

**THE GEOGRAPHICAL VARIATION OF *CARABUS*
(*EUCARABUS*) *PARREYSSI* PALLIARDI, 1825 WITH
DESCRIPTION OF TWO NEW SUBSPECIES, LECTOTYPES
DESIGNATION FROM PAUL BORN COLLECTION**

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ABSTRACT: In the last years a number of field researches carried out in the Western part of Balkan Peninsula given us the opportunity to better understand the geographical variation of *Carabus (Eucarabus) parreyssi* Palliardi, 1825. We found that the species has a larger distribution in the Former Yugoslavia Countries (Croatia, Bosnia Hercegovina, Montenegro and Serbia) than known in the past. Although the species is variable between the different populations and according to the characteristic of the habitats, it is possible to recognize several well distinguished geographic subspecies. We found two remarkable forms that we describe as new subspecies in this paper: *C. parreyssi paulborni* n. subsp. and *C. parreyssi durmitoricola* n. subsp.

KEY WORDS: *Carabus parreyssi*, *Carabus catenulatus*, new subspecies, Croatia, Bosnia Hercegovina, Serbia, Montenegro, Lectotype, Paralectotypes

In his work “Die Käferfauna der Balkanhalbinsel” Viktor Apfelbeck (1904) gives a brief outline of the area, which can be referred to as the “Balkan peninsula”. As the northern border, he notes the “lowlands of the Sava and Danube”. In the west, he faunistically expects the Dalmatian coast to the Balkan Peninsula, bounded on the east by Bulgaria and parts of western Turkey, on the south by the Mediterranean Sea. This definition corresponds to the current state of research with a few drawbacks.

For the remarks in this article, the focus today is on Croatia, Bosnia-Herzegovina, Serbia and Montenegro. Some historic name of localities that cannot be found on the maps of today were attributed to actual localities names in accord with the paper of Schütze (2010).

In the last years a number of field researches carried out in the Western part of Balkan Peninsula given us the opportunity to better understand the geographical variation of *Carabus (Eucarabus) parreyssi* Palliardi, 1825. We found that the species has a larger distribution in the Former Yugoslavia Countries (Croatia, Bosnia Hercegovina, Montenegro and Serbia) than known in the past. Although the species is variable between the different populations and according to the characteristic of the habitats, it is possible to recognize several well distinguished geographic subspecies. We found two remarkable forms that we describe as new subspecies in this paper: *C. parreyssi paulborni* n. subsp. and *C. parreyssi durmitoricola* n. subsp.

According to our studies *C. parreyssi* is represented by six different subspecies with a specific geographical distribution and different ecological needing.

The subspecies are:

C. parreyssi parreyssi Palliardi, 1825

C. p. gattereii Géhin, 1882

C. p. tippmannianus Beheim & Breuning, 1943

C. p. plassensis Born, 1907

C. p. paulborni n. subsp.

C. p. durmitoricola n. subsp.

Carabus parreyssi is a polytypical species widespread in the West Balkan Peninsula through the Dinaric Mountains. The species is clearly close to the sympatric *Carabus (Eucarabus) catenulatus* Scopoli, 1763 (Brezina, 1999; Turin et al., 2003; Jambrošić Vradić et al., 2015) and according to us it is also related to the allopatric *Carabus (Eucarabus) obsoletus* Sturm, 1815. Under this point of view they form a natural group of species from the Balkano-Carpathian region.

One of the authors (I. R.) thanks to the courtesy of Dr. Rodney Eastwood curator of the Entomological Collection of ETH, Zürich has had the opportunity to study a part of the *Carabus* belonging to the Paul Born's collection and to describe the Lectotype and Paralectotypes of *Carabus catenatus plassensis* Born, 1907 and *Carabus catenatus strauschi* Born, 1907; it was possible to understand that the first species belongs to *C. parreyssi* and the second species to *C. catenulatus*.

Systematic of *Carabus (Eucarabus) parreyssi* Palliardi, 1825

C. parreyssi parreyssi Palliardi, 1825 [loc. typ. Croatia]

= *purpurifer* Reitter, 1885

= *padeviethi* Csiki, 1906 [loc. typ. South Velebit Mts., Stirovaca]

= *dobiaschi* Beuthin, 1894 [loc. typ. Croatia, Gospić env.]

C. parreyssi gattereri Géhin, 1882 [loc. typ. Steiermark (error): South Bosnia]

= *ganglbaueri* Apfelbeck, 1890 nec Reitter, 1888 [loc. typ. South Bosnia]

= *planinaecola* Csiki, 1906 nom pro *ganglbaueri* Apfelbeck

= *squamidisculptus* Reitter, 1908 nom pro *ganglbaueri* Apfelbeck

C. parreyssi plassensis Born, 1907 [loc. typ. Hercegovina: Plasa Planina]

C. parreyssi tippmannianus Beheim & Breuning, 1943 [loc. typ. Serbia: Fruska Gora]

C. parreyssi paulborni n. ssp. [loc. typ. Bosnia, Bihać, between Velika Kladusa and Cazin, Rosići, 400m]

C. parreyssi durmitoricola n. ssp. [loc. typ. Montenegro, Durmitor Massif, Zubčić pass env., 2.200m]

Diagnosis and designation of Lectotypes from Paul Born Collection.

***Carabus (Eucarabus) parreyssi plassensis* Born, 1907**

Carabus catenatus plassensis nov. subspec.: Born, 1907: 49-50

Lectotype (pres. des.): 1 male with 3 labels (Fig. 1a, 1b): "31,269" print; "Plasa b.(ei) Jablanica Bosn.(isch-) Herzegov.(inische) Grenze" handwrote; "Lectotype *Carabus catenatus plassensis* Born, 1907 (= *Carabus parreyssi plassensis* Born, 1907) I. Rapuzzi det. 2018" red print. The specimen is in perfect condition. The Lectotype is preserved in ETH institute collection.

Size: long 24 mm; large 9,2 mm. Colour: head black; pronotum black with violet shades; elytron black with dark blue and dark green shades, violet-blue sides. Shiny surface. Transverse pronotum (1,4 times as broad as long).

Female (Figs. 2a,b): long. 26,5 mm, larg. 10 mm.

14 Paralectotypes males and 20 Paralectotypes females with the following print number labels: "31,251", "31,252", "31,253", "31,254", "31,255", "31,256", "31,257", "31,258", "31,259", "31,260", "31,261", "31,262", "31,263", "31,264", "31,265",

“31,266”, “31,267”, “31,268”, “31,270”, “41,747”, “41,748”, “41,749”, “41,750”, “45,476”, “45,477”, “45,478”, “45,479”, “45,480”, “45,481”, “45,482”, “45,483”, “45,484”, “45,485”, “56,767”; all the specimens have a red print label with: “Paralectotype *Carabus catenatus pllassensis* Born, 1907 (= *Carabus parreyssi pllassensis* Born, 1907) I. Rapuzzi det. 2018”

In Born's register the specimens have the following indications:

- specimens labelled from n. “31,251” to n. “31,270”: “*Carabus Gattereri pllassensis* Born – Plasa b. Jablanica Bosn. – Herzegov. Grenze”.
- specimens labelled from n. “41,747” to n. “41,750”; from n. “45,476” to n. “45,485” and n. “56,767”: “*Carabus parreyssi pllassensis* Born – Plassa Herzegovina”.

***Carabus (Eucarabus) catenulatus catenulatus* Scopoli, 1763**

(= *Carabus catenatus strauschi* Born, 1908) comb. rest., nov. syn.

Carabus catenatus Strauchi nov. subsp.: Born, 1908: 137-138

Lectotype (pres. des.): 1 male with 3 labels (figs. 3a,b): “42,613” print; “Bihać Bosnien N(ord)W(estlich)” handwrote; “Lectotype *Carabus catenatus strauschi* Born, 1907 (= *Carabus catenulatus catenulatus* Scopoli, 1763) I. Rapuzzi det. 2018” red print. The specimen is in perfect condition. The Lectotype is preserved in ETH institute collection.

Size: long 30,5 mm; large 11 mm. Colour: head black; pronotum black with blue base and sides; elytron dark blur with violet sides.

PLT female: 29 mm, 10,5 mm. Surface uniformly dark-violet (Figs. 4a,b)

PLT females: 31 mm, 12 mm; 31 mm, 12 mm. Same colour as LT.

2 Paralectotypes females with the following print number labels: “42,614”, “42,615” print; 1 Paralectotype female with the following labels: “42,698” print; “Debeljača b(ei) Bihać Bosnien N.(ord) W.(estlich)”; all the specimens have a red print label with: “Paralectotype *Carabus catenatus strauschi* Born, 1907 (= *Carabus catenulatus catenulatus* Scopoli, 1763) I. Rapuzzi det. 2018”

In Born's register the specimens have the following indications:

- specimens labelled from n. “42,613” to n. “42,615”: “*Carabus catenatus Strauchi* – Bihać, Grmeč”.

Paul Born (1908) correctly described *strauschi* as a form of *C. catenatus* (= *C. catenulatus*) with mixed characters between *C. catenulatus catenulatus* and *C. catenulatus fontanellae*. We had the opportunity to study a larger material from the area (Croatia: Slunj, Plitvice, Karlovac, Sisak and North Bosnia) and we found that *C. c. strauschi* is only a local form with non-significant differences with *C. catenulatus catenulatus* widespread in the area. For this reason we consider it as a mere synonym of *C. catenulatus catenulatus*:

Carabus catenulatus catenulatus Scopoli, 1763 = *C. catenulatus strauschi* Born, 1908 nov. syn.

New Taxa:

***Carabus (Eucarabus) parreyssi paulborni* n. subsp.**

(Figs. 7a,b,c, 8, 9, 10)

References

Carabus (Eucarabus) parreyssii plassensis: Turin et al., 2003: 189 part
Carabus parreyssi: Šerić Jelaska et al., 2014: 251

Bosnia Hercegovina: Bihać (Turin et al., 2003 sub *plassensis*); Croatia: Poštrak (Šerić Jelaska et al., 2014 sub *parreyssi*)

Holotype. Male: Bosnia-Hercegovina, Bihać Region, between Velika Kladusa and Cazin, Rosići, 400m, VI.2014, I. Rapuzzi & F. Kleinfeld leg. *In coll.* Ivan Rapuzzi (Prepotto, Udine, Italy). **Paratypes:** 5 males, 4 females, same data as the Holotype (cIR, cFK); 18 males, 32 females, Bosnia-Hercegovina, Bihać Region, between Velika Kladusa and Cazin, Rosići, 400m, VI/VII.2015, I. Rapuzzi leg. (cIR); 10 females, Croatia, Karlovac, Brebornica, Suhodol, Budacki, 150-200m, VI.2013, I. Rapuzzi & L. Caldon leg. (cIR); 1 male, 4 females, Croatia, Karlovac, Brebornica, Suhodol, Budacki, 150-200m, VI/VII.2015, I. Rapuzzi & L. Caldon leg. (cIR); 1 female, Croatia, Karlovac, Brebornica 233m VIII.2012, C. Sola leg., (cCS); 2 males, Croatia, Karlovac, Vojnic, Petrova Gora, 480m, VI.2013, I. Rapuzzi & L. Caldon leg. (cIR); 1 female, Croatia, Šamarica, 23.VII.1970 (cIR); 5 males, 4 females, Bosnia-Hercegovina, Bihać reg., Bosanska Krupa, Buzimen, 26/30.V.2014, I. Rapuzzi & F. Kleinfeld leg. (cIR, cFK); 1 female, Bosnia-Hercegovina, Bihać reg., Bosanska Krupa, near Bastra, 200m, 26/30.V.2014, I. Rapuzzi & F. Kleinfeld leg. (cIR); 1 male, 1 female, Bosnia-Hercegovina, Bihać reg., Cazin, near Konjoder, Veleđžići, 500m, 26/30.V.2014, I. Rapuzzi & F. Kleinfeld leg. (cIR); 1 male, 2 females, Bosnia-Hercegovina, Bihać reg., btw Velika Kladusa and Cazin, Todorovo env., 250m, VI.2014, I. Rapuzzi & F. Kleinfeld leg. (cIR, cFK); 3 males, 15 females, Bosnia-Hercegovina, Bihać reg., btw Velika Kladusa and Cazin, Todorovo env., 250m, VI/VII.2015, I. Rapuzzi leg. (cIR); 2 males, 1 female, Bosnia-Hercegovina, Bihać reg., Cazin, North from Čoralici, Jusin Put, 350m, VI.2014, I. Rapuzzi & F. Kleinfeld leg. (cIR, cFK); 2 males, 5 females, Bosnia-Hercegovina, Bihać reg., Cazin, North from Čoralici, Jusin Put, 350m, VI/VII.2015, I. Rapuzzi leg. (cIR); 2 males, 1 female, Bosnia-Hercegovina, Bihać reg., Bosanski Petrovac, Ostrelj, 1050m, VI.2014, I. Rapuzzi & F. Kleinfeld leg. (cIR); 3 males, 2 females, Bosnia-Hercegovina, West from Žepče, Manjača Planina, 850m, VI.2016, I. Rapuzzi & F. Kleinfeld leg. (cIR); 1 female, Bosnia-Hercegovina, Žepče, Ravan Planina, South from Kamenica, 660m (cIR); 1 female, Bosnia-Hercegovina, South from Kreševo, 680m, VIII.2017 (cIR); 1 male, 2 females, Bosnia-Hercegovina, Pass South from Kladanj, 1000m, VII.2017 (cIR, cFK); 3 females, Bosnia-Hercegovina, Tarčin, Raštelica, Trzanj env., 850m, VIII.2017 (cIR); 1 male, 2 females, Bosnia-Hercegovina, Sipovo, 6.1983, Hladilov leg. (cIR); 1 female, Bosnia-Hercegovina, Reljevo bei Sarajevo (cIR); 2 males, 1 female, Bosnia-Hercegovina, Banja Luka, Sehitluci, 200/400m 14.4.1977 (cIR); 1 female, Bosnia-Hercegovina, Nemila (cIR); 1 female, Bosnia-Hercegovina, Travnik, Komar Planina (cIR); 1 female, Bosnia-Hercegovina, Vlašić, Devečani, Čavo, 23.7.1956, R. Tintor leg. (cIR); 1 female, Bosnia-Hercegovina, Travnik, Vlašić Planina, Paljenik, 18.6.1962 (cIR); 1 male, Bosnia-Hercegovina, Jurina, Vranica pl. 1902 (cIR); 1 male, Bosnia-Hercegovina, Vranika pl. (cIR); 1 male, 2 females, Bosnia-Hercegovina, Northwest Bosnien, zw. Cazin u. Buzin, 370 m, 26.-30.V.2014 (cHS); 3 males, 5 females, Bosnia-Hercegovina, Bihać reg., zw. Velika Kladusa u. Cazin, 250 m, VI, 2014 (cHS); 1 male, 1 female, Bosnia-Hercegovina, Bosansko Petrovac Ostrelj, Kekovac Pl, VI. 2014 (cHS); 3 females, Bosnia-Hercegovina, Bihać reg. zw. Velika Kladusa/Cazin, Todorovo 250 m, VI, 2014 (cHS); 1 female, Bosnia-Hercegovina, Bihać, Wiesenbiotop S Bihać 10.6.2017, F. Kleinfeld & H. Schütze leg. (cHS); 5 females, Bosnia-Hercegovina, Bihać, Umg. Pass Ostrelj 10.6.2017 F. Kleinfeld & H. Schütze leg. (cHS); 6 specimens, Bosnia-Hercegovina, NW Bosnien, zw. Cazin u. Buzin, Rosići (COF).

Description of Holotype. Very large subspecies (the larger form of *Carabus parreyssi* s. l.). Length including mandibles: 24,5mm, maximum width of elytra: 10mm.

Colour: disc of elytra metallic violet lustre, margins green and violet; head and pronotum green and violet; rather mat. Ventral side of head, pronotum and epipleura black with slightly violet shades. Legs, palpi, antennae, and mandibles black.

Head of normal shape; surface of the head punctured, strongly and roughly punctured at the margins of eyes and at the base; very short neck. Eyes salient, hemispheric. Mandibles longer than in the other subspecies. Palpi thin and long, labial palpi bisetose. Antennae thin, extending with 4 antennomeres beyond pronotal base and reaching the third of elytra. Second antennal segment tuberoso. Fourth antennal segment tiny (more than three times as long as broad).

Pronotum transverse (1,5 times as broad as long), sides regularly curved, not sinuate, upper surface slightly convex; sides of pronotum margined, bent upwards; hind angles rounded, very long and protruding behind the base; surface strongly punctured.

Elytra large, of oval shape, slightly convex, maximum width at the middle; shoulders rounded; sculpture triploid, slightly heterodyname: primary and secondary intervals of the same size, tertiary smaller. Primary segments forming chains of short links; secondary uninterrupted till the middle and than in links of grains; tertiary intervals forming lines of grains.

Male aedeagus typical of the species but with the median lobe in lateral view with a strong and large tooth before the apex; the apex is larger than in the other subspecies (Fig. 7b); dorsal view (Fig. 7c).

Variability of paratypes. Very variable subspecies. The length of the body ranges from 22 mm to 26 mm for the males and from 23 mm to 30 mm for the females. The different populations show a specific geographical variation: the westernmost populations (Croatia: Karlovac; Samarica) are constantly gold and shiny in colour, the elytral sculpture is more regular (homodyname type). In the populations from Bosnia (Bihać: Velika Kladusa, Bosanska Krupa, Bosansko Petrovac; Banja Luka; Žepče) and Croatia (Sisak, Voinjc) the elytral sculpture is clearly more heterodyname and the colour is very variable (totally black, blue, green, copper, gold, etc.) sometime bicolored (head and pronotum green with copper elytra with green margins, blue pronotum and violet elytra, violet pronotum and dark green elytra, etc.). The population from the West side of the Bosna river near Žepče (Manjača Planina) are of a smaller size and with less interrupted secondary and tertiary intervals, they are obviously a transition with *tippmannianus* inhabiting the Pannonian hills to the North but still closer to *paulborni*. The specimens from Bosnia, Tarčin, Raštelica, Trzanj shown a transition to *gattereri*.

Comparative notes: The new subspecies, though very variable, is recognizable for its larger size, the heterodyname sculpture of elytra and the shape of the aedeagus.

Etymology. The new subspecies is dedicated to the famous carabidologist Paul Born. He has had connections with numerous colleagues, and he was in possession of one of the most comprehensive collection of Carabus in those days. Born established more than 150 taxa of Carabus, and he liked to name them after collectors or known specialists (in more than one third of his descriptions). Besides, he took great interest in the fauna of the Genus Carabus of the Balkans which it is testified by the description of more than twenty forms of Carabus from this region (Schütze & Friedrich, 2015).

Ecology. Mainly in deciduous and mixed forests, even quite degraded and fragmented. It occurs from low hills (150m) up to mountains (1.100m) in mountain forest. It is very rare and very local in the Western part of its areal (Croatia: Karlovac), common and widespread in Bosnia. Not endangered, except some populations inhabiting places subject to intensive forest clearing.

Discussion. Born (1908) with the description of *Carabus strauschi* correctly considered it as a form of *catenulatus* (see after designation of Lectotypes of Born

collection). After that Breuning (1932-1936) in his Monographie considered by error *C. strauchii* as a *morpha* of *Carabus parreyssi*. Subsequently all the Authors postponed this error (Brezina, 1999; Turin et al., 2003; Deuve, 2004; etc.) considering *strauchii* as a subspecies or as a synonym of *C. parreyssi*. After examination of the type material from Born's collection and studying large series of *Carabus parreyssi* from Bosnia and Croatia it was possible to clarify the correct taxonomy of the species from this area of The Balkans.

Carabus (Eucarabus) parreyssi durmitoricola n. subsp.

References

Morphocarabus parreyssi parreyssi: Rautenstrauch et al., 1994: Tav. 15, Figs. 1, 2
Carabus (Eucarabus) parreyssii: Turin et al., 2003: 188-189 part

Crna Gora: Durmitor, Tudorov Do, 1800m (Rautenstrauch et al., 1994); North Montenegro (Durmitor, Tudorov) (Turin et al., 2003 sub *parreyssii*)

Holotype. Male: Montenegro (Crna Gora), Durmitor Massif, Zubci pass env., 2.200m, 6/11.VII.2013, I. Martnu leg. *In coll.* Ivan Rapuzzi (Prepotto, Udine, Italy). **Paratypes**. 2 males, 6 females: same data as the Holotype (cIR); 3 males, 1 female: Montenegro (Crna Gora), Durmitor Massif, Dobri do, 1.900m, VII.1980, B. Drovenik leg. (cIR); 1 Female: Montenegro (Crna Gora), Škrke, 14.VII.1971, B. Drovenik leg. (cIR); 2 females: Montenegro (Crna Gora), Trsa, 1.980m, 11.VIII.1985 (cIR); 1 female: Montenegro (Crna Gora), Durmitor, 20.VIII.1985 (cIR); 2 males: Montenegro (Crna Gora), Žabljak, VII.1981, B. Drovenik leg. (cIR).

Description of Holotype. Length including mandibles: 19,5mm, maximum width of elytra: 7,6mm.

Colour: upper surface uniformly dark copper; mat. Ventral side, legs, palpi, antennae, and mandibles black.

Head small; surface of the head very sparsely punctured, superficially rough at the margins of eyes; very short neck. Very short mandibles. Palpi thin but short, labial palpi bisetose. Antennae thin and very short, extending with 3 apical antennomeres beyond pronotal base and reaching the base of elytra. Second antennal segment tuberoso; third antennal segment with very sparse pores around the apex; fourth antennal segment stout (only two times as long as broad).

Pronotum slightly transverse (1,3 times as broad as long), not sinuate and moderately convex; sides of pronotum margined, slightly bent upwards only behind its base; hind angles rounded, moderately protruding behind the base for the species; upper surface punctured.

Elytra narrow and elongate, oval shape; convex; shoulders rounded; sculpture triploid nearly homodyname: primary segments slightly more relieved forming chains of links; secondary and tertiary of the same size, uninterrupted till the middle and than in links of grains.

Male aedeagus small and moderately curved in lateral view, apex short and large (Fig. a); dorsal view (Fig. b).

Variability of Paratypes. Quite small variability. The length of the body ranges from 18 mm to 20 mm for the males and from 19 mm to 23,5 mm for the females. The colour is slightly variable: the larger part of the specimens are constantly copper, rare the black form.

Comparative notes: the new subspecies is isolated on the high mountains of Montenegro and it is the southernmost form. It is related to *gattereri* but it is characteristic for and the slender shape, the darker colour, the narrower pronotum and the shape of the male aedeagus.

Etymology. The new subspecies is named after the type locality.

Ecology. Only in subalpine and alpine steppes between 1.900 and 2.200m. Under stones in grassland, near the edges of snowfields. Although very rare it is not endangered like many other mountain species (*B. Drovenik pers. observ.*).

***Carabus (Eucarabus) parreyssi parreyssi* Palliardi, 1825**

Carabus paraysi Palliardi, 1825. Besch. 2. Dec. Carab.: 5, Tab. I, Fig. 2

Carabus parreyssi var. *dobiaschi* Beuthin, 1894. Soc. Ent. IX: 97

Carabus parreyssi var. *padeviethi* Csiki, 1906. Magyarorsz. Bograf.: 154

References

Carabus parreyssii: Dejean, 1826: 72-73

Carabus Parreyssii: Dejean & Boisduval, 1829: 325-326

Carabus (Carabus) parreyssi parreyssi: Apfelbeck, 1904: 36 part

Carabus (Eucarabus) parreyssi parreyssi + var. *gattereri*: Breuning, 1932-1936: 372-373, 374-375 (part)

Carabus catenulatus v. *Padeviethi*: Novak, 1952: 14

Carabus (Eucarabus) parreyssii: Turin et al., 2003: 188-189 part

Carabus (Eucarabus) parreyssii parreyssii: Turin et al., 2003: 189 part

Carabus parreyssi: Šerić Jelaska et al., 2014: 251

Croatia: “Il a été trouvé par M. Parreyss, dans les montagnes de la Croatie » (Dejean, 1826 loc. typ.); montagnes de la Croatie (Dejean & Boisduval, 1829); “Gebirgen von Süd-Kroatien” (= Mountains of Southern Croatia) (Apfelbeck, 1904 sub *parreyssi parreyssi*); Velebit; Zengg (= Senj); Stirovaca (Breuning, 1932-1936); Velebit (Novak, 1952 sub *Padeviethi*); Dalmatia (Turin et al., 2003 sub *parreyssii*); Croatia (Turin et al., 2003 sub *parreyssii parreyssi*); Velebit (Šerić Jelaska et al., 2014)

Examined material: 1 male, 6 females, Croatia, Velebit, Zavižan, 1300m, 15.VI.1983, I. Rapuzzi leg. (cIR); 22 male, 29 females, Croatia, Velebit, Zavižan, 1400/1500m, 7.VI.1998, I. Rapuzzi leg. (cIR); 1 male, Croatia, Velebit, Mt. Vujak, 18.VII.1977, Perdisa leg. (cIR); 1 male, 2 females Croatia, Velebit, Mt. Vujak, 1100m, 15.VI.1983, I. Rapuzzi leg. (cIR); 10 males, 31 females Croatia, Velebit, Mt. Vujak, 1100m, 7.VI.1998, I. Rapuzzi leg. (cIR); 3 males, Croatia, Northern Velebit, 1300m, VIII.1989, I. Rapuzzi leg (cIR); 3 females, Croatia, Lika reg., Gospić, Babin Potok, 2.VI.2005 (cIR); 2 males, 5 females, Croatia, Lika reg., Gospić, Babin Potok, 24.VI.2007 (cIR); 4 males, 15 females, Croatia, Velebit, Zavižan, 1600m, 7.1981 B. Drovenik leg (cIR); 1 female, Croatia, Velebit, Zavižan, 3/4.7.1973 (cIR); 2 females, Croatia, Velebit, Zavižan, 2.8.1974, Calligaris leg. (cIR); 1male, Croatia, Velebit, Rossijeva Koliva 19.7.1972 (cIR); 2 males, 2 females, Croatia, North Velebit, Zavižan Mt., VII.1981 (cFK); 1 male, 1 female, Croatia, North Velebit, Zavižan Mt., 1500m, VI.1998 (cFK); 2 males, 2 females, Croatia, Velebit bor., 1600m, VI.1984 (cFK); 1 female, Croatia, Velebit, Javorje, 1210m (cCNM); 1 male, Croatia, Velebit, Podstrane, 1300m (cCNM); 1 male, Croatia, Krisici, Velebit, 1530m (cCNM); 1 female, Corina prosina, Stirovaca, Velebit (cCNM); 1 female, Croatia, Velebit; (cCNM); 1 female, Croatia, Lika (transition form with *paulborni*) (cCNM); 7 males, 18 females, Croatia, Velebit Sett., Mt. Vujak, 1/15.VII.1973, Calligaris leg. (cMFSN); 1 female, Croatia, Velebit, Zavižan (cMFSN); 4 females, Croatia, Velebit Centr., Ravni Padeš, 14-28.VII.1973 (cMFSN); 4 males, 3 females, Croatia, North Velebit, Zavižan Mt., 12.VI.1983, A. Del Fabbro leg. (cMFSN).

Small size (from 19 mm to 23 mm for males; from 19 mm to 23 mm for females), very short and quite convex shape. Very transverse pronotum; upper surface strongly punctured. Hind angles of pronotum very large and long protruding its base, strongly bent upwards. Elytral sculpture of homodyname triploid type. Rather variable colour: the mostly part of specimens are dark blue or dark violet or dark green, rare are the specimens of light blue, blue-green or light violet colour, extremely rare are the copper (var. *dobiaschi* Beuthin, 1894; var. *purpurifer* Reitter, 1885) or green colour. The form *padeviethi* Csiki, 1906 was

correctly considered as a synonym of the typical form by Breuning (1932-1936).

Geographical distribution. West Croatia: Velebit Mountain Range and adjacent area of Lika region.

Ecology. The typical subspecies lives in mountain meadows, mainly between 1.400 and 1.600m. In the Lika region was found at lower altitude in meadows. Locally very common it is not endangered.

***Carabus (Eucarabus) parreyssi gattereri* Géhin, 1882**

Carabus Parreyssi var. *Gattereri* Géhin, 1882. Revue d'Entomologie. Société Française d'entomologie. I: 263-264

Carabus parreyssi var. *purpurifer* Reitter, 1885. Deutsch. ent. Zs.: 194

Carabus parreyssi ganglbaueri Apfelbeck, 1890, nec Reitter, 1888

Carabus parreyssi var. *planinaecola* Csiki, 1906. Magyarorsz. Bograf.: 154

Carabus parreyssi var. *squamidisculptus* Reitter, 1908. Wien. ent. Ztg.: 36

References

Carabus Parreyssi var. *Gattereri*: Géhin, 1882: 263-264

Carabus parreyssi var. *gattereri*: Apfelbeck, 1894: 213

Carabus parreyssi var. *Ganglbaueri*: Apfelbeck, 1894: 213

Carabus (Carabus) parreyssi parreyssi: Apfelbeck, 1904: 36 part

Carabus (Carabus) parreyssi gattereri + *ganglbaueri*: Apfelbeck, 1904: 36

Carabus (Eucarabus) parreyssi parreyssi + var. *gattereri*: Breuning, 1932-1936: 372-373, 374-375 (part)

Carabus catenulatus v. *Gattereri*: Novak, 1952: 14

Carabus catenulatus a. *Ganglbaueri*: Novak, 1952: 15

Carabus (Eucarabus) parreyssii: Turin et al., 2003: 188-189 part

Carabus (Eucarabus) parreyssii parreyssii: Turin et al., 2003: 189 part

BiH: Bjelašnica-Trebević (Apfelbeck, 1894 sub *gattereri*); Gola Jahorina (Apfelbeck, 1894 sub *Ganglbaueri*); "Zentral- und Südbosnien" (= Central and South Bosnia) (Apfelbeck, 1904 sub *parreyssi gattereri* + *ganglbaueri*); Dalmatien, dinarische Alpen (= Dalmatia, Dinara Planina); "West- und Nord-Bosnien" (= West and North Bosnia) (Apfelbeck, 1904 sub *parreyssi parreyssi*); Trescavica; Bjelasnica; Vlasic Planina; Gola Jahorina; Romania Planina; Dinarische Alpe (= Dinara Planina) (Breuning, 1932-1936 sub *parreyssi*); Dinara; Cincar (Novak, 1952 sub *Gattereri*); Cincar (Novak, 1952 sub *Ganglbaueri*); Central Bosnia; North, East Herzegovina; Dinara Alps; (Turin et al., 2003 sub *parreyssii*); Bosnia; North Herzegovina (Turin et al., 2003 sub *parreyssii*)

Examined material: Lectotype *Carabus parreyssi ganglbaueri* Apfelbeck, 1890 (cNMBH) (Figs. 24a,b); 1 male, Bosnia-Herzegovina, Lebrsnik (cNMBH); 1 male, Bosnia-Herzegovina, Sarajevo, Miljevici (cNMBH); 2 males, 2 females, Bosnia-Herzegovina, Bjelasnica Planina (cIR); 1 female, Bosnia-Herzegovina, Bjelasnica (ex Apfelbeck) (cIR); 1 female, Bosnia-Herzegovina, Bjelasnica Planina, VII.1978 (cIR); 1 female, Bosnia-Herzegovina, Bjelasnica Mt., 2000m, 6/11.VII.2014, I. Martinu leg. (cIR); 1 female, Bosnia-Herzegovina, Volujak (cIR); 3 males, Bosnia-Herzegovina, Vysosica Planina (cIR); 1 male, Bosnia-Herzegovina, Cincar pl., 1600m, 18.VI.1930 (cIR); 1 male, Bosnia-Herzegovina, Tjentiste, Perućica, 9.IX.1977 (cIR); 7 males, 9 females, Bosnia-Herzegovina, Foča prov., Tjentiste, Maglic Mt., 1550m, 11/27.VIII.2015, F. Sandel leg. (cIR); 1 male, 1 female, Bosnia-Herzegovina, Čvakovica, Ilica pl., 27.4.1972, B. Drovenik leg (cIR); 1 female, Bosnia-Herzegovina, Livno, Krug Planina (cIR); 1 male, 1 female, Bosnia-Herzegovina, Livno (cIR); 1 female, Bosnia-Herzegovina, Glamoc (cIR); 1 male, Bosnia-Herzegovina, Vrelo Bosne, Brezovača, Igman, 700m 19.9.1987 (cIR); 3 females, idem 22.8.1985 (cIR); 2 females, idem 21.7.1978 (cIR); 1 female, Bosnia-Herzegovina, Sarajevo (cIR); 1 female, Bosnia-Herzegovina, Igman, Veliko Polje, 1350m, 3.9.1967 (cIR); 4 females, Bosnia-Herzegovina, Jahorina, 29.6.1974, B. Drovenik leg. (cIR); 2 males, Bosnia-Herzegovina, Bjelašnica, 30.6.1984 (cIR); 2 males, Bosnia-Herzegovina, Bjelašnica (cIR); 1 female, Bosnia-Herzegovina, Bjelašnica, Kradenik, 850m, 15.9.1974 (cIR); 1 male, Bosnia-Herzegovina, Glasinac (cIR); 1 female, Bosnia-

Hercegovina, Hrbljina (cIR); 1 male, Bosnia-Hercegovina, Zelengora, 1906 (cIR); 1 male, Bosnia-Hercegovina, Lebršnik, 23.7.1969, E. Pretner leg. (cIR); 1 male, 2 females, Bosnia-Hercegovina, Bjelasnica, 1900m (cFK); 1 female, Bosnia-Hercegovina, Hadzici, Bjelasnica (cFK); 2 females, Bosnia-Hercegovina, Cincar pl., 1600m, 30.V.1930, Coll. Novak (cCNM).

Small size (from 19 mm to 22 mm for the males; from 20 mm to 23 mm for the females), stout and convex. Close to *parreyssi parreyssi* but with very variable colour, usually more shiny. Less transverse pronotum, narrower at the base. Hind angles of pronotum shorter protruding its base and moderately bent upwards. Elytral sculpture a little more rough and heterodynamic. Apex of aedeagus more elongate and strongly crenate behind the apex.

Geographical distribution. Widespread from South Bosnia (Mountains South from Sarajevo; East from Sarajevo, Glasinac), Northern Hercegovina (Livno env.).

Ecology. The subspecies prefers the mountain pastures from 1.200 m to 2.000 m, locally at lower altitude in rocky meadows, scrubs. In general quite common, not endangered (B. Drovenik *pers. observ.*).

Note. *C. parreyssi gattereri* was described from "Styrien", the type locality is obviously wrong. The Lectotype preserved in the NMHN Paris (Figs. 24a,b) fits with the specimens from the South from Sarajevo, Bjelašnica Planina (Fig. 21), that we consider as the true *locus typicus* of the subspecies. Through its area *C. p. gattereri* shows a significant variability: the specimens from the type locality (Mount South from Sarajevo) are shorter and convex, the dominant coloration is copper-gold with green shades, quite shiny; the specimens from Tjentište (Mt. Perućica Planina, Mt. Maglić Planina) are slender, all the specimens examined are copper-gold, very shiny; the specimens from Hercegovina (Livno, Mt. Krug Planina, Mt. Činčar) are larger, more convex, darker color, mat and with stronger elytral sculpture.

C. p. planinaecola Csiki, 1906 (nom pro *ganglbaueri* Apfelbeck, 1890 nec Reitter, 1888; *squamidisculptus* Reitter, 1908 nom pro *ganglbaueri* Apfelbeck, 1890 nec Reitter, 1888) is a mere synonym of *C. p. gattereri* as already established by Breuning (1932-1936).

***Carabus (Eucarabus) parreyssi tippmannianus* Beheim & Breuning, 1943**

Carabus (Eucarabus) parreyssi ssp. *tippmannianus* Beheim et Breuning, 1943. Mitt. der Münch. Ent. Ges., XXXIII: 9-10

References

- Carabus (Eucarabus) parreyssi parreyssi* + var. *gattereri*: Breuning, 1932-1936: 372-373, 374-375 (part)
Carabus (Eucarabus) parreyssi ssp. *tippmannianus*: Beheim et Breuning, 1943: 9-10
Carabus (Eucarabus) parreyssii tippmannianus: Turin et al., 2003: 189 part
Carabus (Eucarabus) parreyssi: Čurčić et al., 2007: 96-97
Carabus (Eucarabus) parreyssi plassensis: Čurčić et al., 2007: 97

BiH: Brcka (= Brčko) (Breuning, 1932-1936);

Serbia: Fruška Gora (Syrmien) (Beheim et Breuning, 1943 Loc. Typ.); East Serbia (Turin et al., 2003); Serbia, without precise locality; Sremska Mitrovica, Mt. Fruška Gora (Čurčić et al., 2007 sub *parreyssi*); Serbia, without precise locality; Sremska Mitrovica; Mt. Fruška Gora (Čurčić et al., 2007 sub *plassensis*)

Examined material: 1 male, 22 females, Croatia, Petrinja, Zrinska Gora, Piramida env., 500/600m, VI.2015 I. Rapuzzi leg. (cIR); 6 females, Croatia, Petrinja, Zrinska Gora, Maćinovići env., 240m, VI.2015, I. Rapuzzi leg. (cIR); 51 females, Croatia, Petrinja,

Hrastovica env., 150m, VI.2015, I. Rapuzzi leg. (cIR); 1 male, 1 female, Croatia, Sisak, Moslavina reg., Glina, near Donji Zirovac, Komora, 350m, VI.2016, I. Rapuzzi & F. Kleinfeld leg. (cIR); 1 male, 1 female, Bosnia-Herzegovina, Kozara N. P., 28/31.VII.2010 (cIR); 1 male, 1 female, Bosnia-Herzegovina, Srbac, Donjia Lepenica, Motalica Planina, 470m, I. Rapuzzi & F. Kleinfeld leg. (cIR); 7 males, 6 females, Bosnia-Herzegovina, Srbac, Bosanski Kobas, Motalica Planina, 140m, I. Rapuzzi & F. Kleinfeld leg. (cIR, cFK); 2 males, 1 female, Bosnia-Herzegovina, Kotor Varoš, Borja Planina, Solila pass, 850m, VI.2016, I. Rapuzzi & F. Kleinfeld leg. (cIR, cFK); 1 male, Serbia, Banat (Reitter) (cIR).

Small-medium size [from 21 mm to 24 mm for the males; from 21 mm to 25 mm for the females; 20mm to 22mm in the original description of Beheim et al. (1943)]. Poorly variable colour: blue, blue-violet, blue-green (only 2 specimens from the Westernmost part of its of distribution are copper-gold); shiny. Very short and stout shape, disc of elytra rather convex. Pronotum transverse, hind angles very long developed behind its base and strongly bent upwards; surface of pronotum very shine and sparsely punctured. Elytral sculpture nearly of homodyname triploid type, very regular, null or slightly punctured transversally. Aedeagus in lateral view (Fig. 17b) and frontal view (Fig. 17c).

Geographical distribution. Widespread on the Pannonian hills South from Sava River (Zrinska Gora, Kozara Planina, Motalica Planina), isolated on Fruška Gora (loc. typ.) North from Sava River.

Ecology. The subspecies inhabits deciduous mixed forests at low-medium altitude. Not endangered, except in the areas subject to intensive forest clearing.

***Carabus (Eucarabus) parreyssi plassensis* Born, 1907**

Carabus catenatus plassensis nov. subspec. Born, 1907. Societas Entomologica XXII: 49-50

References

- Carabus catenatus plassensis*: Born, 1907: 49-50
Carabus (Eucarabus) parreyssi parreyssi + var. *gattereri*: Breuning, 1932-1936: 372-373, 374-375 (part)
Carabus (Eucarabus) parreyssi plassensis: Breuning, 1932-1936: 373, 375 (part)
Carabus (Eucarabus) parreyssi strauchi: Breuning, 1932-1936: 373, 375-376 (part)
Morphocarabus parreyssi plassensis: Rautenstrauch et al., 1994: Tav. 14, Fig. 4
Carabus (Eucarabus) parreyssii: Turin et al., 2003: 188-189 part
Carabus (Eucarabus) parreyssii parreyssii: Turin et al., 2003: 189 part
Carabus (Eucarabus) parreyssii plassensis: Turin et al., 2003: 189 part

BiH: “Auf dem bewaldeten Abhange der Plassa bei Jablanica an der bosnisch-herzegovinischen Grenze von Herrn Leonhard in grösserer Anzahl erbeutet” (Born, 1907 loc. typ.); Velez Planina (Breuning, 1932-1936 sub *parreyssi*); Plasa (Breuning, 1932-1936 sub *plassensis*); Herzegovina, Ruiste bei Mostar; Drenovac; Nemila; Prenj Planina (Breuning, 1932-1936 sub *strauchi*); Plassa planina (Rautenstrauch et al., 1994); South Herzegovina (Plasa Planina) (Turin et al., 2003 sub *parreyssii*); South Herzegovina (Prenj Planina) (Turin et al., 2003 sub *parreyssii*); Drenovac; Herzegovina: Plasa, vicinity of Mostar; Prenj Planina (Turin et al., 2003 sub *plassensis*)

Examined material: Lectotype male, 14 Paralectotypes males and 20 Paralectotypes females (cETH); 1 male, 1 female, Bosnia-Herzegovina, Veliki Vran, 1320m (cNMBH); 1 female, Bosnia-Herzegovina, Herzegovina, Plassa pl. (cIR); 1 female, Bosnia-Herzegovina, Plasa pl, Herzegovina, 1000m, 6.7.1924, Svirčev (cIR); 1 male, Bosnia-Herzegovina, Herzegovina, Prenj 16.7.1970, (cIR); 1 male, 3 females, Bosnia-Herzegovina, Prenj, Jezerce, 17.7.1979 B.Drovenik leg (cIR); 1 male, 1 female, Bosnia-Herzegovina, Prenj pl. (cIR); 1 male, Bosnia-Herzegovina, Prenj, Rujište 20.6.1971 (cIR); 1 male, 1 female, Bosnia-Herzegovina, Nevesinje (cIR); 1 male, Bosnia-Herzegovina, Herc., Plassa Planina, Coll. Leonhard (cIR); 1 male, 3 females, Bosnia-Herzegovina, Herzegovina, Plassa Planina (cIR);

1 male, Bosnia-Herzegovina, Diva Grabovica, Plasa Planina, 1400-1600m, Svirčev (cIR); 1 male, 1 female, Bosnia-Herzegovina, Plasa Planina (cFK); 1 female, Bosnia-Herzegovina, Plasa (cFK); 1 male, Bosnia-Herzegovina, Plasa, Kanabe De 7ŠO (cFK); 1 male, Bosnia-Herzegovina, Diva Grabovica, VI.1930 (cFK).

Large size (mm to mm males; mm to mm females). Poorly variable colour in the Type Locality: dark blue, violet, blue-green; more variable in the other localities; rather mat. Quite stout shape, disc of elytra moderately convex. Pronotum moderately transverse, hind angles quite short and rounded, slightly bent upwards. Elytral sculpture triploid quite homodynamy, very regular, striae punctured transversally. Aedeagus in lateral view (Fig. 25b) and frontal view (Fig. 25c).

Geographical distribution. Localized on the mountains of Southwest Herzegovina (Cvrstnica Planina, Prenj Planina, Nevesinje).

Ecology. Mainly in mixed forest or in the edge of forest at medium-high altitude. Recent records missing from the type locality (Plasa planina = Plasa Planina on the Cvrstnica Planina near Jablanica).

ACKNOWLEDGEMENTS

Thanks to Luisa Caldon (San Vito al Tagliamento, Italy), Rodney Eastwood (CETH, Zürich, Swiss), Paolo Glerean (Museo Friulano Storia Naturale, Udine, Italy), Dejan Kulijer (National Museum of Bosnia and Herzegovina, Sarajevo, Bosnia Herzegovina), Vlatka Micetic Stankovic (Croatian Natural History Museum, Zagreb, Croatia), Franco Sandel (Miane, Treviso, Italy) and Claudio Sola (Guiglia, Modena, Italy). We sincerely thanks Dr. Božidar Drovenik (Kamnik, Slovenia) for sharing us his precious information and observations on the West Balkans *Carabus* fauna and Mr. Helmut Schütze (Gleichen, Germany) for his support in the literature search as well as his additions and some corrections of the work.

Acronyms:

cCNM: Collection Croatian Natural Museum (Zagreb, Croatia)
 cMFSN: Collection Museo Friulano di Storia Naturale (Udine, Italy)
 cMNHNP: Collection Museum National d'Histoire Naturelle Paris (Paris, France)
 cNMBH: Collection National Museum of Bosnia and Herzegovina (Sarajevo, Bosnia Herzegovina)
 cETH: Collection Eidgenössische Technische Hochschule Zürich (Zurich, Swiss)
 cFK: Frank Kleinfeld collection (Fürth, Germany)
 cHS: Helmut Schütze collection (Gleichen, Germany)
 cIR: Ivan Rapuzzi collection (Prepotto, Italy)
 cOF: Oskar Friedrich collection (Kassel, Germany)
 cCS: Claudio Sola collection (Modena, Italy)

LITERATURE CITED

- Apfelbeck, V.** 1890. Neue Arten und Varietäten des Tribus 'Carabidae', die in den Jahren 1887-89 in Bosnien und Herzegovina entdeckt wurden. Glasnik 1890, p. 99-104.
Apfelbeck, V. 1894. Rezultati koleopteroškog ispitivanja iz alpinske regije južno-bosanskih planina. Enumeratio coleopterorum in alpinum Bosniae meridionalis regione alpinae collectorum. Glasnik zemaljskog Muzeja Bosne-Herzegovine, Sarajevo, 6: 209-223.
Apfelbeck, V. 1894. Fauna insectorum balcanica. - Beiträge zur Kenntniss der Balkanfauna. Wissenschaftliche Mitteilungen aus Bosnien und der Herzegovina. Band II: 511-542.
Apfelbeck, V. 1904. Die Käferfauna der Balkanhalbinsel. Verlag R. Friedländer & Sohn, Berlin.
Beheim, D. & Breuning, S. 1943. Neubeschreibungen von Caraboidea u. Revisionen an den v. Breuning'schen Monographien von *Carabus*, *Calosoma* und *Ceroglossus*. Mitteilg. Münchner Entomol. Gesellschaft, 33: 9.
Beuthin, H. 1894. Die Varietäten des *Carabus Parreyssi Palliardi*. Societas Entomologica, 9 (13).

- Born, P.** 1907. Zwei neue *Carabus*-Formen von der Balkanhalbinsel. Societas Entomologica, 22 (1907-1908) no. 7: 49-50.
- Born, P.** 1908. *Carabus catenatus strauchii*. Societas Entomologica, 23: 137-138.
- Breuning, S.** 1932-1936. Monographie der Gattung *Carabus* L. Bestimmungstabelle der europäischen Coleopteren. Troppau, 1610 pp.
- Březina, B.** 1999. World Catalogue of the Genus *Carabus*. Pensoft Sofia-Moscow, 170 pp.
- Csiki, E.** 1905-1908. Magyarországi Bogárfaunája (Die Käferfauna Ungarns). Budapest, 798 pp.
- Čurčić, S., Brajković, M. & Čurčić, B.** 2007. The Carabids of Serbia. Geokarta, Belgrade, Serbia, 1083 pp.
- Dejean, P.** 1826. Species général des Coléoptères, Tome II, Paris.
- Dejean P. & Boisduval J.-A.** 1829. Iconographie et Histoire naturelle des Coléoptères d'Europe. Chez Méquignon-Marvais, Libraire – Editeur Tome I: 270-400.
- Deuve, Th.** 2004. Illustrated Catalogue of the Genus *Carabus* of the World. Pensoft Sofia-Moscow, 461 pp.
- Géhin J. B.** 1882. Sur une variété du *Carabus parreyssi*. Revue d'Entomologie. Société Française d'entomologie, I: 263-264.
- Jambošić Vladić, Ž. J., Postić, S., Šerić Jelaska, L.** 2015. Morphological difference between two sister species: *Carabus (Eucarabus) parreyssi* and *Carabus (Eucarabus) catenulatus* from Dinaric karst and body size variations along altitudinal gradients. Primošten, Croatia, 20-25.IX.2015, Abstract: 83.
- MNHN.** 2018. https://science.mnhn.fr/institution/mnhn/collection/ec/item/ec419?lang=en_US
- Novak, P.** 1952. Kornjaši Jadranskog Primorja (Coleoptera). Jugoslavenska Akademija Znanosti i Umjetnosti, 521 pp.
- Palliard, A.** 1825. Beschreibung zweyer Decaden neuer und wenig bekannter Carabiden. Wien, J. G. Hübner: 5: 6.
- Rautenstrauch A., Rautenstrauch E. & Rautenstrauch G.** 1994. *Carabus* Europa und Nordafrika. Eigenverlag Erwin Rautenstrauch, 60 pp., 102 tav.
- Reitter, E.** 1885. Coleopterologische Ergebnisse einer Excursion nach Bosnien im Mai 1884. Deutsche Entomologische Zeitschrift, Berlin 29.
- Reitter, E.** 1908. Coleopterologische Notizen. Wiener Entomologische Zeitung, XXVII: 36.
- Schütze, H.** 2010. Fundorte-Verzeichnis (Gazetteer) zur Caraben-Fauna von Mittel-, Ost-, Südost- und Süd-Europa. Die heute gültigen Namen historischer *Carabus*-Fundorte und ihre geographische Lage. Eigenverlag. ISBN 978-3-00-030261-9.
- Schütze, H. & Friedrich, O.** 2015. Paul Born – ein Leben für *Carabus*. Entomologische Zeitschrift. Schwanfeld, 125 (3): 181-189.
- Šerić Jelaska, L., Jambošić Vladić, Ž., Radovanović, H. & Franjević, D.** 2014. Comparison of molecular and morphological systematics of *Carabus* species (Coleoptera: Carabidae) with special emphasis on species from Dinaric karst. Periodicum Biologorum, 116 (3): 249-257.
- Turin H., Penev L. & Casale A.** 2003. The Genus *Carabus* in Europe. A Synthesis. Pensoft Publisher, Sofia-Moscow, 511 pp.

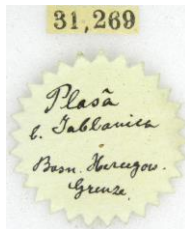


Figure 1a. *C. parreyssi plassensis* Born, 1907 Lectotype labels (cETH), 1b. *C. parreyssi plassensis* Born, 1907 Lectotype (cETH).

31,254



Figure 2a. *C. parreyssi plassensis* Born, 1907 Paralectotype labels (cETH), 2b. *C. parreyssi plassensis* Born, 1907 Paralectotype female (cETH).



Figure 3a. *C. catenulatus catenulatus* Scopoli, 1763 (= *Carabus catenatus strauschi* Born, 1908) Lectotype labels (cETH), 3b. *C. catenulatus catenulatus* Scopoli, 1763 (= *Carabus catenatus strauschi* Born, 1908) Lectotype (cETH), 3c. *C. catenulatus catenulatus* Scopoli, 1763 (= *Carabus catenatus strauschi* Born, 1908) Lectotype, details of head and pronotum (cETH).

42,614



Figure 4a. *C. catenulatus catenulatus* Scopoli, 1763 (= *Carabus catenatus strauschi* Born, 1908) Paralectotype female labels (cETH), 4b. *C. catenulatus catenulatus* Scopoli, 1763 (= *Carabus catenatus strauschi* Born, 1908) Paralectotype female (cETH).

42,615



Figure 5a. *C. catenulatus catenulatus* Scopoli, 1763 (= *Carabus catenatus strauschi* Born, 1908) Paralectotype female labels (cETH), Figure 5b. *C. catenulatus catenulatus* Scopoli, 1763 (= *Carabus catenatus strauschi* Born, 1908) Paralectotype female (cETH).



Figure 6a. *C. catenulatus catenulatus* Scopoli, 1763 (= *Carabus catenatus strauschi* Born, 1908) Paralectotype female labels (cETH), Figure 6b. *C. catenulatus catenulatus* Scopoli, 1763 (= *Carabus catenatus strauschi* Born, 1908) Paralectotype female (cETH).



Figure 7a. *C. parreyssi paulborni* n. subsp. Holotype (cIR), 7b. *C. parreyssi paulborni* n. subsp. male aedeagus in lateral view (cIR), 7c. *C. parreyssi paulborni* n. subsp. male aedeagus in dorsal view (cIR).



Figure 8. *C. parreyssi paulborni* n. subsp. Paratype female, 29mm. Loc. Typ. (cIR).



Figure 9. *C. parreyssi paulborni* n. subsp. Paratype female, 30mm. From: Bihac, Cazin, North from Coralici, Jusin Put, 350m (cIR).



Figure 10. *C. parreyssi paulborni* n. subsp. Paratype male, 26mm. From: West from Zepce, Manjaca Planina, 850m (cIR).



Figure 11a. *C. parreyssi durmitoricola* n. subsp. Holotype (cIR), 11b. *C. parreyssi durmitoricola* n. subsp. male aedeagus in lateral view (cIR), 11c. *C. parreyssi durmitoricola* n. subsp. male aedeagus in dorsal view (cIR).



Figure 12. *C. parreyssi durmitoricola* n. subsp. Paratype male, 20mm. From: Montenegro, Durmitor, Dobri Do, 1900m (cIR).



Figure 13a. *C. parreyssi parreyssi* Palliardi, 1825. Male 22mm. From: Croatia, Velebit, Mt. Vujak, 1200m (cIR), 13b. *C. parreyssi parreyssi* Palliardi, 1825. Male aedeagus in lateral view (cIR), 13c. *C. parreyssi parreyssi* Palliardi, 1825. Male aedeagus in dorsal view (cIR).



Figure 14. *C. parreyssi parreyssi* Palliardi, 1825. Female, 21mm. From: Croatia, Velebit, Mt. Zavižan, 1400/1500m (cIR).



Figure 15. *C. parreyssi parreyssi* Palliardi, 1825 (= *purpurifer* Reitter, 1885). Female, 22mm. From: Croatia, Velebit, Mt. Zavižan, 1500m (cIR).



Figure 16. *C. parreyssi parreyssi* Palliardi, 1825 (= *dobiaschi* Beuthin, 1894). Female, 21mm. From: Croatia, Lika, Babin Potok (cIR).



Figure 17a. *C. parreyssi tippmannianus* Beheim & Breuning, 1943. Male, 22mm. From North Bosnia, Srbać, Bosanski Kobaš, Motalica Planina, 140m (cIR), 17b. *C. parreyssi tippmannianus* Beheim & Breuning, 1943. Male aedeagus in lateral view (cIR), 17c. *C. parreyssi tippmannianus* Beheim & Breuning, 1943. Male aedeagus in dorsal view (cIR).



Figure 18. *C. parreyssi tippmannianus* Beheim & Breuning, 1943. Female, 23mm. From: North Bosnia, Kozara Planina (cIR).



Figure 19. *C. parreyssi tippmannianus* Beheim & Breuning, 1943. Male, 21mm. From: Banat (cIR).



Figure 20a. *C. parreyssi gattereri* Géhin, 1882. Male, 20mm. From: Bosnia, Peručica, Tjentiste (cIR), 20b. *C. parreyssi gattereri* Géhin, 1882. Male aedeagus in lateral view (cIR), 20c. *C. parreyssi gattereri* Géhin, 1882. Male aedeagus in dorsal view (cIR).



Figure 21. *C. parreyssi gattereri* Géhin, 1882. Female, 22mm. From: Bosnia, Bjelasnica Planina (cIR).



Figure 22. *C. parreyssi gattereri* Géhin, 1882. Male, 21mm. From: Bosnia, Glasinac (cIR).



Figure 23a. *C. parreyssi gattereri* Géhin, 1882. Lectotype labels (cMNHNP), 23b. *C. parreyssi gattereri* Géhin, 1882. Lectotype (cMNHNP).



Figure 24a. *C. parreyssi gattereri* Géhin, 1882 (= *ganglbaueri* Apfelbeck, 1890). Lectotype labels (cNMBH), 24b. *C. parreyssi gattereri* Géhin, 1882 (= *ganglbaueri* Apfelbeck, 1890). Lectotype (cNMBH).



Figure 25a. *C. parreyssi plassensis* Born, 1907. Male, 27mm. From: Bosnia, Diva Grabovica, Plasa planina (cIR), 25b. *C. parreyssi plassensis* Born, 1907. Male aedeagus in lateral view (cIR), Figure 25c. *C. parreyssi plassensis* Born, 1907. Male aedeagus in dorsal view (cIR).

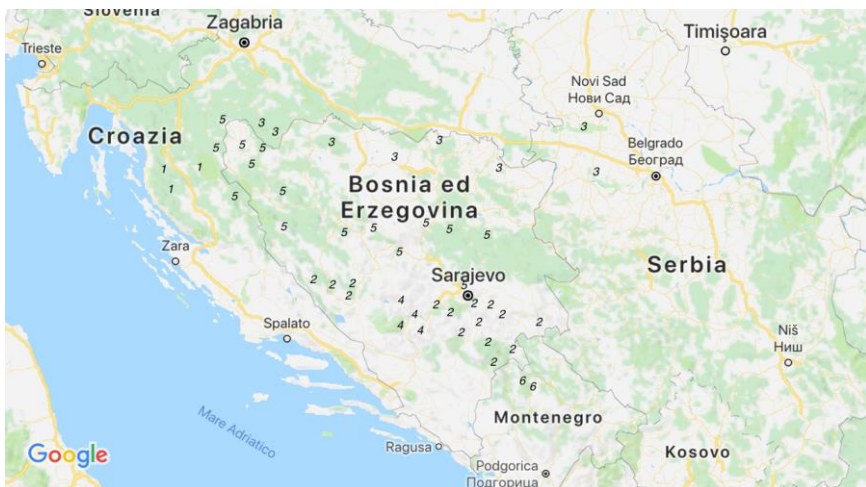


Figure 26. Distribution map of *Carabus parreyssi*: 1 - *C. parreyssi parreyssi* Palliardi, 1825; 2 - *C. p. gatterei* Géhin, 1882; 3 - *C. p. tippmannianus* Beheim & Breuning, 1943; 4 - *C. p. plassensis* Born, 1907; 5 - *C. p. paulborni* n. subsp.; 6 - *C. p. durmitoricola* n. subsp.