated taxonomy for the Palaearctic representatives, technical papers like this one seem to be unavoidable transitive steps towards more comprehensive studies. Although this paper basically deals with the species-level taxonomy of *Quedius,* in case of *Q. suramensis*, some problems of the subgeneric classification have to be exposed for discussion.

Material and methods

This paper is based on the examination of material from the following institutional and private collections:

FMNH	Field Museum of Natural History, Chicago (A.F. Newton, P.P. Parrillo)
HMNH	Hungarian Museum of Natural History, Budapest (O. Merkl)
IRSN	Institut royal des Sciences naturelles de Belgique, Bruxelles (D. Drugmand)
IZE	Institute of Zoology, Armenian Academy of Sciences, Erevan (M. Kalashyan)
IZK	Institute of Zoology, Ukrainian Academy of Sciences, Kiev (A.A. Petrenko)
MHNG	Muséum d'Histoire naturelle, Geneva (G. Cuccodoro)
MNHN	Muséum national d'Histoire naturelle, Paris (N. Berti)
MNHUB	Museum für Naturkunde der Humboldt-Universität, Berlin (M. Uhlig)
NMW	Naturhistorisches Museum Wien (H. Schillhammer)
NNMU	Natsional'ny Nauchno-prirodovedcheskiy Musey NAN Ukrainy, Kiev (V.V. Manilo)
SNM	Slovenské Národné Múseum, Bratislava (V. Janský)
ZIN	Zoological Institute, Russian Academy of Sciences, St.Petersburg
ZMMU	Zoological Museum of the Moscow State University (N.B. Nikitsky)
cGus	Private collection of V.I. Gusarov (St. Petersburg)
cKh	Private collection of E.A. Khachikov (Rostov-na-Donu)
cKor	Private collection of H. Korge (Berlin)
cKr	Private collection of P. Krásenský (Chomutov, Czech Republic)
cSch	Private collection of M. Schülke (Berlin)
cIgS	Private collection of I. Solodovnikov (Vitebsk, Belarus)
cŠtr	Private collection of P. Štourač (Praha)
cSol	Private collection of the author (St. Petersburg)

All localities from the patria labels of historical collectors were converted to their modern equivalents. Only two of these localities could not be exactly identified. For "Kaukas Leder Alexanderhilf" it is only known that "Alexanderhilf" belonged to Georgia. The locality "Kaukas Leder, Ach Bulach" could not be identified at all. Based on the reasons described in SOLODOVNIKOV (2001), "Circassien" [Circassia] of Leder's patria labels is considered here as the southern slopes of the Main Caucasian Range between Tuapse and Sochi in Krasnodar Territory of Russia.

Subgenus *Distichalius* CASEY, 1915 sensu SMETANA (1971)

Quedius minor HOCHHUTH, 1849

Quedius impressus var. *minor* HOCHHUTH, 1849: 151.
Quedius minor: KORGE 1964: 117; 1971: 47; COIFFAIT 1978: 188; SOLODOVNIKOV 1998: 342.
Quedius punctatellus a. *rufipennis* ROUBAL, 1911: 9 (nom.praeocc., nec Mäklin, 1853), unavailable name.
Quedius punctatellus a. *distincticolor* ROUBAL, 1914: 91 (nom.n. pro *Q. punctatellus* a. *rufipennis*), unavailable name.
Quedius roubali BERNHAUER & SCHUBERT, 1916: 432 (nom.n. pro *Q. punctatellus* a. *rufipennis*), unjustified renaming.
Quedius distincticolor GRIDELLI, 1924: 76, **syn.n.**

Quedius minor was described based on material from Tiflis [now Tbilisi, Georgia] (HOCHHUTH 1849). Later (e.g. BERNHAUER & SCHUBERT 1916; and others), *Q. minor* was considered a synonym of *Q. punctatellus* (HEER, 1839) for a long time. GRIDELLI (1924) thought that the widely accepted records of *Q. punctatellus* for the Caucasus actually refer to a different species which is very similar to *Q. punctatellus*. Gridelli assigned the name "*distincticolor* ROUBAL" to this species (nom.n. for "*rufipennis*", an aberration of *Q. punctatellus* with pale elytra (ROUBAL 1914)). KORGE (1964), although not having seen the respective type material of Hochhuth, used the name *Q. minor* HOCHHUTH for this "*punctatellus*-like" species from the Caucasus and northeastern Turkey, and provided a satisfactory diagnosis with illustrations of the aedeagus. Korge, following ROUBAL (1914) and GRIDELLI (1924), used the name "*distincticolor*" (as "*Q. minor distincticolor* ROUB.) for the form of *Q. minor* with pale elytra. Based on Article 45.6.2. of the International Code of Zoological Nomenclature (1999), the name "*distincticolor*" should be attributed to Gridelli, who first used it as a valid species-group name (GRIDELLI 1924). Examination of the type and non-type material of *Q. minor* and *Q. distincticolor* GRIDELLI provides evidence for the new synonymy: *Q. minor* HOCHHUTH = *Q. distincticolor* GRIDELLI.

TYPE MATERIAL EXAMINED: *Quedius minor:* **syntype** ♂: "Q. impressus Pz. var minor Cauc: Kindernd [in Hochhuth's handwritting] [**Georgia** (?)]" (NNMU).

Quedius distincticolor: **lectotype** ♂ (here designated): "Caucasus occ., Krasnaya Polyana [in Russian] Roubal VII.1910 / Aibga [underside, in Russian] / Typus / a. rufipennis mihi / [orange square] / distincticolor Roubal det. / Lectotypus Quedius distincticolor Gridelli, A. Solodovnikov des. 1999 [red label] / Quedius minor Hochh. A. Solodovnikov det. 2000" (SNM). - **Paralectotypes**: 1 ♂: same data as in lectotype, but "distincticolor Roub. Type / mihi type / distincticolor Roubal det. / Paralectotypus Quedius distincticolor Gridelli, A. Solodovnikov des. 1999 / Quedius minor HOCHH. A. Solodovnikov det. 2000"; 1 ♀: same data as in lectotype, but "distincticolor Roubal det. / mihi type / [orange square] / Paralectotypus Quedius distincticolor Gridelli, A. Solodovnikov des. 1999 / Quedius minor HOCHH. A. Solodovnikov det. 2000 [**Krasnodar Territory, Russia**]" (all in SNM).

ADDITIONAL MATERIAL EXAMINED:

Russia: ***Krasnodar Territory***: 1 ♂: 1 km S of village Ubinskaya, in forest litter, 11.IX.1992, leg. M. Savitsky (cSol); 2 ♀♀: Mt. Aibga near village Krasnaya Polyana, 800 m, beech forest, 19. - 24.VI.1999, leg. I. Solodovnikov (cIgS); 1 ♂: Krasnaya Polyana, leg. Roubal VII.1910 (FMNH); 1 ♀: Caucasian Nature Preserve, Mt. Bambak, 2000 m, alpine zone, near snowfield, 10.VIII.1993, leg. I. Solodovnikov (cIgS); 9 ♂♂, 2 ♀♀: Mt. Khuko, 8.VIII.1962, leg. V. Kurnakov (IRSN); 4 ♀♀: Mt. Bolshaya Chura, 8.VII.1962, leg. V. Kurnakov (IRSN); ***Republic of Adygeja***: 1 ♀: Chelepsy, 31.VIII. - 2.IX.1894, leg. Prikhodko (ZIN); 1 ♀: Psebai, 28.V.1911, leg. Volnukhin (ZIN); 1 ♀: Lagonaki plateau, 30.VII.1990, leg. V. Grebennikov (cKh); 2 ♂♂, 3 ♀♀: same locality, but 20.VII.1991, 10.VIII.1992 and 28.VI.1996, leg. Khachikov (cKh); 1 ♀: village Nikel', 15.VI.1979, leg. G. Lunina (cKh); 1 ♂, 6 ♀♀: Caucasian Nature Preserve, Mt. Fisht, N slope, 1800 m, 7.VII.1999, leg. Putchkov (cKr); 1 ♂, 1 ♀: same locality, but VII.1998, leg. Kopecký & Švarc (cKr); 2 ♀♀: same locality, but 1800 m, 11.VIII.1992, timber line and alpine zone, leg. I. Solodovnikov (cIgS); 1 ♀: pass Cherkessky near Mt. Fisht, 1800 m, in forest litter, 18.VIII.1992, leg. I. Solodovnikov (cIgS); 1 ♀: Caucasian Nature Preserve, Mt. Oshten, E slope, 1800 m, 5.VII.1999, leg. Putchkov (cIgS); 2 ♀♀: environs of Mt. Tybga, 2300 m, 27. - 28.VI.1999, leg. Putchkov (cIgS); 2 ♀♀: Mt. Abago, 2100 m, 29. - 30.VI.1999, leg. Putchkov (cSch); 4 ♀♀: Mt. Abago, 19.VI.59, leg. V.N. Kurnakov (IRSN); ***Karachaevo-Cherkessia:*** 1 ♀: Klukhorsky pass. 9.X.1909 (ZIN); 1 ♂: upper course of river Bolshoy Zelenchuk, river Sofia, 16.VI.1992, leg.V. Grebennikov (cKh); ***Stavropol Territory:*** 1 ♂: Teberda, VI.912 leg. Roubal (SNM); 1 ♂, 1 ♀:

Central Caucasus Klukhor (ZMMU); 4 ♀♀: same locality, 1912, leg. Roubal (SNM); ***Kabardino-Balkaria***: 1 ♂: source of river Cherek Balkarsky, near pass Gezevtseg, 2500 m, alpine zone, under stones, 28.V.1996, leg. A. Solodovnikov (cSol); ***North Osetia***: 1 ♂: Skalysty range, Mt. Khumarapkhokha, 20.VII.1997, leg. D. Kasatkin (cKh); 1 ♂, 1 ♀: Kazbegi, Orzveri glacier 2500 - 3600 m, 1. - 8.VII.1988, leg. Wrase (cSch, cSol); **Georgia**: 1 ♂: Ritza national park, near Avadkhara, 1600 m, 4.VII.1978, leg. L.V. Vasil'ev (IZK); 1 ♀: Abkhazia, river Resheva near Pskhu, 1.VIII.1995, leg. Yu. Arzanov (cKh); 1 ♂: Abkhazia, Avadkhara, 2000 - 2800 m, 8. - 13.VII.1982, leg. Wrase, Schülke (cSch); 2 ♀♀: same locality, but 2000 - 2700 m, 26.VII. - 3.VIII.1985, leg. D. Wrase (cSch); 1 ♂: same locality, but 2500 m, lake Msi, 30.VII.1985, leg. D. Wrase (cSch); 1 ♀: Central Caucasus, Kazbek, leg. A. Zolotarev (ZMMU); 2 ♂♂: "Kaukas Leder ostl. vom Kasbek 7 - 11.000' " (NMW); 1 ♂, 1 ♀: Svanetia, Mestia, forest, 1700 m, 2. - 4.VII.1968 (MNHN); **Azerbaijan**: 1 ♂, 1 ♀: "Kaukas, Leder, Helendorf [now Khanlar]" (NMW); 1 ♂: "Lenkor. [Lenkoran] Gotsch." (NNMU); **Turkey:** 2 ♀♀: Çifteköpru Hopa 6/77 1000 m leg. F. Schubert (NMW); 3 ♂♂, 13 ♀♀: Borčka, 500 - 700 m, leg. F. Schubert, 1. - 3.VI.1960; 18. - 27.VI.1971 and VII.1971 (NMW); 2 ♂♂, 1 ♀: Kurtul/Ardanuc, 1800 m, 17.VII.1978, leg. F. Schubert (NMW); 1 ♀: Ünye, VIII.1971, leg. Schubert (NMW); 1 ♀: Akkus, VIII.1971, leg. F. Schubert (NMW); 7 ♂♂, 4 ♀♀: Çangal Dağ, leg. F. Schubert, VI.1959 and 7. - 15.VI.1960 (NMW); 1 ♀: same locality, but leg. M. Yaman; 1 ♂, Çangal/Ayançik, V.1962, leg. F. Schubert (NMW); 5 ♂♂, 8 ♀♀: Ayançik, leg. Schubert, VI.1966, 6. - 12.VII.1973 (NMW); 2 ♂♂, Bolu, leg. F. Schubert (NMW); 2 ♂♂: Ulu Dağ, Bursa, 2.VI.1957, leg. F. Schubert (NMW); 2 ♂♂: Lazistan Range, E of Salmankash Geçidi, Erikli-Çai 1800 - 2200 m, 11.VI.1996 leg. I. Belousov & G. Davidyan (cGus); 2 ♀♀: Kalkanli Dağlari, NW slopes, 8 km NE of Zigana pass 1700 - 1800 m, coniferous forest near timber line, 7. - 9.VI.1998, leg. A. Solodovnikov (cSol); 2 ♂♂, 3 ♀♀: same locality, but 15 km SE of Zigana pass 2300 - 2500 m, alpine zone 10.VI.1998, leg. A. Solodovnikov (ZIN, cSol).

VARIABILITY: Coloration (darker to paler) and total size of the body (6.0 – 7.5 mm) are rather variable in *Q. minor*. Coloration of elytra is most variable: from specimens having dark elytra with pale humeral spots and pale stripes along suture and apical margin, through specimens with well-marked pale humeral and indistinct sutural and apical stripes, to ones with completely dark elytra. Some beetles (those which are usually generally paler) have pale-brown elytra, which are paler than the rest of the body. The variability of the elytral coloration neither corresponds with the variability of the aedeagus shape or any other characters, nor demonstrates any geographic pattern. Specimens with obviously pale elytra are more or less teneral.

The shape of the aedeagus is also variable: paramere varying in width and especially in relative length (longer to shorter than median lobe); sensory peg setae on the underside of the paramere vary in number (around 20-30) and arrangement (situated denser to sparser in the longitudinal rows); distance between ventral dent and apex of median lobe is somewhat variable too. The mentioned variability of the aedeagus has no geographic pattern either.

DISTRIBUTION: Based on reliable records in GRIDELLI (1924) and KORGE (1964, 1971), as well as on the material here examined, *Q. minor* is known from the western and central Caucasus (abundant material), from eastern Transcaucasia (few male and female specimens from "Lenkoran" and "Helenendorf" collected in the XIXth century), and from northern Turkey.

BIONOMICS: *Quedius minor* is obviously a montane species, most abundant at higher elevations (1600 - 3000 m) from the upper forest zone to subalpine and alpine meadows. In the western Caucasus it is recorded also from lower elevations (down to 300 - 400 m). In the forest, *Q. minor* is common in leaf litter. In the open, alpine and subalpine landscape, it inhabits wet debris at the edges of snowfields, often under stones.

Comments

Syntypes of *Q. impressus* var. *minor*: In the original description, Hochhuth mentioned four syntypes collected near Tiflis by B. Gotsch. In the collection of Hochhuth, which I examined on site in Kiev, only two specimens of *Q. minor* have been found (for details see "Type material examined" section). One of them bears Hochhuth's identification label with the addition "Cauc: Kindernd." Although, the meaning of "Kindernd." is not clear, this specimen is here considered

as a syntype. The second specimen, labelled as "Lenkor. Gotsch." is without Hochhuth's identification label. It cannot be considered as a syntype because it disagrees with the type locality indicated in the original description. Since other syntypes may be found, which could match the type locality better, a lectotype designation is currently refrained from.

***Quedius distincticolor*: lectotype designation and taxonomic status**: *Quedius distincticolor* GRIDELLI was originally described by ROUBAL (1911) under the preoccupied (nec MÄKLIN 1853) name *rufipennis* as an aberration (of *Q. punctatellus*) with paler elytra. In that description only the type locality is indicated - mount Aibga [near village Krasnaya Polyana, Krasnodar Territory, Russia], but nothing is said about the type series. There are four specimens marked by Roubal as types of *Q. distincticolor* ROUBAL (nom.n. pro *Q. punctatellus* a. *rufipennis* ROUBAL) in his collection. Of them, only three specimens from the type locality and with the respective identification labels by Roubal are considered here to be syntypes. The fourth specimen of *Q. punctatellus* a. *distincticolor* with Roubal's label "mihi type" and the respective orange marking label, is in fact not a type. This specimen was collected near Teberda [Karachaevo-Cherkessia, Russia] in 1912, i.e. far from the type locality and a year after the description of *Q. distincticolor*. To fix the identity of *Q. distincticolor*, a male syntype with the somewhat paler elytra and with the word "Aibga" [in Russian] on the underside of the patria label, is designated as a lectotype.

As explained above in the "Variability" section, the coloration of the elytra is rather variable in *Q. minor*. Since *Q. distincticolor* falls within this range of variability, it is placed in synonymy with *Q. minor*.

Subgenus *Microsaurus* STEPHENS, 1835 sensu SMETANA (1971)

Quedius puncticollis THOMSON, 1867

Quedius puncticollis THOMSON, 1867: 43; BERNHAUER & SCHUBERT 1916: 432; LOHSE 1964: 210; COIFFAIT 1978: 162; BOLOV 1969: 514; HERMAN 2001: 3249.
Quedius rubripennis BERNHAUER, 1901: 652; GRIDELLI 1924: 72; COIFFAIT 1978: 30 (footnote), **syn.n.**

Quedius puncticollis is a nidicolous species widely distributed in Europe (HORION 1965; COIFFAIT 1978). The material, here examined, provides the first modern records of this species from the Caucasus, where it also leads a nidicolous mode of life. An earlier record of *Q. punctatellus* from Kabardino-Balkaria in the Caucasus (BOLOV 1969) needs revision.

TYPE MATERIAL EXAMINED: *Quedius rubripennis*: **holotype** ♂: "Kau [Kaukas] / rubripennis Brnh. Type [yellow label, in Bernhauer's handwritting] / Da... [illegible] Kopfpunkt steht dem gr. viel näher als. b. puncticollis [in Bernhauer's handwriting] / Chicago NHMus M. Bernhauer collection / Holotypus Quedius rubripennis Bernh., male, V.I. Gusarov rev. 1999 [red label] / Q. puncticollis Thoms. V.I. Gusarov det. 1999 / Q. puncticollis Thoms. A. Solodovnikov det. 2000" (FMNH).

ADDITIONAL MATERIAL EXAMINED:

Russia: ***Karachaevo-Cherkessia***: 2 ♂♂: Khasaut, in the nid of suslik (gopher), 1.VII.1974, leg. Reytblat (ZIN); 5 ♂♂, 15 ♀♀: same data, but 1.IX.1975 (ZIN).

COMMENTS: GRIDELLI (1924) and COIFFAIT (1978) treated *Q. rubripennis* as a valid species apparently because none of them had examined its holotype. The holotype of *Q. rubripennis* is conspecific with *Q. puncticollis* (sensu BERNHAUER & SCHUBERT 1916; LOHSE 1964; COIFFAIT 1978; HERMAN 2001 and other authors). Thus, the following synonymy is established: *Q. puncticollis* THOMSON, 1867 = *Q. rubripennis* BERNHAUER, 1901.

Quedius suramensis EPPELSHEIM, 1880

Quedius transcaucasicus var. *suramensis* EPPELSHEIM, 1880: 580.
Quedius vicinus: GRIDELLI 1924: 34; 1938: 12; KORGE 1964: 117; 1971: 43; 1971a: 10 (and footnote); BORDONI 1976: 236 (misidentification, nec MÉNÉTRIÉS, 1832).
Quedius grouziacus COIFFAIT, 1969: 45; 1978: 207, **syn.n.**
Quedius grouziacus var. *borjoniensis* COIFFAIT, 1969: 46; 1978: 207, unavailable name.
Quedius grouziacus var. *rizensis* COIFFAIT, 1977: 136; 1978: 207, unavailable name.
Quedius vicinus a. *maculatus* KORGE, 1971: 44, unavailable name.
Quedius suramensis: GUSAROV 1992: 73; SOLODOVNIKOV 1998: 343.

As a result of the misidentification by HOCHHUTH (1849), *Quedius suramensis*, a large and common Caucasian species, has been misinterpreted as *Q. vicinus* for a long time (e.g. BERNHAUER & SCHUBERT 1916; GRIDELLI 1924, 1938; KORGE 1964, 1971, 1971a; COIFFAIT 1977, 1978). This mistake was recently revealed by GUSAROV (1992), who revised the respective type material and clarified the identity of both *Q. suramensis* and *Q. vicinus*. Further examination of some type and rich non-type material of *Q. suramensis* added a new synonym, as well as new distributional and bionomic data for this species.

TYPE MATERIAL EXAMINED: *Quedius grouziacus*: **holotype** ♂: "Georgia, Lagodekhi preserve, 13.VI.67 [in Russian] / holotype / Q. (Sauridus) grouziacus Coiff. H. Coiffait det. 1968" (MNHN).

Q. grouziacus var. *borjoniensis*: **holotype** ♂: "Georgia, Borzhomi, Akhaldaba, 4.VI.67 [in Russian] / holotype / Q. grouziacus v. borjoniensis Coiff. H. Coiffait, 1968 [**Georgia**]" (MNHN).

Q. grouziacus var. *rizensis*: **holotype** ♂: "Çat...[illegible] Rize 7.VIII.70 / Turqui G.Pim...[illegible] / type [**Turkey**]" (MNHN).

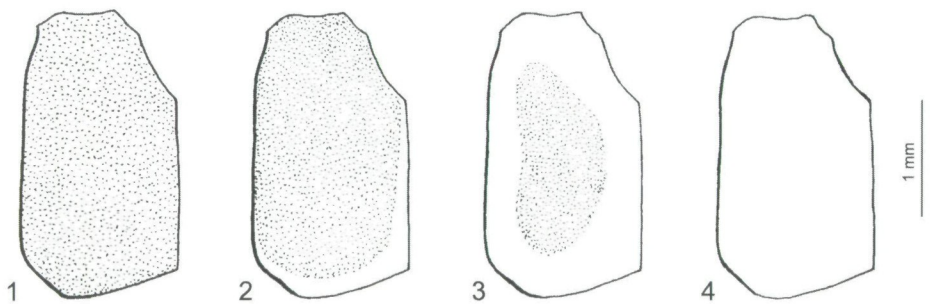
ADDITIONAL MATERIAL EXAMINED:

Russia: ***Krasnodar Territory***: 3 ♂♂, 1 ♀: "Caucas occ. Circassien. Leder Reitter" (NMW); 1 ♂: same data (IRSN); 1 ♂: Mt. Achishkho leg. Stark (NMW); 1 ♀: Mt. Aibga (FMNH); 1 ♂: "Circassia, Sotcha [Sochi]" (FMNH); 2 ♀♀: valley of river Malaya Laba near village Nikitino, 1600 m, shingle bank of a stream, 8.VIII.1997, leg. I. Solodovnikov (cIgS); 1 ♂, 1 ♀: distr. of Mostovskoy, Malye Bambaki range, 1600 m, beech forest, 4. - 22.VIII.1997, leg. I. Solodovnikov (cIgS); 2 ♂♂, 1 ♀: Sochi, upper course of river Agura, beech-hornbeam forest, 5.VII.1992, 15. - 27.VI.1999, leg. I. Solodovnikov (cIgS); 10 ♂♂, 10 ♀♀: valley of river Malaya Laba, 1200 - 1400, beech and ferns, 11. - 15.VIII.1997, leg. I. Solodovnikov (cIgS); 1 ♀: Mt. Aibga near village Krasnaya Polyana, 1100 m, beech and fir forest, 18. - 24.VI.1999, leg. I. Solodovnikov (cIgS); 1 ♂: valley of river Malaya Laba, village Umpyr', 14.VI.1992, leg. V. Grebennikov (cKh); 1 ♂: same locality, but 15.VII. - 15.VIII.1992, pitfall traps, leg. A. Solodovnikov (cSol); 1 ♂, 3 ♀♀: valley of river Achipsta near pass Alous, 1500 m, forest zone, pitfall traps 10.VII. - 13.VIII.1992, leg. V. Shchurov, A. Solodovnikov (cSol); 3 ♂♂: slopes of Mt. Yatyrgvarta, 2000 - 2500 m, alpine zone, pitfall traps 15.VII. - 15.VIII.1992, leg. V. Shchurov, A. Solodovnikov (cSol); 1 ♂, 1 ♀, village Mezmay, VII.1990, leg. Shokhin (cSol); 1 ♂: same locality, but VI.1991, leg. E. Khachikov (cKh); 1 ♀: same locality, but VII.1998, leg. Kopecký, Švarc (cKr); 2 ♂♂: Mt. Khuko NW of Sochi, 1500 m, 24.VI.1994, in forest litter, leg. A. Solodovnikov (cSol); 1 ♂: valley of river Shakhe between Solokh-Aul and Babuk-Aul, 500 - 1000 m, forest zone, in litter, 22-23.VI.1994, leg. A. Solodovnikov (cSol); 31 ♂♂, 17 ♀♀: S slopes of Mt. Chugush, 1300 m, forest zone, pitfall traps 21.VII - 10.VIII.1994, leg. A. Solodovnikov (cSol); 1 ♀: Krasnaya Polyana, 19.VII.1907, leg. Kirichenko (ZIN); 1 ♀: Krasnaya Polyana, Achishkho, 1800 m, 3.VI.1983, leg. O. Odvárka (cSch); 1 ♀: Krasnaya Polyana, 14.VI.1974, leg. Mir. Dvořák (cSch); 1 ♂, 1 ♀: same locality, but 6.VI.1978, leg. V. Brovdy (IZK); 6 ♂♂: same data, but leg. P. Vasil'ev (IZK); 4 ♀♀: Krasnaya Polyana VII. 1910 leg. Roubal (SNM); 1 ♂, 1 ♀: 12 km E of village Krasnaya Polyana, 1600 - 1700 m, 1.VIII.1994, in forest litter, leg. A. Solodovnikov (cSol); 1 ♂, 3 ♀♀: 10 km E of Krasnaya Polyana, 700 m, forest, pitfall traps 30.VII – 16.VIII.1994, leg. A. Solodovnikov (cSol); 1 ♀: southern slopes of Mt. Achishkho, 12.VIII.1909 (cSol); 1 ♂: Krasnaya Polyana, Mt. Aibga, 15.VI.1990, leg. Bogdan (cKh); ***Republic of Adygeja***: 2 ♂♂, 4 ♀♀: Mt. Abago, leg. Stark (NMW); 1 ♂, 1 ♀: Belaya river, 420 m, 15.VII.1998, leg. Kopecký, Švarc (cKr); 1 ♂: 10 - 20 km SW of village Dakhovskaya, 1000 - 1900 m, 6.VII.1993, leg. V. Savitsky (cSol); 2 ♂♂, 1 ♀: Lagonaki plateau, 20.VII.1992, leg. E. Khachikov; 2 ♀♀: same data, but VI.1990, leg. V. Grebennikov (cKh); 1 ♀: village Nikel', 13.VI.1973, leg. G. Lunina (cKh); 2 ♂♂: same data, but 22.IV.1970, leg. Khachikov (cKh); 4 ♂♂: near village Novoprokhladnoe, S of Maykop, 1000 m, forest, 2.VI.1994, leg. A. Solodovnikov (cSol); 1 ♀: 10 km SW of village Dakhovskaya, 600 m, 26.VIII.1994, in

forest litter, leg. A. Solodovnikov (cSol); 1 ♂: 10 - 20 km SW of village Dakhovskaya, 1000 - 1900 m, 6.VII.1993, leg. V. Savitsky (cSol); 4 ♂♂: Lagonaki plateau, Azish-Tau range, 1500 m, 27.VIII.1994, in forest litter, leg. A. Solodovnikov (cSol); 2 ♂♂: "valley of river Kishi, Maykop distr., 3.V.1911, leg. Volnukhin" (ZIN); 1 ♀: same locality, but 26 - 29.IV.1911, leg. Volnukhin (ZIN); 3 ♀♀: Guzeripl', Mt. Abago, 21.VII.1963, leg. Kurnakov (ZIN); 1 ♂: same locality, but 24.IX.1997, leg. A. Narkevich (cKh); 2 ♀♀: environs of Guzeripl', 700 m, 23.VI.1999, leg. Putchkov (cSch); 4 ♂♂, 2 ♀♀: Guzeripl, 16.VI.1963 (MNHN); 5 ♂♂: Psebai, 27-30.V.1911, leg. Volnukhin (ZIN); **Karachaevo-Cherkessia:** 6 ♂♂, 13 ♀♀: Mt. Turya, 1800 m, beech forest, 11. - 15.VIII.1997, leg. I. Solodovnikov (cIgS); 2 ♂♂: valley of river Bol'shaya Laba 12 km upper village Pkhia, 8. - 13.VIII.1996, leg. E. Khachikov (cKh); 1 ♂: same locality, but 1500 m, 31.VIII.1992, leg. V.Savitsky (cSol); 1 ♂: Arkasara range, 20. - 27.VI.1997, leg. A. Narkevich (cKh); 1 ♂: village Arkhyz, 29.IX.1989, leg. V. Grebennikov (cKh); 7 ♂♂: confluence of Bol'shaya Laba and Zakan rivers, 1200 m, 10.V.1991, leg. Puzyk (cKh); **Georgia**: 1 ♀: Bzybsky range, 19.IV.1959, leg. Kurnakov (IRSN); 1 ♂: Georgia, Mt. Lamismta, 17.VI.1957, leg. V. Kurnakov (IRSN); 1 ♀: Swanetia, river Nakra, 6.VIII.1956, V. Kurnakov (IRSN); 1 ♂: Swanetia, Mestia, 16.VII.1948, leg. V. Kurnakov (IRSN); 1 ♀: "Caucas. occid. Psecocho Stark" (NMW); 2 ♂♂: "Caucasus, Meskisch. Gb. Leder. Reitter" (NMW); 1 ♂: "Caucas, Suram. gebirg. Leder" (NMW); 3 ♂♂, 2 ♀♀: "Kaukas, Leder, Suram Geb." [incorrectly labeled as syntypes by curators] (IRSN); 1 ♀: "Caucasus, Tbatani 79 Leder" (Reitter) (NMW); 1 ♂, 1 ♀: "Caucasus, Meskisch. Gb. Leder. Reitter" (FMNH); 1 ♀: Central Caucasus, Borzhomy leg. N. Branskyi (FMNH); 1 ♂: same locality, but leg. Werner (FMNH); 1 ♀: "Caucasus, Tbatani, Leder (Reitter)" (FMNH); 1 ♂: "Sukhumi distr., Dzen...[illegible], 2.IX.1909"; 1 ♂: Abkhazia, Gagrsky range, 1800 m, leg. A. Zolotarev (ZIN); 2 ♂♂: Abkhazia, Avadkhara, 2000 - 2800 m, 8. - 13.VII.1982, leg. Wrase, Schülke (cSch); 27 ♂♂, 5 ♀♀: same locality, but 26.VII. - 3.VIII.1985, leg. D. Wrase (MNHUB); 1 ♂: same locality, but 1500 m, 23.VI.1983, leg. O. Odvárka (cSch); 1 ♂: Abkhazia, environs of Ablukhvara, 18. - 22.VI.1986, leg. Odvárka (MNHUB); 1 ♂: river Roshava near village Pskhu, 10.VIII.1995, leg. Yu. Arzanov (cKh); 2 ♂♂: confluence of rivers Bzyb' and Gega, 5.V.1990, leg. V. Grebennikov (cKh); 5 ♂♂: lake Ritsa, 7.V.1990, leg. V. Grebennikov (cKh); 1 ♂: valley of river Aapsta near village Khabyu, 12.V.1990, leg. A. Solodovnikov (cSol); 1 ♂: valley of river Vedura near village Khaishi, 11.V.1991, leg. A. Solodovnikov (cSol); 6 ♂♂: Kakhetia, Lagodekhi, 21. - 26.X.1958, leg. Arnol'di (ZIN); 7 ♂♂: same data, but 27. - 30.IX.1968, in forest litter (ZIN); 1 ♂: same locality, but 4.XI.1896, leg. Mlokosovich (ZIN); 1 ♂: Lagodekhian preserve, 5.VI.1977, in forest litter, leg. O. Kryzhanovsky (ZIN); 3 ♂♂: Banis-Khevi, 16.V.1929, leg. Ya. Kirshenblatt (ZIN); 1 ♂, Central Caucasus Borzhomy, leg. Dr. Lgocki (IZK); 4 ♂♂, 2 ♀♀: 129 km of Batumi behind Goderdzi pass, coniferous forest, bottomland of the river, under fallen trunks, 6. - 8.VI.1977, leg. A. Petrenko (IZK); 2 ♂♂: environs of Dzhava, 25.VII.1979, leg. V. Dolin (IZK); 1 ♂: "Caucasus, Meskisch Gb. Leder. Reitter" (IZK); 1 ♂, 1 ♀: Trialetsky range, Bakuriani 1800 - 2200 m, 4. - 8.VII.1986, leg. Wrase, Schülke (cSch); 1 ♂: Trialetsky range, Borzhomi, 800 m, 18.VI.1987 leg. Wrase, Schülke (cSch); 1 ♂: same data (MNHUB); 2 ♂♂: Trialetsky range, Bakuriani 1800 - 2200 m, 15. - 20.VI.1987 leg. Wrase & Schülke (MNHUB, cSch); 2 ♂♂: Kartliysky range, Sabaduris Tre, 1800 m, 8.VI.1987, leg. Wrase, Schülke (cSch); 4 ♂♂, 1 ♀: same locality, but 25.VI.1988, leg. Wrase, Schülke (MNHUB); 1 ♀: Kartliysky range, E of Sioni, 12.VI.1988, leg. Wrase (cSch); 1 ♂: Zoti (Kutaisi) 1400 m 16.V.1985, leg. Mir. Dvořàk (cSch); **Armenia:** 1 ♂: "Semenovka, distr. Novo-Bayazet, 2.V.1929, leg. Ya. Kirshenblatt" (ZIN); "**Caucasus**": 1 ♂: Caucasus (ZIN); 1 ♂: Caucasus - 3830 (ZIN); **Turkey**: 1 ♂: Jureligöz (MNHN); 1 ♂: Gök-Dağ, leg. V. Bodemeyer (FMNH); 5 ♂♂, 8 ♀♀: Çangal Dağ, 16. - 26.V.57, VI.1959, 7. - 15.VI.1960, V.1962, leg. Schubert (NMW); 1 ♂, 1 ♀: Hopa, 6.VI.1977, 1000 m, leg. Schubert (NMW); 2 ♂♂: Bolu, leg. F. Schubert (NMW); 2 ♂♂: Ulu Dağ, Bursa, 2.VI.1957, leg. Schubert (NMW); 1 ♀: Kurtul/Ardanuc, 1800 m, 17.VII.1978, leg. Schubert (NMW); 4 ♂♂, 10 ♀♀: Borčka, 700 - 1700 m, 1. - 3.VI.1960, 18. - 27.VI.1970, leg. Schubert (NMW); 1 ♀: Akkus, VIII.1971, leg. Schubert (NMW); 5 ♂♂, 8 ♀♀: S of Ayançik, 6. - 12.VII.1973, leg. Schubert (NMW); 1 ♂: Gümüşhane, Zigana pass, 30.V.1989, leg. Schödl (NMW); 2 ♀♀: Ilgaz Dağlari, Tosya Ilgas Gecidi, Yaman Tepe, 1350 - 1700 m, 10. - 28.VI.1997, leg. Puchner (NMW); 2 ♂♂, 4 ♀♀: Trabzon, Kalkanli Dağlari NW slopes, 8 km NE of Zigana pass, 1700 - 1800 m, coniferous forest near timber line, 7. - 9.VI.1998, leg. A. Solodovnikov (cSol); 1 ♂, 1 ♀: Rize, Gül Dağı, NW slopes, valley of river Çaglayan D., 1000 m, forest zone, 27.VI.1998, leg. A. Solodovnikov (ZIN); 4 ♀♀: same data, but 28.VI.1998 (ZIN, cSol); 2 ♂♂, 13 ♀♀: Artvin, SW of Artvin, 9.VI.1986, 1500 - 1900 m, leg. Besuchet, Löbl, Burkhardt (MNHG); 3 ♂♂, 5 ♀♀: Artvin, near Pirnali, range Karkal Dağı, 1250 - 1600 m, 11.VI.1986, leg. Besuchet, Löbl, Burkhardt (MNHG); 1 ♂, 1 ♀: Kastamonu, Ilgazdağ, 17.V.1976, 1700 - 1800 m, leg. Besuchet, Löbl (MNHG); 1 ♂: 5 km N of Küre, 600 m, 18.V.1976, leg. Besuchet, Löbl (MNHG); 1 ♂: Karadere, 32 km N of Tosia, 1400 m, 19.V.1976, leg. Besuchet, Löbl (MNHG); 1 ♂: Bolu, 9 km N of Mengen, 750 m, 23.V.1976, leg. Besuchet, Löbl (MNHG); 1 ♂: Turkey, Sinop, S Bektas 23 km N of Boyabat, 1100 m, 20.V.1976, leg. Besuchet, Löbl (MNHG); 1 ♂: Abant, 1500 m, X.1969, leg. Breuning (IRSN); 1 ♂: Abant Dağ, 1400 - 1550 m, V.1967, leg. G. Fagel (IRSN).

VARIABILITY: *Quedius suramensis* is very variable, especially the coloration of the body (brown to black) and elytra (the whole range of elytral coloration can be roughly divided into four types - see Table, and Figs. 1 - 4). There is no sharp border between each of these types, intermediate specimens sometimes occur. Of the total number of examined specimens (155)[1] originating from the whole distribution range of *Q. suramensis*, most (46.4%) have pale elytra with a more or less developed dark area on the disk (Fig. 3). The other types of elytral coloration (Figs. 1, 2, 4) are more or less evenly distributed in the whole sample and in no case exceed 20.0% (see Table). In the sample presumably consisting of members of the same population and the same generation[2], specimens with pale elytra with dark markings are also predominant (41.6%), remaining to be the dominant type of coloration in each sample except from the southern Central Caucasus. Only in this sample beetles with completely pale elytra appeared to be most numerous (47.4%). The number of specimens with dark elytra and dark elytra with pale markings varies in different areas, but nowhere they dominate. The results, presented in the table and here discussed, seem to indicate that the variability of elytral coloration has no distinct spatial (geographical or altitudinal) pattern, but likely represents a case of genetic polymorphism.

A geographic pattern of the variability of the microsculpture of the forebody, as mentioned by KORGE (1971a), is not confirmed by additional material: the microsculpture of specimens from various parts of the Caucasus, as well as from various parts of northern Turkey, varies from more or less isodiametric to more or less transverse.



Figs. 1 - 4: coloration of elytra of *Q. suramensis* (comments in the Table and text).

DISTRIBUTION: According to the reliable records in GRIDELLI (1924, 1938), KORGE (1964, 1971), BORDONI (1976) and SOLODOVNIKOV (1998), as well as based on newly examined material, *Q. suramensis* is currently known from the western Caucasus, Transcaucasia and northern Turkey.

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[1] The number refers to an earlier stage of the study. Later, more specimens became available and the examination of that additional material (included in the "Material examined" section, but not incorporated in the statistics) confirmed the previously revealed pattern.

[2] This sample was taken in the North-Western Caucasus by pitfall traps during a period of about 3 weeks in a collecting site, not exceeding 100 m^2.

BIONOMICS: Based on previous observations (KORGE 1971) and new data, *Q. suramensis* is restricted to the humid mountain forests, where it occurs at a wide altitudinal range (200 - 1800 m). Mostly, *Q. suramensis* can be collected in the forest litter, but also it occurs in other decaying matters like rotten mushrooms and faeces of brown bear. During my own field work in the western Caucasus and northeastern Turkey, I have never collected *Q. suramensis* in the open montane landscapes above the timber line. LYAYSTER (1967) recorded one specimen of *Q. suramensis* (as *Q. transcaucasicus* var. *suramensis*) collected in the burrows of the rodent *Prometheomys schaposchnikovi* SATUNIN, 1901. Undoubtedly, this was an occasional finding.

Localities	**Coloration of elytra**								
	completely dark (Fig. 1)		Dark; but epipleura, often also apical and sutural margins pale (Fig. 2)		Pale; but dorsal surface more or less dark (Fig. 3)		completely pale (Fig. 4)		Total number of specimens
	number	percent	number	percent	number	percent	number	percent	
North-Western Caucasus: Chugush range	*15*	*31,2*	*6*	*12,5*	*20*	*41,6*	*7*	*14,6*	*48*
North-Western Caucasus: other localities	7	25,0	3	10,7	12	42,8	6	21,4	28
South Central Caucasus (Lagodekhi, Banis-Khevi)	1	5,3	5	26,3	4	21,0	9	47,4	19
Northern Turkey (from Bursa to the border with Georgia)	5	8,3	10	16,6	36	60,0	9	15,0	60
Total number of specimens	28	18,1	24	15,5	72	46,4	31	20,0	155

Table: Quantities of specimens of *Quedius suramensis* with various types of coloration of the elytra in various areas of its distribution; Chugush range sample taken from about 100 m^2.

Comments

Quedius grouziacus*, *Q. grouziacus* var. *borjoniensis*, *Q. grouziacus* var. *rizensis: The descriptions of *Q. grouziacus*, *Q. grouziacus* var. *borjoniensis* and *Q. grouziacus* var. *rizensis* were based mainly on their differences from the "typical" *Q. suramensis* in the coloration of the elytra. The examination of the type material of these taxa revealed that all characters (including shape of the aedeagus) fall within the intraspecific variability range of *Q. suramensis*. Although I was not able to examine specimens to which KORGE (1971) assigned the name a. *maculatus*, judging from the respective description, they are also within the variability range of *Q. suramensis*. Therefore, I consider *Q. grouziacus* to be a junior synonym of *Q. suramensis*. Whereas, according to the Article 15.2 of the International Code of Zoological Nomenclature (1999), the infrasubspecific names *borjoniensis*, *rizensis* and *maculatus* are unavailable.

Problems of subgeneric placement of *Quedius suramensis* and allied species

Traditionally, *Q. suramensis* (together with the other species of *Q. lateralis* species group) were placed in *Microsaurus* by most authors (BERNHAUER & SCHUBERT 1916; GRIDELLI 1924, 1938; COIFFAIT 1978; and others). It was KORGE (1971a), who first pointed out that *Q. suramensis* and related species actually resemble large *Sauridus* (*Raphirus* sensu SMETANA 1971). Later, an ambiguity with the subgeneric placement of the *Q. lateralis*-group was implicitly reflected in COIFFAIT (1978), where one and the same species, *Q. suramensis*, appears in both subgenera. In that paper, following the tradition, *Q. suramensis* (as *Q. vicinus*) and related species of the *Q. lateralis* species group are treated in *Microsaurus*, but the newly described *Q. grouziacus* (now a junior synonym of *Q. suramensis*) is placed in *Sauridus*. In my opinion, *Q. suramensis* (and all members of the *Q. lateralis* species group) should belong to *Sauridus* (*Raphirus* sensu SMETANA 1971). To clarify the point, a careful comparison of the most detailed existing diagnoses of the subgenera *Microsaurus*, *Sauridus* and *Raphirus* (SMETANA 1971) was made. It appears that all three subgenera differ from each other only by the relative size of eyes and tempora (smaller eyes and longer tempora in *Microsaurus*; larger eyes, shorter tempora in *Sauridus*; and largest eyes in *Raphirus*). Other distinguishing characters greatly overlap between these three taxa. SMETANA (1971), aware of this problem, merged the subgenera *Raphirus* and *Sauridus* into one subgenus *Raphirus*, stating that the relative size of the eyes alone cannot serve as a distinguishing character separating subgenera. Following this approach, however, the separate status of the subgenera *Microsaurus* and *Raphirus* becomes questionable, too. Species of the *Q. lateralis* species group, with eyes about as long as tempora, are the best indication of the weakly defined border between *Microsaurus* and *Raphirus* in current concepts. In case of *Q. suramensis* it is impossible to decide whether it has *Microsaurus*-like, or *Sauridus*-like eyes. Most likely, *Q. lateralis* and allied species are traditionally considered as *Microsaurus* based on superficial habitus characters (large size and dark coloration of the body) characteristic for many "good" *Microsaurus*. A preliminary attempt to detect additional characters to separate both subgenera was made by SMETANA (1988), who observed that all *Microsaurus* have two punctures behind the posterior frontal puncture, whereas all *Raphirus* have only one. Unlike the rest of *Microsaurus*, and as in *Raphirus*, *Q. suramensis* (and the related *Q. lateralis*, etc.) bear only one puncture behind the posterior frontal puncture. This character supports the idea that within the frame of "traditional" concepts of *Microsaurus* and *Raphirus*, *Q. suramensis* and all members of *Q. lateralis* species group, contrary to traditional views, should be placed in *Sauridus* (*Raphirus* sensu SMETANA). It is not known, whether the existing subgenera *Microsaurus* and *Raphirus* are completely artificial assemblages, or represent some poorly defined fragments of monophyletic but not yet understood lineages. At any rate, such problems, as well as a subgeneric reclassification of *Quedius* as a whole should be based on the examination of rich material on a world wide scope and should involve new characters (morphological, and possibly molecular). On the limited West Palaearctic basis, one should probably refrain from classification novelties at the generic level, as well as from formal transfers of problematic species from one ill-defined subgenus to another. Noteworthy, that *Q. lateralis* is the type species of the subgenus *Microsaurus*! Therefore, because changes in the subgeneric arrangement would result in significant and utterly confusing changes in nomenclature, *Q. suramensis* is treated here traditionally in the subgenus *Microsaurus*.

Subgenus *Raphirus* STEPHENS, 1835 sensu SMETANA (1971)

Quedius limbatus (HEER, 1839)

Heterothops limbatus HEER, 1839: 74.
Quedius limbatus: GRIDELLI 1924: 121; COIFFAIT 1978: 258; SOLODOVNIKOV 1998: 342; ASSING 1999: 38.
Quedius limbatus ponticus KORGE, 1964: 121; 1971: 54; COIFFAIT 1978: 258, **syn.n.**
Quedius limbatus erdciyasicus KORGE, 1971: 55; COIFFAIT 1978: 258, **syn.n.**
Quedius potockajae COIFFAIT, 1967: 414; 1978: 256; SOLODOVNIKOV 1998: 336, 343, **syn.n.**
Quedius ledouxi COIFFAIT, 1977: 138; 1978: 259, **syn.n.**

Based on literature data (HORION 1965; COIFFAIT 1978; KORGE 1990), *Q. limbatus* is widely distributed in Europe and also known from the Caucasus and Asia Minor. However, as pointed out by KORGE (1990), this distribution pattern might be based on misidentifications and should be revised. As regards the mountain areas of the Caucasus and Asia Minor, data on the distribution of *Q. limbatus* consisted of a few scattered records. The examination of relevant type and non-type material from these areas revealed that *Q. limbatus* is widely distributed in the Caucasus and Turkey, whereas a few species similar to *Q. limbatus* or its subspecies described from these territories occurred to be junior synonyms of the former.

TYPE MATERIAL EXAMINED: *Quedius limbatus ponticus*: **holotypus** ♂: "Anatolia bor. W. Heinz leg. / Egribel Pass, 2000 - 2400 m, 28.07.1963 / Holotypus Quedius limbatus ssp. ponticus Korge / Quedius limbatus (Heer) A. Solodovnikov det. 2000" (cKor).

Quedius limbatus erdciyasicus: **holotypus** ♂: "Erciyas-Dag 2000 m, 24.VII.1965 / Anatolia Centr. Korge & Heinz leg. / Holotypus Quedius limbatus ssp. erdciyasicus Korge / Quedius limbatus Heer A. Solodovnikov det. 2000" (cKor). - Paratypes: 2 ♂♂: same data as in holotype, but marked as paratypes [**Turkey**] (cKor).

Quedius potockajae: **holotype** ♂: "1041 Région de Maykop. Montagnes Courtines d' épicéa / Holotype / Q. (Sauridus) potockajae Coiff. H. Coiffait det. 1967" (MNHN). - **Paratypes**: 1 ♀: "IV 892 16.7.63 Région de Maykop. Montagnes Forêt de hêtre. Litière / 16.7.63 Khamishki, beech forest, in litter [label in Russian] / Allotype / Quedius potockajae Coiff. / Quedius limbatus Heer. V. Gusarov det. 1997"; 1 ♀: "N 856 10.6.63 Region de Maykop. Montagnes. Forêt de hêtres + epicéas / Paratype / Quedius potockajae Coiff. H.Coiffait det. 1966 / Quedius limbatus Heer V. Gusarov det. 1997" (ZMMU) [**Republic of Adygeja, Russia**].

Quedius ledouxi: **holotype** ♂ [aedeagus lost, see "Comments" below]: "Abalurni Guliam, 1000 m / N Iran G.M. et G.L. l. [two labels in handwritting] / Type [red label] / Quedius (Sauridus) ledouxi Coiff. [in handwritting] / Holotypus Quedius ledouxi Coiff. A. Solodovnikov rev. 2000 / Quedius limbatus Heer. A. Solodovnikov det. 2000" (MNHN). - **Paratype**: 1 ♀: "Abalurni Guliam, 1000 m / N Iran G.M. et G.L. l. [two labels in handwritting] / paratype / Quedius (Sauridus) ledouxi Coiff. [in handwritting] / Museum Paris Ex. Collection J. Jarrige 1976 / Quedius limbatus Heer. A. Solodovnikov det. 2000" [**Iran**] (MNHN).

ADDITIONAL MATERIAL EXAMINED:

Russia: ***Krasnodar Territory***: 1 ♂, 1 ♀: Krasny Les forest, 21.VI.1953, leg. K. Arnol'di (ZIN); 1 ♂, 5 ♀♀: same locality, but 3.V.1995, leg. A. Solodovnikov (cSol); 1 ♂: same data, but 22.VI.1953 (ZMMU); 1 ♂: Kaluzhskaya, 3.V.1976 (ZMMU); 1 ♀: Aderbeevka, under stones, 23.IV.1952, leg. V. Pototskaya; 1 ♀: Ubinskaya, 5.IV.1951, leg. K. Arnol'di (ZMMU); 2 ♂♂, 3 ♀♀: Krasnaya Polyana, leg. Roubal VII.1910 (SNM); 2 ♂♂, 2 ♀♀: Krasnodar, bottomland forest near Kuban river, 4.VII.1992, 30.VI.1993, leg. A. Solodovnikov (cSol); 2 ♂♂, 4 ♀♀: near village Ubinskaya, 10.X.1992, leg. M. Savitsky (cSol); 1 ♀, near village Kaluzhskaya, 11.IV. - 29.V.1992, leg. A. Solodovnikov (cSol); 1 ♀: S slopes of Pseashkha range, 1700 m, in forest litter, 1.VIII.1994, leg. A. Solodovnikov (cSol); 1 ♂: Mt. Khuko, NW of Sochi, 1500 m, in forest litter, 24.VI.1994, leg. A. Solodovnikov (cSol); ***Republic of Adygeja***: 2 ♂♂: Lagonaki plateau, 20.VII.1992, leg. E. Khachikov (cKh); 3 ♂♂, 3 ♀♀: same locality, but Azish-Tau range, 1200 - 1500 m, 27.VIII.1994, 3.VI.1995 and 13.VI.1995, in forest litter, and near forest creeks, leg. A. Solodovnikov (cSol); ***Karachaevo-Cherkessia***: 1 ♂: Teberda, 1500 m, leg. A. Zolotarev (ZMMU); 1 ♂: near Klukhorsky pass, in the moss on the spruce; 1 ♀: Teberda (ZMMU); 1 ♀: Teberda 10. - 11.VI.1967, leg. F. Hieke (MNHUB); 1 ♂, 1 ♀: Teberda (FMNH); 3 ♂♂, 2 ♀♀: same locality, but VI.1912, leg. Roubal (SNM); 1 ♂: same locality, but leg. Zolotarev (SNM); 1 ♂: same locality (cŠtr); 1 ♂: Teberda nature preserve, locality Shumka, 18.VI.1997 (cKh); 1 ♂, 1 ♀: Dombai, forest, 29.VII.1973 (MNHN); ***Stavropol Territory***: 1 ♀: Pyatigorsk, Mt.

Beshtau, VII.1993, leg. E. Khachikov (cKh); 1 ♀: same data, but Mt. Mashuk (cKh); 1 ♂, 1 ♀: 10 km SW of Kislovodsk, valley of river Alikanovka, 24.VIII.1996, leg. A. Gussakov (ZMMU); 2 ♂♂, 3 ♀♀: Kislovodsk V.1912, leg. Roubal (SNM); ***Kabardino-Balkaria***: 1 ♂: "Priel'brus'e, near Kyrtykaush [Kyrty ?k [illegible] aush] pass, 28.VI.1981, leg. E. Khachikov" (cKh); 1 ♀: 6 km S of village Babugent, Golubye Ozera, 900 m, in forest litter, 31.V.1996, leg. A. Solodovnikov (cSol); 3 ♂♂, 1 ♀: valley of Cherek Balkarsky river, 6 - 10 km above village Verkhnyaya Balkaria, 1500 m, in forest litter, 25.V.1996, leg. A. Solodovnikov (cSol); 1 ♂: source of Cherek Balkarsky river near pass Gezevtseg, 2100 m, timber line, in litter, 29.V.1996, leg. A. Solodovnikov (cSol); ***North Osetia***: 1 ♂: mountains near Vladikavkaz, 2100 m, leg. A. Zolotarev (ZMMU); ***Dagestan***: 1 ♂: "Daghestan Leder Reitter" (FMNH); 1 ♂: near Makhachkala, vill. Agychaul, 18.VII.1997, leg. E. Khachikov (cKh); 1 ♂: village Sergo-Kala, valley of Aaya-Kala, 30.VII.1997, leg. E. Khachikov (cKh); 3 ♂♂: environs of village Rutul, valley Lalaan, 22. - 26.VII.1997, leg. E. Khachikov (cKh); **Georgia:** 1 ♂: "Kaukas Leder Alexanderhilf [now?]" (FMNH); 1 ♂: Lagodekhi, Kakhetia, valley of rivers Antsalor and Lagodekhor, 17. - 19.X.1958, leg. Arnol'di (ZIN); 1 ♂: Bakuriani near Borzhomi, 3.V.1939, leg. Kozlov (ZIN); 1 ♂: urochishche [locality] Kholon, 7.VII.1997, leg. Yu. Arzanov (cKh); 1 ♂: Trialetsky range, Bakuriani 1800 - 2200 m, 3. - 7.VII.1986, leg. Wrase, Schülke (cSch); 1 ♂, 3 ♀♀: Kartliysky Range Sabaduris Tre, 1800 m, 8.VI.1987, leg. Wrase, Schülke (cSch); 5 ♂♂, 6 ♀♀: Zchneti near Tbilisi, 800 m, 1. - 10.VI.1987, leg. Wrase, Schülke (cSch); 1 ♀: same locality, but 1200 m, 5.VI.1987, leg. Wrase, Schülke (cSch); 1 ♂: Mzcheta near Tbilisi, 4. - 23.VI.1987, leg. Wrase, Schülke (cSch);1 ♀: same data, but 25.VI.1986 (cSch); 4 ♀♀: Borzomi, leg. Lgocki; 1 ♂: same locality, but leg. Werner (FMNH); 1 ♀: Tiflis Kolenati (NMW); 1 ♂: Caucasus, Swanetien Leder Reitter (NMW); 4 ♂♂, 1 ♀: "Kaukas Leder Gomereti" (NMW); 2 ♂♂, 2 ♀♀: Mzcheta near Tbilisi, 4. - 23.VI.1987, leg. Wrase, Schülke (MNHUB); 1 ♂: same data, but 800 m, 1. - 10.VI.1987 (MNHUB); 1 ♂: Kazbek, 2100 m, leg. A. Zolotarev (ZMMU); 1 ♂: same data, but 1800 m (ZMMU) ; 1 ♀: same locality, but leg. Veselý (cŠtr); **Armenia**: 1 ♂, 1 ♀: "Caucasus, Armen. Geb. Leder Reitter" (IZK); 1 ♂, 2 ♀♀: ca. 18 km E of Dilizhan, ca. 3 km below Gosh village, 40°44.26'N 45°01.09'E, ca. 1000 m, sifted from very wet leaf litter at base of slope along bank of small stream, 22.5.2001, leg. Shaverdo, Schillhammer (NMW); 1 ♂, 2 ♀♀: N of Erevan, 40°30.10'N 44°34.97'E, ca. 1850 m, "Arzakan" river, fast flowing (through oak forest), sifted from very wet leaf litter along bank of small left tributary of "Arzakan", 7.05.2001, leg. Shaverdo, Schillhammer (NMW); **Azerbaijan:** 1 ♂: "Caspi.-M.-Gebiet, Liryk [Lerik] Leder (Reitter)" (NMW); 1 ♂, 1 ♀: N Azerbaijan, river Gamzalichay, 1200 m, 17.VII.1994, leg. V. & M. Savitsky (cSol); 1 ♂, 1 ♀: Mamudly [Mamedly], 1350 m, leg. Leder (NMW); **"Caucasus":** 1 ♀: "Caucasus Leder Reitter" (NMW); **Turkey**: 2 ♂♂, 2 ♀♀: SE of Trabzon, Gümüşhane, basin of Soiran river, 1500 - 1800 m, 5. - 6.VI.1996, leg. I. Belousov, G. Davidyan (cGus); 1 ♂: Ilgazdağ, 1800 - 2000 m, 13.VIII.65, leg. Korge, Heinz (cKor); 1 ♂: Bayburt, 1600 m, 7.VIII.1964, leg. W. & U. Heinz (cKor); 1 ♂: Kastamonu, Ilgazdağ, 1700 - 1800 m, 17.V.1976, leg. Besuchet, Löbl (MHNG); 2 ♂♂: Bolu - Yeniçuğu, 24.V.1967, 1000 m, leg. Besuchet (MHNG); 1 ♂: Tunceli, Tunceli - Ovacik, 1100 m, 5.VI.1986, leg. Besuchet, Löbl, Burckhardt (MHNG); 1 ♀: Artvin, down from Pirnalli, range Karkal Dağı, 1250 m, 11.VI.1986, leg. Besuchet, Löbl, Burckhardt (MHNG); 3 ♂♂, 5 ♀♀: Gümüşhane, Erzincan - Kelkit, 2100 m, 4.VI.1986, leg. Besuchet, Löbl, Burckhardt (MHNG); 7 ♀♀: Kars, 16 km SW Göle, 1600 m, 16.VI.1986, Besuchet, Löbl, Burckhardt (MHNG).

DISTRIBUTION: According to HORION (1965) and COIFFAIT (1978), *Q. limbatus* is widely distributed in Europe, but this pattern requires revision. Based on the material here examined and on recent reliable records (KORGE 1964, 1971; SOLODOVNIKOV 1998), the species occurs through all the Caucasus to northern Iran, and in northern and central Turkey.

BIONOMICS: The bionomics of *Q. limbatus* in the considered areas is the same as in Europe (HORION 1965). In the Caucasus and in Turkey, *Q. limbatus* inhabits more or less forested landscapes in a wide range of altitudes, from the foothills to the timber line at elevations of 2000 - 2200 m. Mostly, the beetles live in forest leaf litter, in debris, etc.; they can also be collected in wet moss along forest creeks.

Comments

Quedius potockajae: Since the type material of *Q. potockajae* completely agrees with the accepted concept of *Q. limbatus* (GRIDELLI 1924; COIFFAIT 1978, ASSING 1999, etc.), the former name is synonymized with the latter.

Quedius limbatus ponticus* and *Q. limbatus erdciyasicus: Externally and in the structure of the aedeagus, both subspecies fit in the variability range of *Q. limbatus* (based on the study of large samples *of Q. limbatus* from Europe and the Caucasus). Therefore, the additional synonymies are established: Q. *limbatus* (HEER 1839) = *Q. limbatus ponticus* KORGE, 1964 = *Q. limbatus erdciyasicus* KORGE, 1971.

Quedius ledouxi: This species was described from two type specimens (male and female). Externally, and in the structure of the secondary sexual characters, the types of *Q. ledouxi* appear to be conspecific with *Q. limbatus*. Unfortunately, the aedeagus of *Q. ledouxi* could not be examined because it was lost by Coiffait during examination and never illustrated (this is mentioned in a footnote to the original description). The published verbal description of the aedeagus (COIFFAIT 1977; 1978) supports the hypothesis that *Q. ledouxi* is conspecific with *Q. limbatus*. Therefore, the latter is placed here in synonymy with the former.

Quedius omissus COIFFAIT, 1977

Quedius omissus COIFFAIT, 1977: 140; 1978: 267; SOLODOVNIKOV 1998: 343.

TYPE MATERIAL EXAMINED: **holotype** ♂: "1074, Région de Maykop, Alpage Gazon [mountains S of Maykop, alpine zone] / Holotype [red label] / Q. (Raphirus) omissus Coiff. H. Coiffait det. 1967 / Muséum Paris 1985 Coll. H. Coiffait / Quedius omissus Coiff. A. Solodovnikov det. 2000 [Republic of Adygeja, Russia]" (MNHN).

ADDITIONAL MATERIAL EXAMINED:

Russia: ***Krasnodar Territory***: 3 ♂♂, 2 ♀♀: Caucasian Nature Reserve, slopes of Mt. Yatyrgvarta, 2000 - 2500 m, pifall traps 15.VII. - 15.VIII.1992, leg. A. Solodovnikov (cSol); ***Republic of Adygeja***: 1 ♀: Mt. Bambak, 28. - 30.VIII.1894, leg. Prikhodko (ZIN); 2 ♂♂, 2 ♀: Caucasian Nature Reserve, environs of Mt. Tybga, 2300 m, 27. - 28.VI.1999, leg. Putchkov (cSch); ***Karachaevo-Cherkessia***: 1 ♂: left source of Beskes river, 2400 m, 13.VIII.1997, alpine zone, shingle-sandy bank, leg. I. Solodovnikov (cIgS); 1 ♀: near range Dzhenta, 1900 m, subalpine meadow, 11. - 15.VIII.1997, leg. I. Solodovnikov (cIgS).

DISTRIBUTION: Western Caucasus.

BIONOMICS: All specimens hitherto collected were taken at high elevations (1900 - 2500 m) above the timber line.

COMMENTS: The examination of the holotype of *Q. omissus,* and the additional material, confirm that the status, diagnosis and comparison of *Q. omissus* provided by Coiffait, as well as the identification of this species in SOLODOVNIKOV (1998) are correct.

Quedius suturalis KIESENWETTER, 1845

Quedius suturalis KIESENWETTER, 1845: 225.
Quedius humeralis anatolicus KORGE, 1964: 119.
Quedius humeralis: HORION 1965: 283.
Quedius obscuriceps COIFFAIT, 1967: 404; 1978: 241, **syn.n.**

TYPE MATERIAL EXAMINED: *Quedius obscuriceps*: **holotype** ♂: "Kaukas Leder / Q. humeralis / Quedius pseudonigriceps Reitt. Coll. Reitter / Holotype [red label] / Q. (Sauridus) obscuriceps Coiff. H. Coiffait det. 1967 / Quedius suturalis Kiesw. A. Solodovnikov det. 2000" (HNHM).

ADDITIONAL MATERIAL EXAMINED:

Russia: ***Krasnodar Territory***: 2 ♂♂, 2 ♀♀: environs of village Betta [between Gelendzhik and Dzhubga], forest, in wet debris along creek, 20. - 21.IV.1996, leg. A. Solodovnikov (cSol); 1 ♀: 25 km NE of village Lazarevskoe, 600 m, in forest litter, 30.V.1995, leg. A. Solodovnikov (cSol); 1 ♂: Sochi, vill. Izmaylovskoe, valley of river Matsesta, beech forest, in litter, 2.VIII.1992, leg. I. Solodovnikov (cIgS); 4 ♂♂, 4 ♀♀: Krasnaya Polyana, VII.1910, leg. Roubal (SNM); ***Republic of Adygeja***: 1 ♂: 10 km SW of village Dakhovskaya, 700 m, 26.VIII.1994, in wet moss of the forest creek, leg. A. Solodovnikov (cSol); 1 ♂: village Nikel', 20.VII.1987, leg. E. Khachikov (cKh); 1 ♂: village Mezmay, 15.VII.1992, leg. E. Khachikov (cKh); **Georgia**: 1 ♂, 2 ♀♀: 129 km of Batumi through the pass Goderdzi, in the moss at the shore of the creek, 9.VI.1977, leg. A. Petrenko (IZK); 1 ♂: Borzhomi, leg. Lgocki (IZK); 1 ♂, 1 ♀: same data (FMNH); 5 ♂♂, 2 ♀♀: Kartliysky range, Sabaduris Tre, 1800 m, 8.VI.1987, leg. Wrase, Schülke (cSch); 1 ♀: Zkhneti near Tbilisi, 800 m, 1. - 10.VI.1987, leg. Wrase, Schülke (cSch); 3 ♀♀: environs of Mtskheta near Tbilisi, 600 m, 23.VI.1986, leg. M. Schülke (cSch); **Armenia**: 1 ♀: ca. 18 km E of Dilizhan, ca. 3 km below Gosh village, 40°44.26'N 45°01.09'E, ca. 1000 m, sifted from very wet leaf litter at base of slope along bank of small stream, 22.V.2001, leg. Shaverdo, Schillhammer (NMW); "**Caucasus**": 1 ♀: "Kaukas Leder, Ach Bulach" (NMW); 2 ♀♀: "Kaukas Leder, Alexanderhilf" (NMW); **Turkey**: 1 ♀: "Turcia" (NMW); 6 ♂♂, 5 ♀♀: Artvin, Borçka - Hopa, 700 m, 8.VI.1986, leg. Besuchet, Löbl, Burkhardt (MHNG); 1 ♂, 3 ♀♀: Artvin, Hopa - Kemalpaşa, 30 m, 10.VI.1986, leg. Besuchet, Löbl, Burkhardt (MHNG); 2 ♂♂: Artvin, Hopa – Kemalpaşa, 5 km E of Hopa, 100 m, 10.V.1986, leg. Besuchet, Löbl, Burkhardt (MHNG); 1 ♀: Artvin, Pirnalli, range Karkal Dağı, 1600 m, 11.VI.1986, leg. Besuchet, Löbl, Burkhardt (MHNG); 5 ♂♂, 3 ♀♀: Artvin, SW of Artvin, 1900 m, 9.VI.1986, leg. Besuchet, Löbl, Burkhardt (MHNG); 2 ♀♀: Artvin, Kirklareli, Demirköy, 15.V.1976, leg. Besuchet, Löbl (MHNG).

COMMENTS: *Quedius obscuriceps* was described from a single teneral male. Based on the external characters and the structure of the aedeagus, *Q. obscuriceps* is conspecific with *Q. suturalis*. It differs from the latter by the paler coloration and the shape of the pronotum which is more converging anteriad with anterior angles more deflexed downwards. However, the body shape of *Q. obscuriceps* is certainly a result of the teneral condition of the beetle. Thus, the new synonymy *Q. suturalis* KIESENWETTER, 1845 = *Q. obscuriceps* COIFFAIT, 1967 is here established.

The status of *Q. humeralis* and *Q. humeralis anatolicus* KORGE, 1964 remains unrevised until the type material becomes available.

DISTRIBUTION: This species is recorded from Central, southern and eastern Europe, and the southern portion of northern Europe (HORION 1965). It also occurs in northern Turkey, in the western Caucasus and the southern central Caucasus.

BIONOMICS: In the Caucasus, *Q. suturalis* was collected in mountain forests at lower elevations (up to 700 m) in wet forest litter, or in other wet habitats like debris or moss at the banks of forest creeks. These habitat requirements are similar to those known for *Q. suturalis* in Europe (HORION 1965).

Quedius umbrinus ERICHSON, 1840

Quedius umbrinus ERICHSON, 1840: 491; SOLODOVNIKOV 1998: 343; ASSING 1999: 39.
Quedius dubius a. *umbripennis* ROUBAL, 1913: 111, unavailable name.
Quedius umbripennis GRIDELLI, 1924: 113; KORGE 1964: 123; COIFFAIT 1963: 383; 1978: 236, **syn.n.**
Quedius pseudoumbrinus LOHSE, 1958: 59; SOLODOVNIKOV 1998: 343; ASSING 1999: 39.

TYPE MATERIAL EXAMINED: *Quedius umbripennis*: **holotype** ♂: "Alpenureren / Montes prope Vladikavkaz 5-6000 F [1500 - 1800 m] A. Zolotarev / ab. umbripennis m. / Typ / [orange square] / umbripennis / Holotypus Quedius umbripennis Gridelli, 1924 A. Solodovnikov det. 2000 [red label] / Quedius umbrinus Er. A. Solodovnikov det. 2000 [**North Osetia, Russia**]" (SNM).

ADDITIONAL MATERIAL EXAMINED:

Russia: ***Krasnodar Territory***: 1 ♂, 1 ♀: village Mezmay, S of Maykop, VII.1991, leg. E. Khachikov (cKh); 2 ♂♂, 2 ♀♀: same data, but 19. - 25.VI.1996 (cKh); 1 ♂, 3 ♀♀: village Azovskaya, 5.VII.1971, in moist cavity on soil (ZMMU); 4 ♂♂, 9 ♀♀: Krasny Les forest, 50 km NWW of Krasnodar, in forest litter, 15.VI.1994, leg. A. Solodovnikov (cSol); 4 ♂♂, 4 ♀♀: same data, but 3. - 6.V.1995; 3 ♀♀: Krasnodar, bottomland forest near Kuban river, in forest litter, 4.VII.1992, leg. A. Solodovnikov (cSol); 1 ♂: same locality, but in pitfall traps 12. - 19.IV.1994, leg. V. Shchurov (cSol); 2 ♂♂, 1 ♀: slopes of Mt. Bol'shoy Tkhach, N of village Bagovskaya, 1000 m, in wet litter at the bank of forest creek, 3.VI.1994, leg. A. Solodovnikov (cSol); 3 ♂♂, 1 ♀: Bambaki range, Port-Artur, creek, 8.VIII.1993, leg. I. Solodovnikov (cSol); 5 ♂♂, 2 ♀♀: village Mezmay, S of Maykop, 19. - 25.VI.1996, leg. E. Khachikov (cSol); 2 ♀♀: same data, but VII.1991 (cKh); 1 ♀: Sochi, Alek range, 900 m, 17.VI.1999, leg. I. Solodovnikov (cIgS); 2 ♀♀: S slopes of Lagonaki plateau, 8 km S of Babukaul, 280 m, 10.VII.1999, leg. Putchkov (cSch); 5 ♂♂: Krasnaya Polyana, leg. Roubal VII.1910 (SNM); ***Republic of Adygeja***: 1 ♂, 2 ♀♀: 10 km SW of village Dakhovskaya, 700 m, in moss at the forest creek, 26.VIII.1994, leg. A. Solodovnikov (cSol); 4 ♂♂, 2 ♀♀: environs of village Guzeripl', bank of forest creek, 10.VI.1992, leg. A. Solodovnikov (cSol); ***Karachaevo-Cherkessia***: 3 ♂♂: Kislovodsk, V.912, leg. Roubal (SNM); 1 ♀: Teberda, VI.912, leg. Roubal (SNM); 1 ♂: Teberda 10. - 11.VI.1967, leg. F. Hieke (MNHUB); 1 ♂: Medovye Vodopady, VI.1994, leg. E. Khachikov (cKh); 1 ♂: Arkhyz, 27.VIII.1989, leg. V. Grebennikov (cKh); 3 ♂♂, 3 ♀♀: valley of river Dzhenait, forest zone, 2000 m, 21.VI.1993, leg. A. Solodovnikov (cSol); 1 ♀: Teberda (FMNH); ***Stavropol Territory***: 2 ♂♂, 1 ♀: Pyatigorsk, Mt. Beshtau, VII.1994, leg. E. Khachikov (cKh); 1 ♂: same data, but VI.1995 (cKh); 1 ♂, 6 ♀♀: same data, but VII.1995 (cKh); 1 ♂: Kislovodsk, VI.1995, leg. E. Khachikov (cKh); 1 ♂: Klukhor (ZMMU); ***Kabardino-Balkaria***: 1 ♂: village Verkhnaya Balkaria, 1500 m, forest, in moss, 20.VI.1986, leg. V. Gusarov (cGus); 7 ♂♂, 7 ♀♀: "Ps.. N.. [? illegible], bottomland forest, bank of the creek, 2.VII.1986, leg. V. Gusarov" (cGus); 1 ♂, 1 ♀: Priel'brus'e, upper course of river Malka, on the bank under stones, timber line, 15.VII.1981, leg. E. Khachikov (cKh); 1 ♂: Dolina Narzanov, 6.VII.1994, leg. I. Shokhin (cKh); 6 ♂♂, 4 ♀♀: 6 km S of village Babugent, Golubie Ozera, 900 m, in forest litter, 31.V.1996, leg. A. Solodovnikov (cSol); 1 ♀: source of Cherek Balkarsky river, pass Gezevzeg, 2100 m, *Betula*, *Pinus*, *Rhododendron*, in litter, 29.V.1996, leg. A. Solodovnikov (cSol); ***North Osetia***: 1 ♂: mountains near Vladikavkaz, 1500 m, leg. A. Zolotarev (ZMMU); **Dagestan**: 2 ♂♂: near village Rutul, 22. - 26.VII.1997, leg. E. Khachikov; 1 ♂: "Gertmv. [? illegible], 3.VIII.1998" (cKh); **Georgia**: 1 ♂: Bakuriani, 27.VII.1947, leg. Bogachev (ZIN); 1 ♂: near Kazbegi, river Terek, 1800 m, 1.VII.1988, leg. Wrase (cSch); 6 ♂♂, 8 ♀♀: Kartliysky Range, Sabaduris Tre, 1800 m, 8.VI.1987, leg. Wrase, Schülke (cSch); 4 ♂♂, 2 ♀♀: Trialetsky range, Bakuriani, 1800 - 2200 m, 3. - 7.VII.1986, leg. Wrase, Schülke (cSch, cSol); 1 : same data, but 18. - 20.VI.1987 (cSch); 4 ♂♂, 1 ♀: "Kaukas Leder Kasbek" (NMW, ZIN); **Armenia**: 1 ♂: Khosrov Nature Reserve, 2200 m, 16.VI.1982, leg. M. Nesterov (IZK); 2 ♀♀: environs of Kadzharan, bank of the creek, in wet moss, 16.VI.1977, leg. A. Petrenko (IZK); 1 ♀: Nuzk, 1700 m, bank of the river, 15.VI.1977, leg. A. Petrenko (IZK); 1 ♂: Semenovka 30 km N of Sevan, 2100 - 2250 m, leg. H. Rietzsch (cSch); 1 ♂: Mikoyan, Alayaz, 18.VII.1950 (MNHN); 1 ♀: Sevan, Tsakhkadzor, 8.VIII.1948 (MNHN); 3 ♂♂, 2 ♀♀: N of Erevan, 40°30.10'N 44°34.97'E, ca. 1850 m, "Arzakan" river, fast flowing (through oak forest), sifted from very wet leaf litter along bank of small left tributary of "Arzakan", 7.5.2001, leg. Shaverdo, Schillhammer (NMW); 1 ♀: NE Dilizhan, near Haghartsin monastery, 40°48.05'N 44°53.31'E, ca. 1450 m, forest stream, 1 - 2 m wide, flowing through dense *Fagus* forest, sifted from dripping wet leaf litter along river bank, 21.5.2001 leg. Shaverdo, Schillhammer (NMW); **Azerbaijan**: 1 ♀: "Kaukas, Lirik [Lerik] Leder" (NMW); **"Caucasus":** 1 ♂: "Kaukasus Hummler" (FMNH); 1 ♂: "Caucasus. Leder. Reitter" (FMNH); **Turkey**: 1 ♂, 4 ♀♀: Erzurum, Mescit Dağlari, N slopes, 40 km NE of Ispir, 2100 m, pine forest, sifting of wet moss at the stream, 20.VI.1998, leg. A. Solodovnikov (cSol); 1 ♀: Ilgaz Dağ, 17. - 21.VI.1960, leg. F. Schubert (NMW); 1 ♀: Kastamonu, Karadere, 32 km N of Tosya, 1400 m, 18.V.1976, leg. Besuchet, Löbl (MHNG); 1 ♀: Konya, 10 km SE of Beyşehir, 1200 m, 7.V.1978, leg. Besuchet, Löbl (MHNG); 1 ♂, 4 ♀♀: Istanbul, Forest of Belgrat, 10.VII.1969, leg. Besuchet (MHNG); 5 ♂♂, 3 ♀♀: Artvin, Hopa - Kemalpaşa, 30 m, 10.VI.1986, Besuchet, Löbl, Burckhardt (MHNG); 2 ♀♀: Borçka - Hopa, 700 m, 8.VI.1986, Besuchet, Löbl, Burckhardt (MHNG); 2 ♀♀: Antakya Harbiye, 2.V.1978, leg. Besuchet, Löbl (MHNG); 2 ♀♀: Tunceli, Tunceli - Ovacik, 1100 m, 5.VI.1986 (MHNG); 1 ♂, 1 ♀: Bolu, Konuralp - Akçacosa, 400 m, 15.V.1976 (MHNG); 1 ♂: Elmalik near Bolu, 25.V.1967, 450 m, leg. Besuchet; 1 ♂: S of Bursa, 500 m, 12.V.1976, leg. Besuchet, Löbl (MHNG); 21 ♂♂, 6 ♀♀: Abant Dağ, 1400 - 1550 m, V.1967, leg. G. Fagel (IRSN).

VARIABILITY: The external morphology and the shape of the aedeagus of *Q. umbrinus* are subject to considerable intraspecific variability (ASSING 1999). This is confirmed also by the material from the Caucasus and Turkey examined here. However, in all examined males (20 specimens) from higher localities (700 - 1000 m) of the western Caucasus, the paramere is relatively narrower and more parallel-sided (Figs. 8 - 10) compared to the wider paramere of specimens from the rest of the Caucasian (Figs. 5 - 7), European (illustrations in ASSING 1999)

Quedius vulneratus GEMMINGER & HAROLD, 1868

Quedius vulneratus GEMMINGER & HAROLD, 1868: 572 (nom.n. pro *Q. plagiatus* HOCHHUTH, 1849); GRIDELLI 1924: 107; KORGE 1964: 119; 1971: 50; COIFFAIT 1978: 219; SOLODOVNIKOV 1998: 343.
Quedius plagiatus HOCHHUTH, 1849: 149 (nom.praeocc., nec MANNERHEIM, 1843).
Quedius plagifer EPPELSHEIM, 1889: 15.
Quedius abkasicus COIFFAIT, 1963: 410, **syn.n.**

Quedius vulneratus is well described in old and modern literature (HOCHHUTH 1849; EPPELSHEIM 1889; GRIDELLI 1924; COIFFAIT 1963, 1978), but, possibly because of the considerable unrecognized variability of this species, two additional taxa, *Q. plagifer* and *Q. abkasicus* (both conspecific with *Q. vulneratus*), were described from the western Caucasus (EPPELSHEIM 1889; COIFFAIT 1963, respectively). To enable safe identification of this species, the complicate intraspecific variability of its aedeagus shape is here illustrated.

TYPE MATERIAL EXAMINED: *Quedius plagifer*: **syntypes**: 3 ♀♀: "Caucasus, Circassien Leder Reitter / coll. Eppelsh. Steind. d. / Syntypus A. Solodovnikov rev. 2000 [**Krasnodar Territory, Russia**]" (NMW).

Quedius abkasicus: **holotype** ♂: "Abkhz. [Abkhazia], Riza 800 m, forest, 9.VII.1958 / type / Quedius abkasicus Coiff. H. Coiffait det. 1963 / désiré [red ink handwriting] [**Georgia**]" (IZE).

ADDITIONAL MATERIAL EXAMINED:

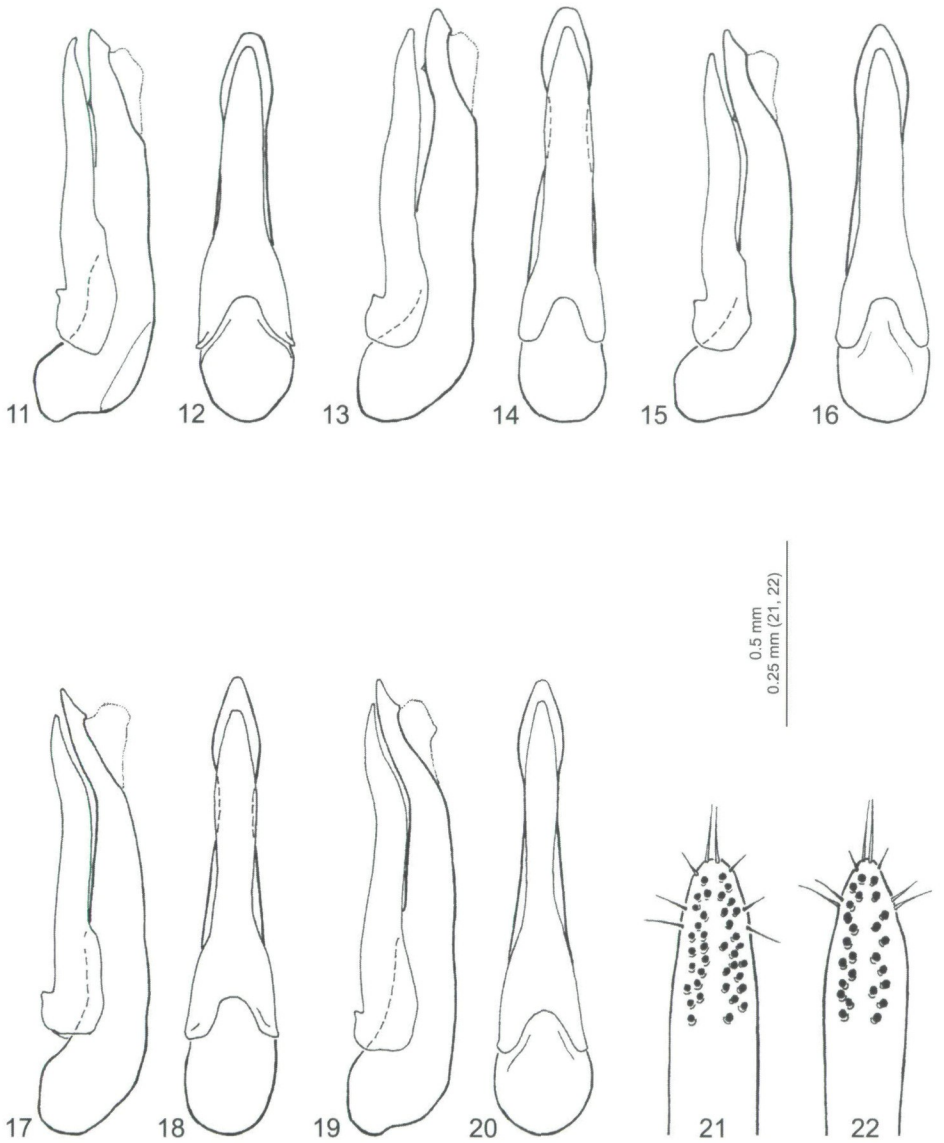
Russia: ***Krasnodar Territory***: 2 ♀♀: "Caucasus, Circassien Leder Reitter" (HNHM); 1 ♂, 2 ♀♀: same data (FMNH); 1 ♀: same data (ZIN); 1 ♂: same data [with the label "plagifer Epp. Type" in Fauvel's handwritting and later curatorial lable "Syntype"] (IRSN); 1 ♀: 1 km S of village Ubinskaya, in forest litter, 11.IX.1992, leg. M. Savitsky (cSol); 1 ♂: Kuban', Goryachy Kluch, 16.IV.1952, leg. K. Arnol'di (ZMMU); 1 ♂, 1 ♀: Mt. Shessi, upper course of river Maly Pshish, forest zone, 2.VI.1992, leg. A. Solodovnikov (cSol); 2 ♂♂, 1 ♀: Mt. Maly Tkhach near village Novoprokhladnoe (S of Maykop), 2100 m, alpine zone, under stones, 22.VII.1994, leg. A. Solodovnikov (cSol); 1 ♂: Caucasian Nature Preserve, near pass Alous, pitfall traps VI. - VII.1992, leg. V. Shchurov (cSol); 1 ♀: Sochi, Mt. Dzikhra, pitfall traps V. - VIII.1994, leg. V. Shchurov (cSol); 1 ♂, 1 ♀: Mt. Tchugush, S slopes, 1300 m, forest zone, pitfall traps 21.VII. - 10.VIII.1994, leg. A. Solodovnikov (cSol); 1 ♀: same locality, but in the faeces of brown bear, 22.VII.1994 (cSol); 3 ♂♂, 1 ♀: valley of river Malaya Laba near village Nikitino, 1600 m, shingle bank of a stream, 8.VIII.1997 leg. I. Solodovnikov (cIgS); 2 ♂♂: Mt. Aibga near village Krasnaya Polyana, 1750 m, beech and fir forest near timber line, 20.VI.1999, leg. I. Solodovnikov (cIgS); 1 ♂: Abago, leg. Stark (NMW); 1 ♀: Mt. Abago, 6.IX.89 (NMW); 2 ♀♀: Krasnaya Polyana, VII.1910, leg. Roubal (SNM); ***Republic of Adygeja***: 1 ♂: "river Kishi [Kisha] distr. of Maykop, 26. - 29.IV.1911, leg. Volnukhin" (ZIN); 2 ♂♂: "valley of river Kishi, distr. of Maykop, 3.V.1911, leg. Volnukhin" (ZIN); 1 ♂: near village Guzeripl, shingle bank of Kisha river, 850 m, 5.VII.97, leg. I. Solodovnikov (cSol); 2 ♀♀: Mt. Pshekish near village Guzeripl', 2000 m, near snowfield, 5.VIII.1993, leg. I. Solodovnikov (cSol); 1 ♀: Mt. Fisht, 1800 m, in forest litter, 11.VIII.1992, leg. I. Solodovnikov (cSol); 1 ♂, 3 ♀♀: Lagonaki plateau, Azish - Tau range, 1500 m, near forest creek, 27.VIII.1994, leg. A. Solodovnikov (cSol); 1 ♂: same data, but in rotten mushrooms (cSol); 4 ♂♂: Lagonaki plateau, Mt. Chernogor, 1400 m, 28.V.1994, leg. V. Shchurov (cSol); 1 ♂: Lagonaki plateau, 8 - 10 km NW of village Guzeripl', 1400 - 1600 m, forest zone, 7.VII.1993, leg. V. Savitsky (cSol); 1 ♂, 1 ♀: environs of Mt. Fisht, VII.1998, leg. Kopecký, Švarc (cKr); 1 ♂: Caucasian Nature Preserve, environs of Mt. Tybga, 2300 m, 27. - 28.VI.1999 leg. Putchkov (cSch); 2 ♂♂: environs of village Guzeripl' 700 m, 23.VI.1999, leg. Putchkov (cSch); ***Karachaevo-Cherkessia***: 1 ♂, 1 ♀: Mt. Turya, 1800 m, beech forest, 11. - 15.VIII.1997, leg. I. Solodovnikov (cIgS); 1 ♀: source of Urup river, upper course of river Atsgara, 1700 - 1900 m, 26.VII.1992, leg. V. & M. Savitsky's (cSol); 2 ♂♂: Teberda (FMNH); 4 ♂♂, 2 ♀♀: Teberda, 5.VI.1912, leg. Roubal; 8 ♂♂, 1 ♀: environs of village Dombai, 6. - 8.VI.1967, leg. F. Hieke (MNHUB); 1 ♂: Kluchor (SNM); 2 ♀♀: same locality, but VII.1912, leg. Roubal; 3 ♂♂, 3 ♀♀: same locality, but 2100 m, A. Zolotarev (SNM); 1 ♂: Dombai near Alibek glacier, 1500 m, 17.V.1986, leg. Rössner (cSch); 4 ♂♂, 1 ♀: Dombai, preserve near hotel Dombai, 1650 m, under stones, 14.V.1986, leg. Rössner (cSch); ***Dagestan***: 1 ♂: Bogos [Bogossky] range, Khvarit Gorge, 11.VII.1997, leg. E. Khachikov (cSol); **Georgia**: 1 ♂: "Caucas. occ., Gagry" (ZIN); 1 ♂: Abkhazia, Mt. Dzikhva, 1600 - 1700 m, under bark, 9.VI.1982, leg. Drabkin (ZIN); 7 ♂♂, 2 ♀♀: Abkhazia, Avadkhara, 2000 - 2800 m, 8. - 13.VII.1982, leg. Wrase, Schülke (cSch, cSol); 2 ♂♂, 5 ♀♀: same locality, but 2000 - 2700 m, 26.VII. - 3.VIII.1985 leg. Wrase (cSch, cSol); 1 ♂: same locality, but 1500 m, 23.VI.1983, leg. Odvárka (cSch); 4 ♀♀: Trialetsky range, Bakuriani, 1800 - 2200 m, 3. - 7.VII.1986 leg. Wrase, Schülke (cSch, cSol); 5 ♂♂, 7 ♀♀: same data, but 15. - 20.VI.1987 (cSch, MNHUB); 1 ♂, 1 ♀: Klukhor pass, southern slopes, 16. - 17.VI.1967, leg. F. Hieke (MNHUB); 1 ♂: Borzhomi, leg. Lgocki (FMNH); 2 ♂♂, 2 ♀♀: "Kaukas. Leder. östlich vom Kasbek 5 – 1 [illegible] 000' " (NMW); 1 ♀: "Cauc. centr. Kasbek, A. Zolotarev"; 1 ♀: Kazbek (SNM); 1 ♂: Svanetia, Mestia, forest, 1700 m, 4.VII.1968 (MNHN); 1 ♂: Racha, Glola, forest, 1.VIII.1956

(MNHN); **Armenia**: 1 [specimen with lost abdomen, sex unknown]: Armenia (ZMMU); 1 ♂: N of Erevan, 40°30.10'N 44°34.97'E, ca. 1850 m, "Arzakan" river, fast flowing (through oak forest), sifted from very wet leaf litter along bank of small left tributary of "Arzakan", 7.05.2001, leg. Shaverdo, Schillhammer (NMW); **Azerbaijan**: 1 ♂: "Kaukas. Leder. Helendorf [Khanlar]" (HNHM); 1 ♂: same data (NMW); 1 ♂: N Azerbaijan, 10 - 15 km NNE of Kutkashen [now Gabala], river Damir - Aparanchay, 1800 - 1400 m, 13. - 14.VII.1994, leg. M. Savitsky (cSol); "**Caucasus**": 2 ♀♀: "Kaukas Leder" (HNHM); 2 ♂♂: "Caucasus" (SNM); **Turkey**: 1 ♂, 1 ♀: Trabzon, Kalkanli Dağlari, NW slopes, 8 km NE of Zigana pass, 1700 m, 7. - 8.VI.1998, leg. A. Solodovnikov (sSol); 2 ♂♂, 2 ♀♀: Borčka, VII.74, leg. Schubert; 1 ♂: Çangal Dağ, leg. F. Schubert (NMW); 1 ♂: Artvin, 650 m, 13.V.1967, leg. Besuchet (MHNG); 1 ♂, 11 ♀♀: SW of Artvin, 1900 m, 9.VI.1986, leg. Besuchet, Löbl, Burkhardt (MHNG); 4 ♀♀: Kars, Damal - Posof, 2400 - 2500 m, 13.VI.1986, leg. Besuchet, Löbl, Burkhardt (MHNG).

DISTRIBUTION: *Quedius vulneratus* is widely distributed in the Caucasus (from the northwestern foothills to eastern Transcaucasia) and in northern Turkey. All reliable recent records for this species (KORGE 1964, 1971; SOLODOVNIKOV 1998) also lie within the known distribution range.

BIONOMICS: *Quedius vulneratus* occurs in the mountains in the forest zone (from 300 - 400 m to the timber line), and higher up to alpine elevations of 2200 - 2400 m. Mostly it can be collected in wet plant debris, under stones, etc. These data coincide with the bionomics reported from Turkey by KORGE (1971). In the forest, *Q. vulneratus* was also recorded from rotten mushrooms and faeces of the brown bear.

VARIABILITY: The examination of material of *Q. vulneratus* from various parts of its distribution range, revealed a considerable variability of the external aspect (especially coloration) and the shape of the aedeagus. This variability is continuous within the whole available sample (Figs. 11 - 20), except for three males from the eastern Caucasus (two from "östl. vom Kasbek 5-1500' ", collected by Leder; and one recently collected from Bogossky range in Dagestan). These males have a longer, more slender aedeagus with its apical portion very distinctly curved ventrad (Figs. 17 - 20). However, because the material of *Q. vulneratus* from the eastern Caucasus is very sparse, I refrain from providing a separate taxonomic status for the form, which may possibly be represented by these males. This decision is also supported by the following facts. A high degree of intraspecific variability of the aedeagus shape is known of many species of *Quedius*. Even among "normal" specimens of *Q. vulneratus* the apical portion of the median lobe and the paramere vary from straight to somewhat curved ventrad (cf. Figs. 11, 13, 15). Thus, the discovery of transitive character states between those shown in Figs. 11 - 16 and 17 - 20 is very likely. The above mentioned three male specimens with somewhat different aedeagi, as well as the females associated with them, do not differ from the remaining material of *Q. vulneratus* in external or secondary sexual characters and fit in the intraspecific variability range displayed by "normal" specimens. Finally, *Q. vulneratus* is a rather polytopic and widely distributed species (see "Bionomics" and "Distribution" sections). These observations in combination with the fact that *Q. vulneratus* has well developed hind wings, elytra, and palisade fringe on the abdominal tergite 7 allow to suggest a high dispersal potential. Localities, from which the "problematic" males are known, seem not isolated from the other parts of the species' distribution area (at least not by obvious dispersal barriers). Thus, a gene flow between the "normal" and "problematic" forms very likely exists.



Figs. 11 - 22: *Q. vulneratus*: 11-20: aedeagus in lateral (11, 13, 15, 17, 19) and ventral (12, 14, 16, 18, 20) view; specimens from the following localities: 11, 12: Lagonaki Plateau, 10 km SW of village Dakhovskaya (Republic of Adygeya, Russia); 13, 14: Zigana pass (Turkey); 15, 16: river Aparanchay (Azerbaijan); 17, 18 "Östlich vom Kazbek" (no exact data about locality); 19, 20: Bogossky Range (Dagestan, Russia); 21, 22: apical portion of paramere; 21: specimen from Lagonaki Plateau (Republic of Adygeya, Russia); 22: specimen from Bogossky Range (Dagestan, Russia).

Comments

Quedius vulneratus: The original description of *Q. vulneratus* contains no data about the type material (HOCHHUTH, 1849), except an indication that it was collected in the Caucasus by B. Gotsch. Unfortunately, I was unable to find any material of *Q. vulneratus* when studying the collection of Hochhuth in Kiev. However, the interpretation of *Q. vulneratus,* widely accepted in literature, agrees with the original description and current faunistic data.

***Quedius plagifer* syntypes**: In the original description of *Q. plagifer*, EPPELSHEIM (1889) did not specify the number of syntypes, but indicated the type locality as "collected by Leder in Circassien". Three female specimens from Eppelsheim's collection in the NMW which match the original description of *Q. plagifer*, are here considered as syntypes. Specimens from other museums identical with those females and labelled as "Circassien Leder / Reitter" or similarly, have very likely been collected together with the syntypes of *Q. plagifer*. However, since there is no evidence that they were examined by Eppelsheim, they are not considered as syntypes[3]. The identity of the syntypes of *Q. plagifer*, as well as the other material from "Circassien" confirms the widely accepted synonymy of *Q. plagifer* with *Q. vulneratus* (BERNHAUER & SCHUBERT 1916; GRIDELLI 1924; COIFFAIT 1978; etc.). Since reliable identification of *Quedius* species is based mainly on primary and secondary sexual characters of males, the designation of one of the females as lectotype of *Q. plagifer* is here refrained from.

Quedius abkasicus: Externally and in aedeagus structure, the holotype of *Q. abkasicus* completely agrees with the accepted concept of *Q. vulneratus*. Thus, the following new synonymy is established: *Q. vulneratus* GEMMINGER & HAROLD, 1868 = *Q. abkasicus* COIFFAIT, 1963.

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[3] From the HNHM I received five specimens of *Q. vulneratus* incorrectly labelled by the HNHM curators as paratypes of *Q. plagifer*. Of them, only two specimens are from the type locality (labelled as "Caucasus occ. Circassien"). The remaining three specimens are labelled differently (two as "Kaukas", and one as "Kaukas, Leder, Helendorf [now Khanlar]"). In the IRSN there is one male specimen of *Q. vulneratus* labelled by Fauvel as "Q. plagifer Epp. Type", and with subsequently attached incorrect curatorial label "Syntype".

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