

## A new subspecies of *Dorcadion fulvum* (SCOPOLI, 1763) (Coleoptera: Cerambycidae) from western Ukraine

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**ABSTRACT.** This study provides a description of *Dorcadion fulvum opillicum* ssp. nov., which is the fourth subspecies of the central European species *Dorcadion fulvum* (SCOPOLI, 1763). The new subspecies was compared with its closest relative, *Dorcadion fulvum erythropterum* FISCHER VON WALDHEIM, 1823. A differential diagnosis and a key to taxa identification are provided. The distribution of all four subspecies of *D. fulvum* was clarified and mapped with comments on the most contradictory published data.

**KEY WORDS:** new taxa, *Dorcadion fulvum opillicum* ssp. nov., longhorn beetles, Opillya steppes

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### INTRODUCTION

Since Breuning's revision of Dorcadionini, three subspecies of *Dorcadion fulvum* (SCOPOLI, 1763) have been recognized (BREUNING 1962): *Dorcadion fulvum fulvum* (SCOPOLI, 1763), *Dorcadion fulvum cervae* FRIVALDSZKY, 1892 and *Dorcadion fulvum canaliculatum* FISCHER-WALDHEIM, 1823. LÖBL & SMETANA (2010) accepted *D. f. canaliculatum* as a synonym of *Dorcadion fulvum erythropterum* FISCHER VON WALDHEIM, 1824. The same authors also recognized *D. f. cervae* as a distinct species, *Dorcadion cervae* FRIVALDSZKY, 1892. However, a comparison of the mitochondrial cytochrome c oxidase gene subunit I (COI) sequences obtained from *D. f. cervae* and *D. f. fulvum* revealed similar sequence patterns between these two taxa (MERKL et al. 2007). These findings by MERKL et al. (2007) support the idea that *D. cervae* is a subspecies of *D. fulvum*.

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In this study I discuss three subspecies of *D. fulvum*: *D. f. fulvum*, *D. f. cervae*, *D. f. erythropterum* and provide a description of a fourth subspecies *D. f. opillicum* **ssp. nov.**

#### MATERIALS AND METHODS

This study is based on my own materials, as well as those deposited in the collections of scientific institutions (Vasyl Stefanyk Precarpathian National University (PNU), Halych National Park (HNP), State Museum of Natural History (SMNH), Nature Reserve "Medobory" (NRM), State Museum of Nature of the V. N. Karazin Kharkiv National University (SMNKNU)) and the private collections of Mr Ruslan PANIN (RP) and Mr Oleksander KRAVCHENKO (OK).

Comparative material: 1♂ 19.06.2018, the village of Kopachyntsi, Horodenka distr., Ivano-Frankivsk Reg., Ukraine, coll. A. ZAMOROKA (AZ); 3♂♂ 5♀♀ 11.05.2010, 2♂♂ 25.05.2016, loc. "Tovtra Dovha", the village of Vikno, Husyatyn distr., Ternopil Reg., Ukraine, coll. Ya. KAPELYUKH (NRM); 1♂ 1♀ 09.05.2010, near the town of Berezivka, Odessa Reg., coll. O. KRAVCHENKO (OK); 1♂ 1♀ 09.06.2007, the village of Holohirky, Zolochiv distr., Lviv Reg, Ukraine, coll. R. PANIN (RP); 5♂♂ 3♀♀ 20.06.2004, near the city of Kolomyia, Ivano-Frankivsk Reg., Ukraine, coll. A. ZAMOROKA (PNU); 2♂♂ 6♀♀ 15.06.2001, "Vovchynetski Hory", near the city of Ivano-Frankivsk, Ivano-Frankivsk Reg., Ukraine, coll. A. ZAMOROKA (PNU); 1 undated ♂, loc. "Haydamatskyi Yar", the village of Busha, Yampil distr., Vinnytsya Reg., Ukraine, coll. D. KURINNYI (RP); 1 undated ♀, near the city of Odesa, Ukraine, coll. A. HONTARENKO (OK); 1 undated specimen, the village of Ivankiv, Borschiv distr.; 1 undated specimen, the village of Derenivka, Terebolliya distr., Ternopil Reg., Ukraine (SMNH).

The holotype (1♂) and 3 paratypes (1♂ and 2♀♀) are deposited in the PNU collection; 2 paratypes (1♂ and 1♀) are deposited in the HNP collection and 24 paratypes (13♂♂ and 11♀♀) are preserved in the author's collection (AZ).

The habitus photographs of the entire beetles and their parts were taken using a DLT-Cam PRO 5 MP USB camera attached to a Nikon SMZ-1 stereomicroscope at 40× magnification. Images were then aligned and stacked in the DLTCamViewer x86, 3.7.7892 software package and enhanced in Adobe Photoshop CS3 v. 10.0.

## RESULTS

**Type material**

*Holotype*: 1♂ 19.06.2015, loc. “Kuropatnytskyi Kamin” (49.286027N, 24.669622E), the village of Kuropatnyky, Halych distr., Ivano-Frankivsk Reg., Ukraine, coll. A. ZAMOROKA (PNU).

*Paratypes*: 3♂♂ 1♀♀ 19.06.2015, loc. “Kuropatnytskyi Kamin” (49.286027N, 24.669622E), the village of Kuropatnyky, Halych distr., Ivano-Frankivsk Reg., Ukraine, coll. A. ZAMOROKA (HNP, AZ); 2♂♂ 1♀ 01.05.2014, 1♀ 15.05.2014, 1♀ 03.06.2014, 3♂♂ 17.06.2014, 1♂ 19.05.2017, loc. “Kasova Hora” (49.224686N, 24.695037E), the village of Bovshiv, Halych distr., Ivano-Frankivsk Reg., Ukraine, coll. A. ZAMOROKA (AZ); 1♂ 2♀♀ 18.04.2014, 1♂ 15.08.2014, loc. “Simlyn” (49.167999N, 24.839748E), the village of Yabluniv, Halych distr., Ivano-Frankivsk Reg., Ukraine, coll. A. ZAMOROKA (AZ); 2♂♂ 21.05.2009, 1♂ 1♀ 31.07.2011, loc. “Mezhyhirskyi Kamin” (49.118435N, 24.803611E), the village of Mezhyhirsia, Halych distr., Ivano-Frankivsk Reg., Ukraine, coll. A. ZAMOROKA (AZ); 1♂ 14.05.2009, 2♂♂ 15.06.2017 loc. “Hora Krasna” (49.240624N, 24.815721E), the village of Stari Skomorokhy, Halych distr., Ivano-Frankivsk Reg., Ukraine, coll. A. ZAMOROKA (AZ).

**Description**

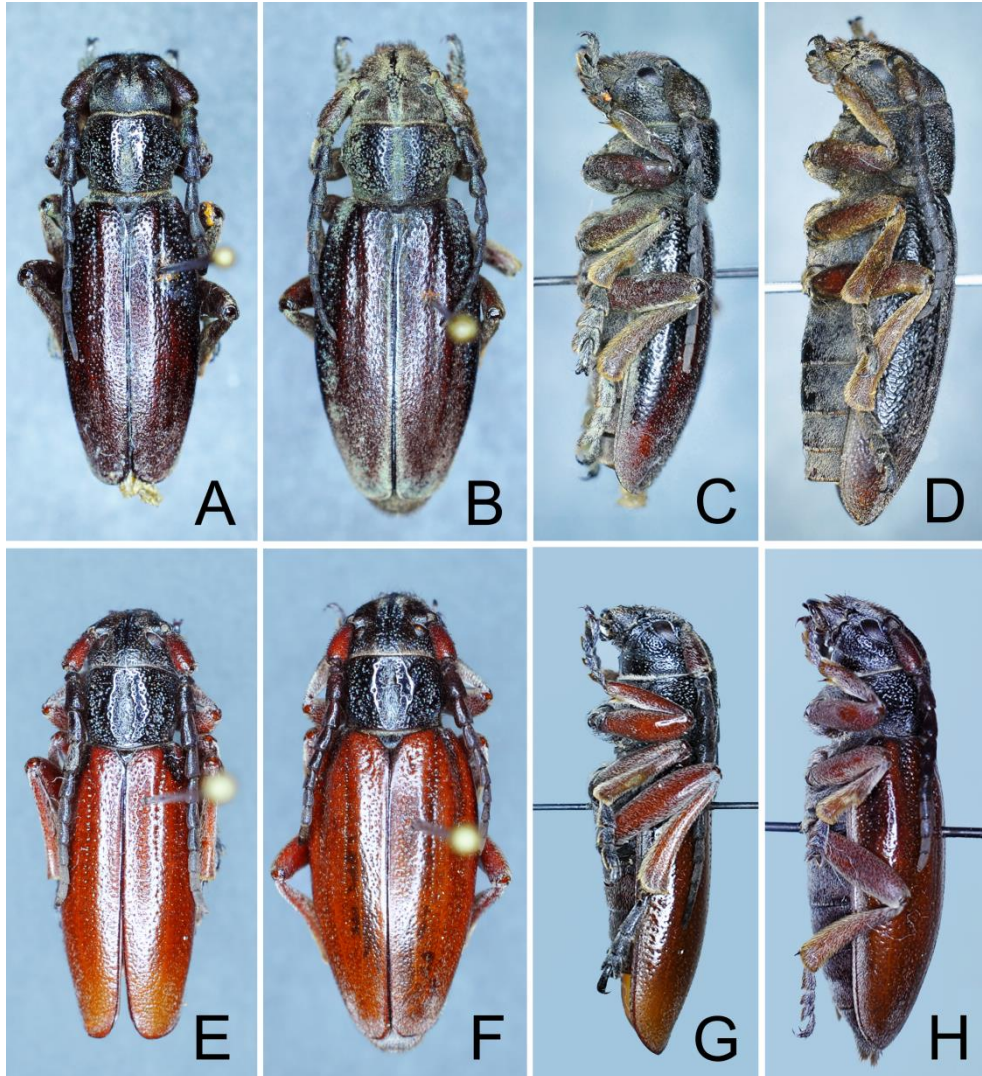
*Dorcadion fulvum opillicum* **ssp. nov.**

**Holotype**: male (Fig. 1A, 1C). Body size 22 mm. Body subcylindrical, moderately elongate. Integuments black with a brownish tint, densely covered with fine hairs.

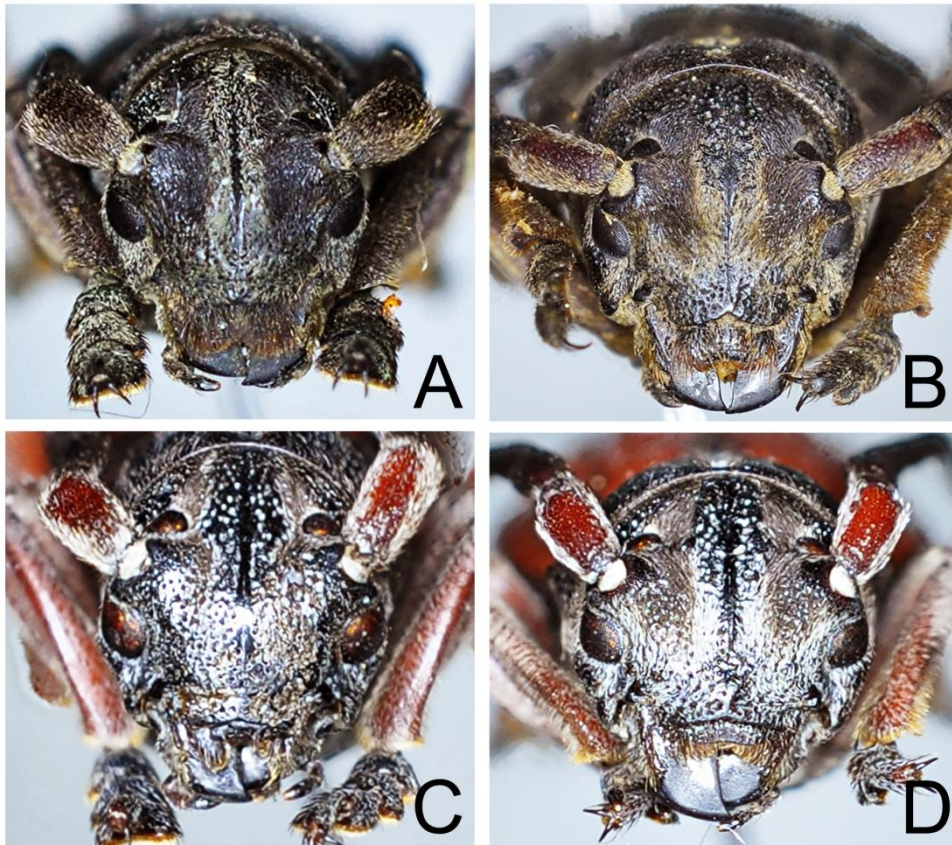
Head with long median sulcus (Fig. 2A), densely covered with pale hairs and with two longitudinal dark brown stripes. Occiput very convex, forming a lump (Fig. 1C) with fine punctation and dust-like hair cover. Frons trapezoidal with rough punctation. Genae and temples smooth, with sparse deep punctures and dust-like hair cover. Labrum long, notched in the middle, and covered with dense hair with bunches of long tough setae. Labrum covers half of mandibles. Antennae black, except for first antennomere, which is dark brown. Narrow longitudinal area on first antennomere covered with short stiff hairs.

Prothorax subcylindrical with lateral spines. Pronotum square. Pronotal median furrow wide and deep, with dense and rough punctation, covered by dust-like hairs. Both sides of furrow glabrous and lustrous, sparsely punctated. Sides and base of pronotum densely covered with deep and coarse punctation, as well as dust-like hairs. Scutellar shield elongate, trapezoidal with median longitudinal depression. Prosternum, mesosternum and metasternum uniformly black, dull, densely and finely punctated, covered with dense short hairs.

Legs dark brown and densely covered with stiff, brush-like yellowish hairs.



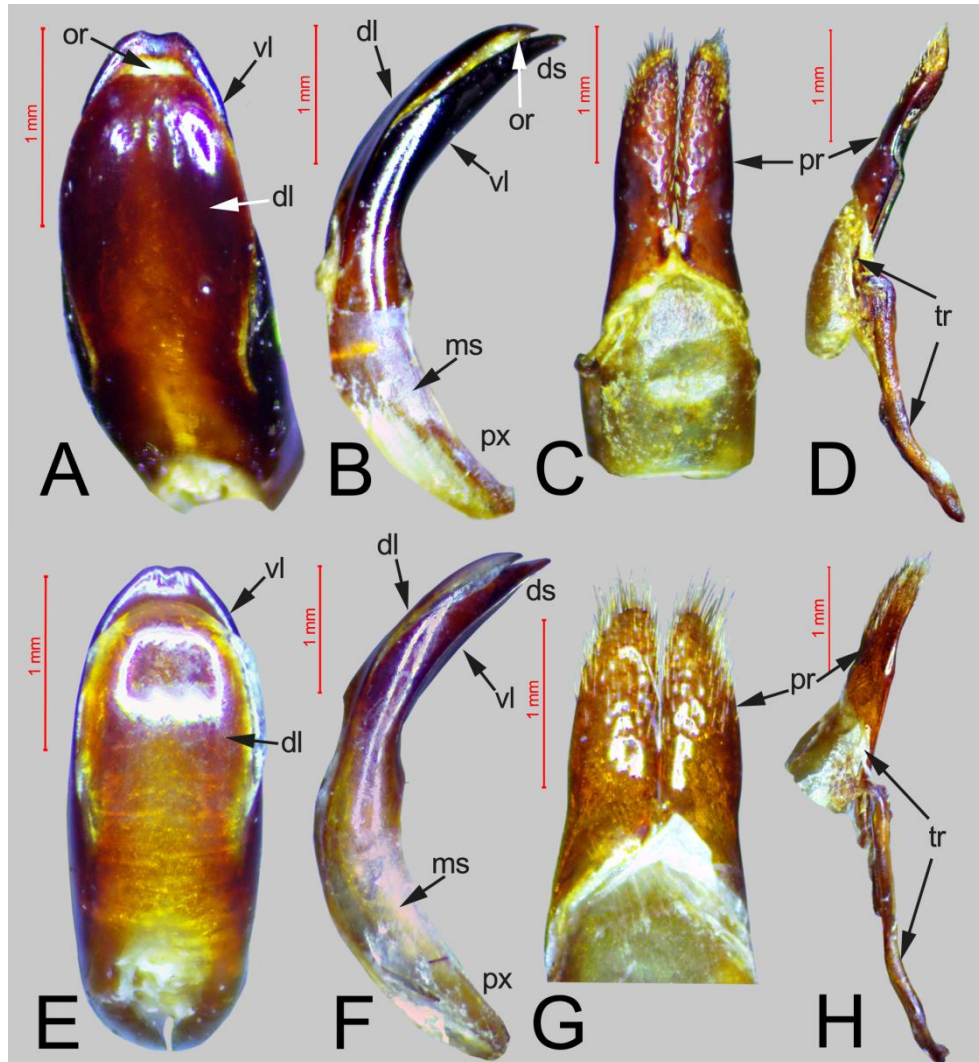
**Fig. 1.** Comparison of *Dorcadion fulvum opillicum* ssp. nov.: holotype (male) – **A** dorsal and **C** lateral view; allotype (female) – **B** dorsal and **D** lateral view; *D. fulvum erythropterum* (Berezivka, Odesa Reg.): male – **E** dorsal and **G** lateral view; female – **F** dorsal and **H** lateral view.



**Fig. 2.** Frontal view of the head of *Dorcadion fulvum opillicum* **ssp. nov.**: **A** holotype (male) and **B** allotype (female); *D. fulvum erythropterum* (Berezivka, Odesa Reg.) **C** male and **D** female.

Elytra elliptical, widest in the middle, apex rounded. Colouration varies from dark brown on disc to black on base and sides. Elytra covered with small dust-like hairs, densely punctated. Disc finely punctated, moderately lustrous; sides of elytra coarsely punctated and slightly rugose. Shoulders smooth. Humeral carinae well developed, extending to middle of elytra. Traces of dorsal carinae present on basal part of elytra.

Abdominal sternites uniformly black, moderately lustrous with very fine but sparse punctation, densely covered with dust-like hairs. Apex of fifth sternite with a small depression.



**Fig. 3.** Comparison of male genitalia: *Dorcadion fulvum opillicum* **ssp. nov.** (holotype) – **A** dorsal and **B** lateral view of the aedeagus, **C** dorsal view of the parameres, **D** lateral view of the entire tegmen; *D. fulvum erythropterum* (Berezivka, Odessa Reg.) – **E** dorsal and **F** lateral view of the aedeagus, **G** dorsal view of the parameres, **H** lateral view of the entire tegmen. Abbreviations: **px** – proximal part, **ds** – distal part, **ms** – median struts, **dl** – dorsal lobe, **vl** – ventral lobe, **or** – orificium, **pr** – parameres, **tr** – tegminal ring.

Genitalia. Median lobe of aedeagus robust, well sclerotized and curved (Fig. 3A, 3B). Proximal (median struts – ms) and distal parts (both dorsal – dl and ventral lobes – vl) of equal length. Dorsal lobe is shovel-shaped, tapering slightly apical and apically truncated, length 2/3 that of ventral lobe. Ventral lobe distinctly longer than apex of dorsal lobe; hence, orificium (or) visible from dorsal side of aedeagus. Apex of ventral lobe moderately notched, its margins thickly sclerotized. Tegmen elongated (Fig. 3C, 3D), its parameres (pr) nearly as long as tegminal ring (tr). Parameres long and narrow, coarsely punctated on internal and apical sides and covered with short hairs.

**Allotype.** For this description I selected 1 female (Fig. 1B, 1D), labelled “Paratype 1”, which is deposited in the collection of PNU. The body (length 23 mm) is more robustly sculptured than in the male holotype.

The female allotype resembles the male holotype except for the characteristic patterns of the head, pronotum and elytra. The female’s head is wider (Fig. 2B). The pronotum is transverse, and is wider than long. The elytra have very robust shoulders, which protrude as far as the pronotal lateral spines. The strong and very well developed humeral carinae run down both sides of the elytra, starting from the shoulders and covering at least two-thirds of the elytra. The dorsal carinae are better developed than in the male. The elytra are coarsely punctated, rugose, and are less lustrous than in the holotype.

**Variations.** The size and colouration of *D. f. opillicum* **ssp. nov.** vary among the population. The elytra in at least 27% of the examined specimens (n=8) had a completely (20%) or partly (7%) pale colouration. The remainder, i.e. 73% (n=22) of the specimens, were dark in colour. The body length in the males varies from 18 to 23 mm (mean = 20.1 mm (n=16)) and in the females from 20 to 24 mm (mean = 22 mm (n=14)).

**Etymology.** The new subspecies is named after the physiographic region of Opillya (western Ukraine), where it was collected.

**Type locality.** “Kuropatnytskyi Kamin” (49.286027N, 24.669622E), 291 m a.s.l., near the village of Kuropatnyky, Halych district, Ivano-Frankivsk Region, Ukraine.

**Habitat.** *D. f. opillicum* **ssp. nov.** inhabits xerophilous steppe localities on the roughly rectangular, flat-topped hills with often karstified (i.e. karstic funnels, sinkholes, deep ravines, rocky outcrops, ponors etc.) steep slopes. The soil is rich in gypsum. *D. f. opillicum* **ssp. nov.** is recorded in various steppe vegetation communities. These include *Brachypodietalia pinnati* KORNECK, 1974, present on the flat-topped hills, summits and gentle slopes, and *Festucetalia valesiaca* SOÓ, 1947, found on the steep south-facing slopes of the hills covered with a thin layer of soil and crushed gypsum stones.

**Differential diagnosis.** *Dorcadion fulvum opillicum* **ssp. nov.** differs from the other three subspecies of *Dorcadion fulvum* (i.e. *D. f. fulvum*, *D. f. cervae*, *D. f. erythropterum*) by the very robust body sculpture that includes coarse and rugose punctation, well developed humeral carinae, dense hair coverage and genitalia morphology. The body shape

of *D. f. opillicum ssp. nov.* more closely resembles *Dorcadion carinatum igrenum* DANILEVSKY, 1998 (specifically, the form with red legs and fulvous elytra), although the genitalia are completely different (not shown here) from those of the geographically closest subspecies *D. f. erythropterum*. The main diagnostic features of *Dorcadion fulvum opillicum ssp. nov.* include the size of the labrum, shape of the occiput, shape of scutellum, elytral sculpture, and male genitalia morphology.

The dominant colouration of *D. f. opillicum ssp. nov.* is black to dark brown on the elytra; it is rarely fulvous, as in the case of *D. f. erythropterum*. The labrum of *D. f. opillicum ssp. nov.* is long and covers at least 1/2 of the mandible (Fig. 2A, 2B), whereas in *D. f. erythropterum* it is short and covers 1/5–1/4 of the mandible (Fig. 2C, 2D). In contrast to *D. f. erythropterum*, where the occiput is nearly flat, the occiput of *D. f. opillicum ssp. nov.* is prominent and convex. The scutellum of *D. f. opillicum ssp. nov.* is elongate and with a median depression, whereas in *D. f. erythropterum* it is short, triangular and uniformly smooth. The elytra of *D. f. opillicum ssp. nov.* are very robustly sculptured. The most prominent features of the elytra are the well-developed, long humeral carinae and big shoulders (Fig. 2A, 2B), especially in the females (as in *D. carinatum igrenum*); in *D. f. erythropterum* these are smooth (Fig. 2E, 2F, 2H). Both subspecies differ in punctuation: the elytra of *D. f. erythropterum* are lustrous, sparsely and finely punctated, whereas the elytral surface of *D. f. opillicum ssp. nov.* is dimmed by dense coarse punctuation and wrinkling. The male genitalia morphology differs significantly between the subspecies (Fig. 3). First of all, this involves the relative size of the proximal (px) and distal (ds) parts of the median lobe of the aedeagus: the ratio of the proximal part to the distal one is nearly 1:1 in *D. f. opillicum ssp. nov.* but is about 1.3:1 in *D. f. erythropterum*. The dorsal and ventral lobes of the aedeagus are bigger and longer in *D. f. opillicum ssp. nov.* with the apex truncated. The tegmen of *D. f. opillicum ssp. nov.* is different from that in *D. f. erythropterum* in several characters, including the paramere shape (elongate), punctuation (punctated on the inner side, and from the base to the apex), hairs (short) coverage and the ratio of the length of the parameres to that of the tegminal ring (nearly 1:1 in *D. f. opillicum ssp. nov.* and 1:2 in *D. f. erythropterum*). Also, the average body length of *D. f. opillicum ssp. nov.* is larger (males 20.1 mm, females 22 mm) in comparison with *D. f. erythropterum* (males 17.9 mm, females 19.5 mm).

#### Key to *Dorcadion fulvum* subspecies, including *D. carinatum* and *D. aethiops* in Europe

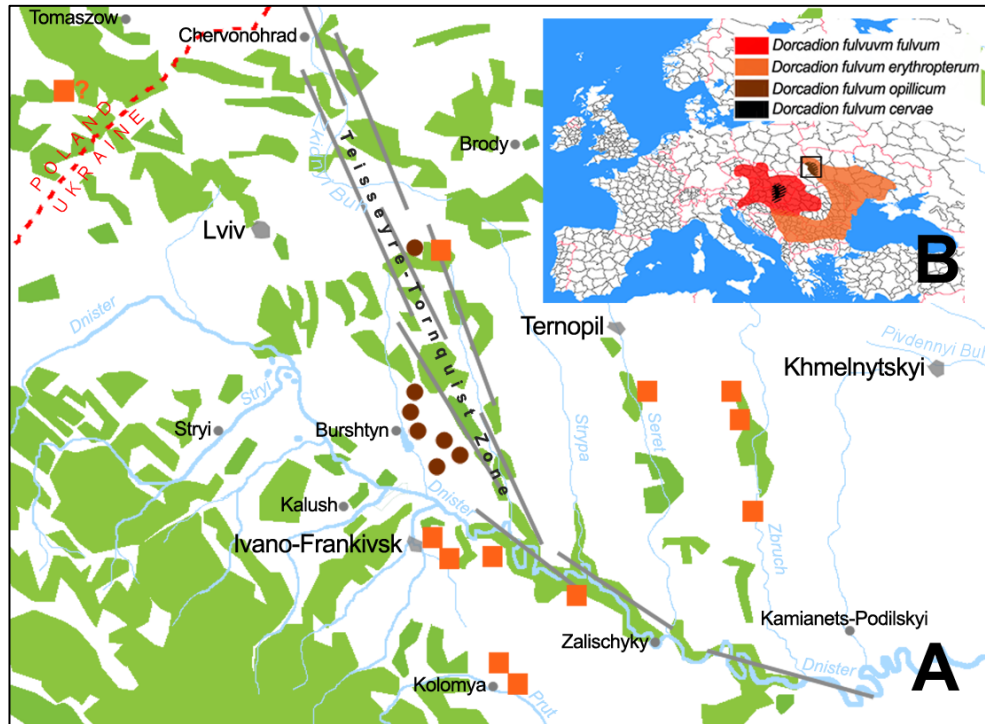
- 1 (12) Pronotum coarsely punctated, medial furrow present. . . . . 2.
- 2 (5) Humeral carinae clearly and strongly pronounced, as long as 3/4 of the elytral length. Elytra weakly convex, almost flattened. 15–24. Distribution east of the River Dnipro (Dnieper) – *Dorcadion carinatum* (Pallas, 1771). . . . . 3.



- 3 (4) Legs and body entire black. Body is robust. 17–24. Distribution east of the River Siverskyi Dinets. . . . . **ssp. *Dorcadion carinatum carinatum* (PALLAS, 1771).**
- 4 (3) Legs and elytra partly brown or reddish. Body slender. 17–21. Distribution between the Rivers Dnipro and Siverskyi Dinets. . . . . **ssp. *Dorcadion carinatum igrenum* DANILEVSKY, 1998.**
- 5 (2) Humeral carinae partially smooth up to 2/3 of elytral length. Elytra clearly convex. 15–24. Distribution from the Alps across the Balkan Peninsula to the River Dnipro. – ***Dorcadion fulvum* (SCOPOLI, 1763).** . . . . . 6.
- 6 (9) Pronotal disc moderately punctated, medial furrow shallow. Elytral humerus completely smooth. . . . . 7.
- 7 (8) Humeral carinae smooth for 1/3 of elytral length. Body red-brown to black, elytra, legs and first antennomere bright red. 16–22. Distribution within the Pannonian Basin. . . . . **ssp. *Dorcadion fulvum fulvum* (SCOPOLI, 1763).**
- 8 (7) Humeral carinae almost absent. Body entirely black with brownish tint. 15–18. Distribution – central Hungary. . . . . **ssp. *Dorcadion fulvum cervae* FRIVALDZKY, 1892.**
- 9 (6) Pronotal disc coarsely punctated, medial furrow deep. Elytral humerus clearly pronounced. . . . . 10.
- 10 (11) Humeral carinae clearly pronounced, for 1/2 elytral length. Elytra lustrous, sparsely punctated. Body red-brown to black, elytra, legs and first antennomere bright red. 16–22. Distribution in the Balkans and eastern Europe as far as the River Dnipro. . . . . **ssp. *Dorcadion fulvum erythropterum* FISCHER VON WALDHEIM, 1823.**
- 11 (10) Humeral carinae strongly pronounced for 1/3 elytral length. Elytra coarsely and deeply punctated, rugose in female. Body dark brown to black, elytra, legs and first antennomere brownish. 18–24. Distribution within Opillya. . . . . **ssp. *Dorcadion fulvum opillicum* ssp. nov.**
- 12 (1) Pronotal disc fine and sparsely punctated, medial furrow absent. Humeral carinae absent, elytra evenly convex, finely punctated. 15– 22. Entire body black. Distribution in the Pannonian Plain and the Balkan Peninsula. . . . . ***Dorcadion aethiops* (SCOPOLI, 1763).**

### Distribution

To date, *D. f. opillicum* **ssp. nov.** has been found in several localities within Opillya, the westernmost edge of the Podillya Upland (Fig. 4). However, the actual distribution range of *D. f. opillicum* **ssp. nov.** is unknown. The specimens from the surroundings of the city of Ivano-Frankivsk and Kolomya (the type locality for *Dorcadion fulvum canaliculatum* *m.*



**Fig. 4.** Map showing the distribution of *Dorcadion fulvum* subspecies: **A** in western Ukraine and eastern Poland (circles – *Dorcadion fulvum opillicum* **ssp. nov.**, squares – *D. fulvum erythropterum*); **B** in Europe.

*humero-costatum* BREUNING, 1946 (BREUNING 1946) = *D. f. erythropter[on]um* (LÖBL & SMETANA 2010) are similar to those from the vicinity of the city of Odesa and belong to *D. f. erythropterum*. Thus, the southern range limit of *D. f. opillicum* **ssp. nov.** probably lies in the valley of the River Dniester, north of Ivano-Frankivsk. Specimens obtained from the collection of the “Medobory” Nature Reserve (central Podillya Upland) also belong to *D. f. erythropterum*. In contrast, the specimens from Holohory (northern Podillya Upland) include both *D. f. opillicum* **ssp. nov.** and *D. f. erythropterum* as well as intermediate specimens. Therefore, the introgression zone of both subspecies lies to the east of Opillya. The most probable easternmost range boundary of *D. f. opillicum* **ssp. nov.** is the Teisseyre-Tornquist Zone, a narrow highland along the crustal boundary between the Phanerozoic orogens of south-western Europe and the Precambrian east European Craton. The Teisseyre-Tornquist Zone separates the westernmost part of the Podillya Upland and the Volyn Upland (both in Ukraine) and the Lublin Upland (Poland) from the rest of Podillya,

where *D. f. erythropterum* is widespread. Unfortunately, the subspecific identity of *D. fulvum* from eastern Poland is unknown because of the lack of specimens for this study. In my opinion, it is likely to be *D. f. opillicum* **ssp. nov.**, but additional studies will be needed.

Additionally, based on own materials and on published data, I clarified the distribution of all four subspecies of *D. fulvum* in Europe (Fig. 4). Special symbols designate the following: \* – the subspecies was originally not specified; the current assignment to a certain subspecies is based on geographical distribution; ? – the presence of a subspecies is not confirmed by certain collection data; (?) – the subspecies identity is doubtful according to current data.

*Dorcadion fulvum opillicum* **ssp. nov.**: **Ukraine:** Bovshiv, Burshtyn, Dytyatyn, Holohirky, Kukilnyky, Kuropatnyky, Mezhyhirska, Pukiv, Verkhnya Lypytsya, Yabluniv.

*Dorcadion fulvum erythropterum*: **Albania:** ?present (LÖBL & SMETANA 2010); **Bosnia and Herzegovina:** ?present (LÖBL & SMETANA 2010); **Bulgaria:** entire territory of Bulgaria (BREUNING 1962); Beledie Han\*, Blagoevgrad\*, Lozen\*, Yundola\*, Železnica; widespread throughout Bulgaria (GANEV 1985; GEORGIEV et al. 2006; MIGLIACCIO et al. 2007; GEORGIEV 2011; TOPALOV et al. 2014); **Croatia:** ?present (LÖBL & SMETANA 2010); **Moldova:** Bahmut\*, Bender\*, Calarasi\*, Chisinau\*, Cornesti\*, Ermoclia, Razeni, Sarata-Mereseni (CHYUBCHIK 2010; SERAFIM & MAICAN 2011); **North Macedonia:** ?present (LÖBL & SMETANA 2010); **Poland:** (?)Klemensów\*; (?)Machnów ad Tomaszów Lubelski\* (BURAKOWSKI 1957; GUTOWSKI et al. 1999); **Romania:** widespread in Romania (BREUNING 1962); Baile Herculane\*, Beceni, Beciu\*, Botosani\*, Branesti\*, Bucuresti\*, Buzau, Canaraua Fetii\*, Costesti\*, Craiova, Daia, Drobeta-Turnu Severin, Dobrosloveni, Gaiseni\*, Iași, Matasaru\*, Izverna, Nicolae Titulescu, Podoleni\*, Sabaoani\*, Saged, Sinaia\*, Stejaru\*, Suceava\*, Tiganesti\* (DASCALU 2006; UNGUREANU et al. 2008; SERAFIM & CHIMISLIU 2010; SERAFIM 2010; SERAFIM & MAICAN 2011); **Serbia:** Banovo Polje, Belgrade, Crna Bara, Despotovac, Donja Sabanta, Fruska Gora, Jagodina, Jakovo\*, Kragujevac, Obedska Bara, Opornica, Petrovac, Radenkovic, Ravnje, Rtanj, Šid, Šumarice, Soko Banja, Svilajnac, Strazilovo\*, Tekija, Zagubica (ĆURČIĆ et al. 2003; PIL 2004/2005; PIL & STANKOVIC 2006; DASCALU et al. 2012; DOBROSAVLJEVIĆ & MIHAJLOVIĆ 2014; ILIĆ & ĆURČIĆ 2015; VUKAJLOVIĆ & ŽIVANOVIĆ 2015); **Ukraine:** widespread in western and southern Ukraine (BREUNING 1962); Bakay, Berezivka, Bila Tserkva, Biloshapky, Busha, Chernelytsya, Derenivka, Ditkivtsi, Dzvenyhorod\*, Holohirky, (?)Hutysko, Ivankiv, Ivano-Frankivsk, Kaniv, Khmeleva, Kolomya, Kopachynsi, Kuripchyne, Myhiya, Nahirne, Odesa, Oleshiv, Petryliv, Pidhirska, Pysarivschyna, Rakovets, Skala-Podilska, Slovita, Synkiv\*, Ternopil\*, Tomylivka, Trakhtemyriv, Velyka Vilshanytsya, Verbivtsi, Vikno, Zalischyky\* (BREUNING 1962; BARTENEV 2009; ZAMOROKA et al. 2012).

*Dorcadion fulvum fulvum*: **Austria:** widespread in eastern Austria; Steiermark, Wien (BREUNING, 1962; BRELIH et al. 2006; LINGAFELTER et al. 2014); **Czech Republic:**

Bohemia, Litomyšl, Morava (BREUNING 1962); **Hungary**: widespread in Hungary (BREUNING 1962); Budakalász, Budakeszi, Budaörs, Budapest, Dömsöd, Dunaharaszti, Eger, Erd, Farnos, Fót, Gödöllo, Gyöngyös\*, Gyöngyöspata\*, Isaszeg, Karácsond\*, Kitérőgyár\*, Kölked, Mariagyud, Mátraháza\*, Monok\*, Nagybörzsöny, Nagykovácsi, Nagymaros, Pécel, Perocsény, Pilisvörösvár, Pomáz, Sátoraljaújhely\*, Szeged\*, Siklós, Solymár, Szentendre, Szob, Szucsi\*, Tárnok, Tokaj\*, Törökbálint, Tolcsva\*, Veroce, Villany, Visegrád, Vokany, Zebegény (GASKÓ 1978; HORVATOVICH 1992; MERKL et al. 1996; HEGYESSY & KOVÁCS 1997; KOVÁCS & HEGYESSY 1997; HEGYESSY et al. 2000; HORVATOVICH et al. 2000); **Poland**: (?)Raciborz\* (BURAKOWSKI, 1957); **Romania**: Ban\*, Cluj-Napoca\*, Haşag\*, Ocna Sibiului\*, Nucet\*, Şeica Mică\*, Tarnaveni\*, Turda\*, Vingard\* (ISTRATE 2005; SERAFIM 2010; DASCALU et al. 2012); **Slovakia**: widespread in Slovakia (BREUNING 1962); Kamenica\*, Šturovo\*, Tvrdošovce\* (AISTLEITNER et al. 2015) **Slovenia**: Lenart, Vipava; possibly extinct in Slovenia (BRELIH et al. 2006); **Ukraine**: Uzhhorod\* (FASULATI 1955).

*Dorcadion fulvum cervae*: **Hungary**: Akasztó, Apajpuszta, Budapest, Bugyi, Dömsöd, Dunatétlen, Farnos, Felsőerek, Felső-Kiskunsági, Miklapusza, Szabadszállás, Szigetcsép, Újsolt (HEGYESSY et al. 2000; MÁTÉ & MERKL 2005).

According to the available data, *D. f. fulvum* inhabits the Pannonian Plain between the Alps in the west and the Carpathians in the east, including Ukraine and Romania. In the north its range reaches the Ore Mountains in the Czech Republic, south-western Poland and the Carpathian Mountains in Slovakia. The River Danube, a natural border preventing *D. f. fulvum* from spreading to the south, separates it from another subspecies, *D. f. erythropterum*. The presence of *D. f. fulvum* in Croatia is unclear: if it is present, then only in the north-east of the country as far as the River Drava. *D. f. fulvum* should also be present in the northernmost part of Serbia, but at present there are no confirmatory data.

*Dorcadion fulvum cervae* inhabits a spatially and ecologically very restricted area in central Hungary east of the Danube. This area represents the Pannonian solonchak habitats (MERKL et al. 2007).

South of the Danube we find *D. f. erythropterum*. Its range in the Balkan Peninsula is still unclear. LÖBL & SMETANA (2010) and DANILEVSKY (2019) suggested that *D. f. erythropterum* should be present in Albania, Bosnia and Herzegovina, Croatia, and North Macedonia, but there is no confirmation of its presence there. It seems that the range of *D. f. erythropterum* is restricted to the basin of the River Velika Morava in Serbia. While *D. f. erythropterum* is widespread within Bulgaria (GEORGIEV 2011; TOPALOV et al. 2014), its presence in European Turkey still requires confirmation (ÖZDIKMEN 2010). The eastern range boundary of *D. f. erythropterum* runs along the River Dnipro in Ukraine. All records of *D. f. erythropterum* from areas east of the Dnipro (BARTENEV 2009) very probably result from a confusion with *Dorcadion carinatum igrenum*, which also very often has brown

elytra and red legs. The presence of *D. f. erythropterum* on the Crimean Peninsula (BARTENEV 2009) is unlikely. There are no specimens from Crimea in BARTENEV's collections (deposited in SMNKNU), contrary to his published claims.

*Dorcadion fulvum opillicum* **ssp. nov.** is known from several localities in western Ukraine. It is currently unclear whether *D. f. opillicum* **ssp. nov.** or *D. f. erythropterum* is present in neighbouring eastern Poland.

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