

**Diagnostical characters and distribution of leaf-beetles  
*Oreina coerulea* (Olivier, 1790) and *O. auricollis* Stierlin, 1887  
(Coleoptera: Chrysomelidae)**

**Диагностические признаки и распространение жуков-листоедов  
*Oreina coerulea* (Olivier, 1790) and *O. auricollis* Stierlin, 1887  
(Coleoptera: Chrysomelidae)**

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КЛЮЧЕВЫЕ СЛОВА: Chrysomelidae, *Oreina*, *Allorina*, систематика, распространение.

**ABSTRACT.** *Oreina luctuosa* var. *auricollis* Stierlin, 1887 is considered to be available name and subjective senior synonym of *O. bidentata* Bontems, 1981. *O. auricollis* and *O. coerulea* are well identified by the aedeagus structure. The dorsal coloration permits us to distinguish these species as follows: all specimens of bright metallic colours belong to *O. auricollis*, whereas specimens of *O. coerulea* are always dark metallic or black. Dark metallic specimens of *O. auricollis* are rare. On the other hand, 12% of examined specimens of *O. auricollis* and about 1% of *O. coerulea* are purely black dorsally. Specimens with two-coloured dorsal side occur in the both species. Shape of pronotum and body do not differ in both species. Males and females of *O. auricollis* are slightly longer in average than the respective sexes of *O. coerulea*. Areas of *O. auricollis* and *O. coerulea* are sympatric in part. Only *O. coerulea* inhabits N. Europe and European Russia, whereas the both species are distributed in the other parts of Europe.

**РЕЗЮМЕ.** *Oreina luctuosa* var. *auricollis* Stierlin, 1887 — пригодное название и старший субъективный синоним *O. bidentata* Bontems, 1981. *O. auricollis* и *O. coerulea* надёжно отличаются по строению эдеагуса. По окраске верхней стороны тела виды различаются следующим образом: все экземпляры ярких металлических цветов относятся к *O. auricollis*, в то время как экземпляры *O. coerulea* всегда тёмно-металлические или чёрные. Тёмно-металлические экземпляры *O. auricollis* редки. С другой стороны, 12% изученных экземпляров *O. auricollis* и только 1% *O. coerulea* сверху полностью чёрные. Особи с двухцветной окраской верхней стороны тела встречаются у обоих видов. По форме тела и переднеспинки виды не различаются. Самцы и самки *O. auricollis* в среднем несколько крупнее особей соответствующего

пола *O. coerulea*. Ареалы *O. auricollis* и *O. coerulea* частично перекрываются. Северную Европу и Европейскую часть России населяет только *O. coerulea*. В остальных частях Европы встречаются оба вида.

### Introduction and material

During the reidentification and reorganization of the *Oreina* Chevrolat, 1837 — collections in Deutsches Entomologisches Institut (DEI, Eberswalde, Germany) and Museum für Tierkunde Dresden (MTD, Dresden, Germany) I paid attention on the species of the subgenus *Allorina* Weise, 1902. Additional specimens were received from Zoological Museum of Moscow State University and A.O. Bienkowski collection (Zelenograd, Russia). Totally, 145 specimens of *O. auricollis* Stierlin, 1887 and 143 specimens of *O. coerulea* (Olivier, 1790) were examined. All males were dissected and identified by the aedeagus structure, and females were attributed to the respective species when they were collected together with the males.

#### MATERIAL EXAMINED:

##### *Oreina coerulea* (Olivier, 1790)

TYPES: *Oreina gloriosa* var. *serbica* Apfelbeck, 1912, paratypes, with labels: “*gloriosa* v. *serbica* Apflb. Apfelbeck scripsit”, “Reiser 1899 Stara-pl.” [blue], “Apfelb. det.”, “Paratype” [red], “*rugulosa* v. *serbica* Apflb. cotypen”, “Coll. Prof. Dr. Noeske Ankauf 1947” — 1 ♂ (MTD), “Reiser 1899 Stara-pl.” [blue], “Apfelb. det.”, “Paratype” [red] — 1 ♀ (MTD).

Additional specimens: Austria: Carinthia (Kaernten) — 1 ♂; Bosnia and Herzegovina: Jablanica — 1 ♂, 4 ♀♀; Bulgaria — 1 ♂; Rila Mts. — 1 ♂; Germany: Franconia, Thurnau — 12 ♂♂, 9 ♀♀; Charlottenberg — 2 ♂♂, 3 ♀♀; Frankenwald, Muggendorf — 7 ♂♂, 11 ♀♀; Franken, Schweiz — 3 ♂♂, 1 ♀; Schwarzwald Mts. — 2 ♂♂; Franken, Behring M. — 1 ♂; N. Saxony, Holzminder a. d. Weser — 2 ♂♂, 1 ♀; Hungary — 3 ♂♂; Italy, Monte-Rosa Mts. — 1 ♂; Italy — 1 ♂; Rumania: Walachia, Sinaia — 1 ♂; Banat — 1 ♂, 8 ♀♀; Transylvania — 3 ♂♂; Transylvania, Koron — 1 ♂, 1 ♀; S. Carpathians, Bucegi — 1 ♂;

S. Carpathians: R. Turm-Pass — 1 ♂; Russia: European part, Yaroslavl — 3 ♂♂, 1 ♀; Moscow, Kosino Vill. — 1 ♂; Kaluga — 1 ♂; Saratov reg., Khvalynsk — 1 ♀; Slovakia: Tatra — 1 ♂; Liptauer Berge (=Liptovsky Mikulas) — 30 ♂♂, 12 ♀♀; Spain: Pyrenees, Perros Guirec — 1 ♂; Switzerland: Tessin, Bellinzona — 1 ♂, 1 ♀; Yugoslavia: Dalmatia — 1 ♂.

Uncertain localities: Schlaessburg — 1 ♂; Bocra — 1 ♂, 1 ♀.

#### *Oreina auricollis* Stierlin, 1887

TYPE: *Oreina luctuosa auricollis*, syntype, with labels: "Helvet", "Coll. Kraatz", "auricollis Stierlin X Macugnaga", "Syntype *Oreina luctuosa* var. *auricollis* Stierlin, 1887" [red] — 1 ♂ (DEI).

Additional specimens: Austria: S. Tirol, Cima-Posta — 7 ♂♂; Tirol — 4 ♂♂, 10 ♀♀; Carinthia — 1 ♂; Carniolia — 1 ♂; Bosnia and Herzegovina: Krain — 1 ♂; Lubine — 1 ♂; Croatia — 1 ♂; Germany: Oberpfalz, Streitberg — 1 ♂, 1 ♀; Hungary — 1 ♂; Italy: Monte-Rosa Mts. — 36 ♂♂, 29 ♀♀; Monte-Rosa Mts., Macugnaga — 2 ♀♀; Dolomites, Cortina — 1 ♂; Dolomites, Val di Ledro (val Scaglia) — 1 ♂, 1 ♀; Switzerland: Graubunden: Rossa — 2 ♂♂, 2 ♀♀; Tessin, Bellinzona — 14 ♂♂, 18 ♀♀; Wallis, Simplon Pass — 1 ♂; Wallis — 1 ♂; Zermatt — 1 ♀; Schaffhausen — 1 ♂; Switzerland — 1 ♂.

Uncertain localities: Carpathians — 1 ♂, 1 ♀; Steiermark — 1 ♂; Zhadra — 1 ♂.

## Results

Diagnosis of the subgenus *Allorina* Weise, 1902: 104

The species of the subgenus *Allorina* of the genus *Oreina* Chevrolat, 1837 differ from the species of other subgenera in the following characters [Kühnelt, 1984; Kippenberg & Döberl, 1994; Warchalowski, 1993, 2003]: last maxillary palpomere as wide as the penultimate, elytra unicolorous, with convex lateral callus (at least in basal 1/2 or near mid-length), pronotal lateral calli convex and separated from the disk by impression along entire length, antennomere 2 rufous (at least partly).

#### Nomenclatorial note

The subgenus in question includes two "good" species. One of them was attributed with the name *O. tristis* Fabricius, 1792 for a long time since Weise [1884]: Weise [1894], Daniel [1903], Jacobson [1924],

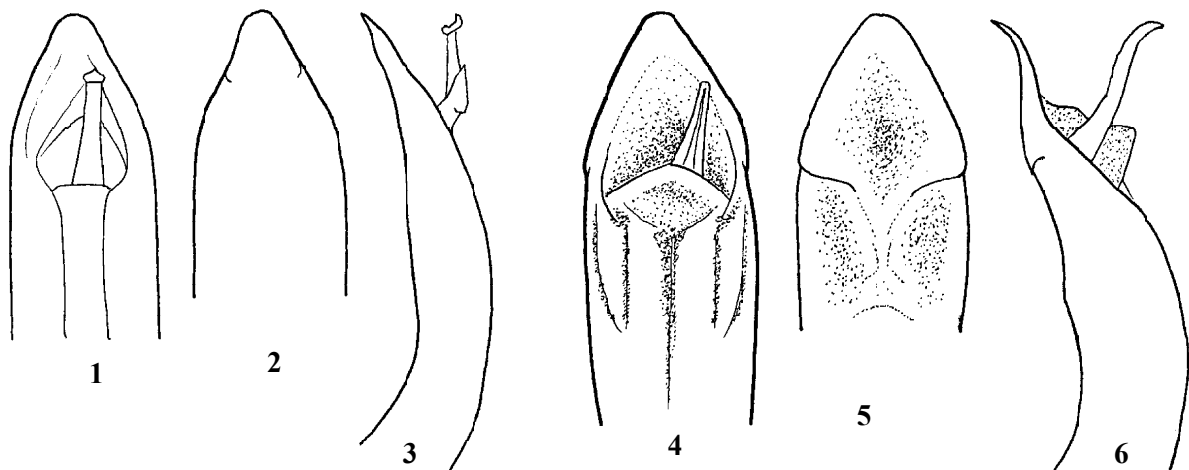
Bechyně [1958], Daccordi & Ruffo [1976], Brovdij [1977], Kühnelt [1984]. Bontems [1981] examined the type specimens of the taxa described by Dr. J.C. Fabricius and considered *O. tristis* to be conspecific with *Oreina (Chrysochloa) cacaliae* (Schränk, 1785). As a result, Bontems [1981] described a new species *O. bidentata* based on the specimens identified as *tristis* in Dr. J. Weise collection.

However, earlier Stierlin [1887] described from Alps (Macugnaga) *Oreina luctuosa* var. *auricollis*. Weise [1916] considered *auricollis* to be an aberration of *O. (Allorina) tristis*. I examined a type specimen of *O. auricollis* Stierlin (Fig. 7) and found it to be conspecific with *O. bidentata* Bontems. The original publication [Stierlin, 1887] does not include the indication on the infrasubspecific rank of this new "Varietät". According to ICZN [1999]: 45.6.4, the name *O. auricollis* Stierlin could be considered to be available. Therefore, it should be used as a replacement name for *O. tristis*: Weise, 1884 et auct., nec Fabricius, 1792, according to ICZN [1999]: 23.3.5. Respectively, *O. bidentata* Bontems is junior subjective synonym of *O. auricollis* Stierlin:

*Oreina luctuosa* var. *auricollis* Stierlin, 1887: 137 = *Oreina bidentata* Bontems, 1981: 108, **syn.n.**

The second "good" species of the subgenus *Allorina* is *O. coerulea* (Olivier, 1790) (= *rugulosa* Suffrian, 1851, = *luctuosa* Olivier, 1807).

Two more species belonging to the subgenus *Allorina*, namely *O. collucens* (Daniel, 1903) and *O. canavesei* Bontems, 1984, have the restricted areas at the border between Italy and France. The former is found in Alpes Cottiennes and Maritime Alps, and the latter — in Alpes Graies. Neither *O. coerulea*, nor *O. auricollis* have been recorded from the above-named territories till now [Bontems, 1984]. *O. collucens* and *O. canavesei* both are close to *O. coerulea* and recently believed to be probable subspecies of the latter [Kippenberg & Döberl, 1994]. Intraspecific system of *O. coerulea* includes more than 10 nominal taxa [Warchal



Figs 1–6. *Oreina (Allorina)* spp., aedeagus: 1–3 — *O. coerulea* (Russia: Yaroslavl), 4–6 — *O. auricollis* (syntype, Italy: Macugnaga); 1, 4 — dorsal view; 2, 5 — ventral view; 3, 6 — lateral view.

Рис. 1–6. *Oreina (Allorina)* spp., эдеагус: 1–3 — *O. coerulea* (Россия: Ярославль), 4–6 — *O. auricollis* (синтип, Италия: Масугнага); 1, 4 — вид сверху, 2, 5 — вид снизу, 3, 6 — вид сбоку.

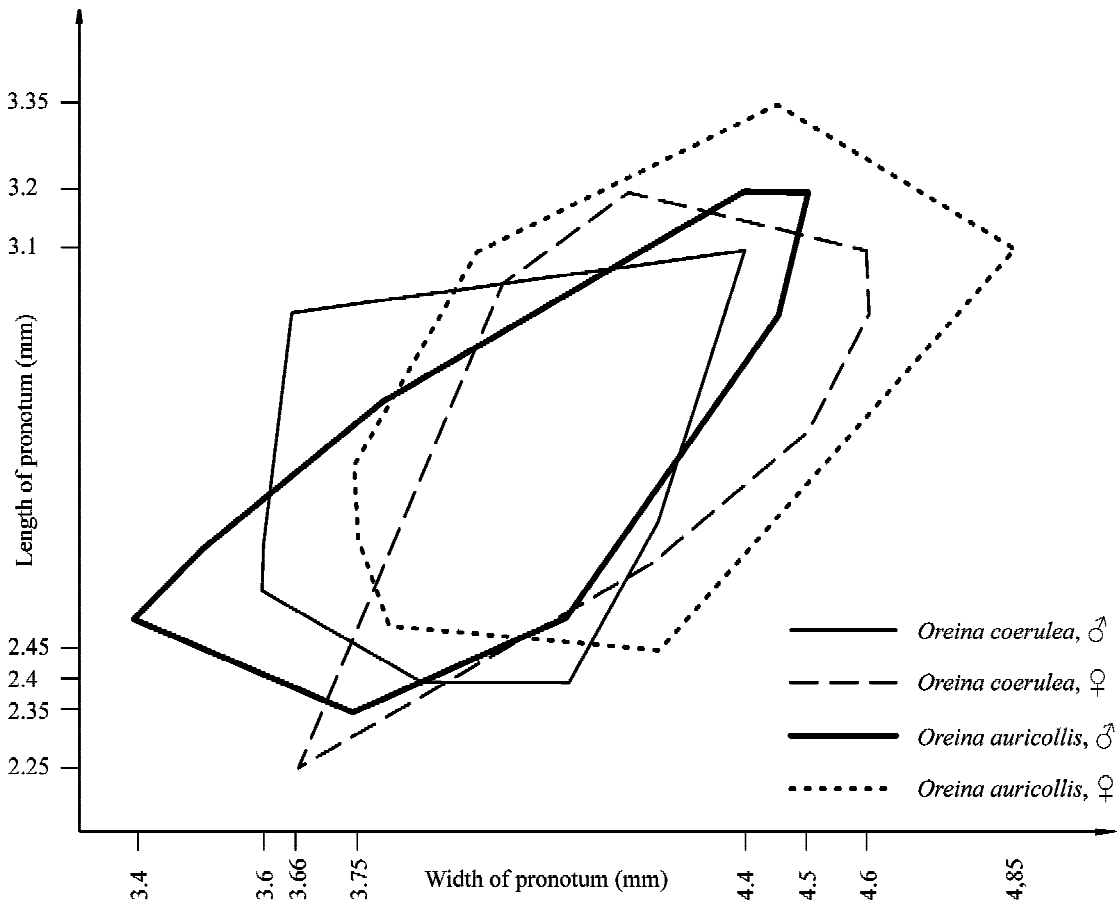


Fig. 7. Correlation of the length and width of pronotum in *Oreina coerulea* and *O. auricollis*.  
 Fig. 7. Соотношение длины и ширины переднеспинки у *Oreina coerulea* и *O. auricollis*.

owski, 1993] and requires a revision. However, this is beyond the scope of the present report.

Diagnostic characters of *O. coerulea* and *O. auricollis*

The main distinguishing characters of these species are the shape and length of male aedeagus. It is longer (3.5–3.9 mm long) and bearing large lateral denticles on ventral side before apex in *O. auricollis* (Fig. 4–6), and shorter (2.8–3.3 mm long), devoid of such denticles in *O. coerulea* (Fig. 1–3). Besides that, Bontems [1984] found these species to differ in the shape of the internal sac of aedeagus.

*O. coerulea* is, on the average, slightly smaller than *O. auricollis* (Figs 8–9), as some authors noted [Weise, 1884, Warchalowski, 1993, 2004]. Males are 8.0–10.5 mm long and 8.3–11.0 mm long, and females are 8.3–11.0 mm long and 8.8–11.3 mm long in *O. coerulea* and *O. auricollis*, respectively. However, this character does not permit us to separate the most of the available specimens (Figs 8–9).

Brovdiij [1977] and Kühnelt [1984] noted that pronotum is 1.3 × and 2 × broader than long in *O. auricollis* (mentioned as *tristis*) and *O. coerulea* (mentioned as *rugulosa*), respectively; and pronotal lateral sides mostly parallel in basal 1/2 in *O. auricollis*, whereas pronotum nar-

rowed towards base, with lateral sides slightly emarginate before base in *O. coerulea*. Materials being at my disposal shows that the proportions of the pronotum (Fig. 7) and shape of pronotal lateral side (Figs 10–15) are variable in the both species and do not permit us to separate them.

After Bontems [1984], *O. coerulea* (mentioned as *luctuosa*) and *O. auricollis* (mentioned as *bidentata*) differ in the shape of the body (rounded, with elytra more convex in the former, and elongate, with elytra slightly depressed dorsally in the latter). However, I could not find any distinct differences in the body outline in the specimens being at my disposal.

The coloration of dorsal side is variable in the specimens of both species being at my disposal (Table). Bright colours (green, bluish-green, blue, violet, bronze, or coppery) are characteristic of *O. auricollis*, whereas specimens of *O. coerulea* are always dark metallic or black. Dark metallic specimens occur in *O. auricollis* too, but they are rare (6% among the specimens being at my disposal). On the other hand, 12% of the examined specimens of *O. auricollis* and only 1% of *O. coerulea* are purely black.

Kippenberg & Döberl [1994] and Warchalowski [2003] indicated that pronotum and elytra sometimes differently coloured in *coerulea*, while dorsal side is unicol-

orous in *auricollis* (mentioned as *bidentata*). Specimens with differently coloured pronotum and elytra represent 58% and 14% among the specimens of *O. coerulea* and *O. auricollis* being at my disposal, respectively. Therefore, this character can not be used for the distinguishing of these species.

Distribution

*O. auricollis* and *O. coerulea* are considered to be allopatric [Kippenberg & Döberl, 1994]. I have at my disposal *O. auricollis* specimens from the Alps, Apennines, S. Germany (Oberpfalz), Hungary, Balkan Penins., and Carpathians. Weise [1884] also recorded this spe-

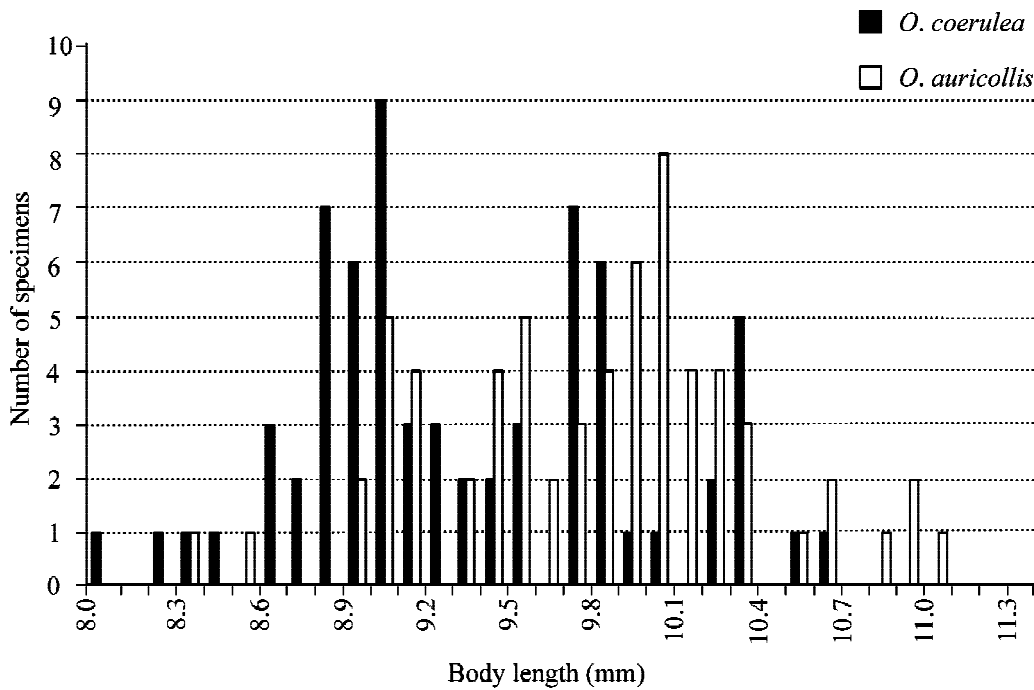


Fig. 8. Variability of the body length in the males of *Oreina coerulea* and *O. auricollis*.  
Рис. 8. Изменчивость длины тела у самцов *Oreina coerulea* и *O. auricollis*.

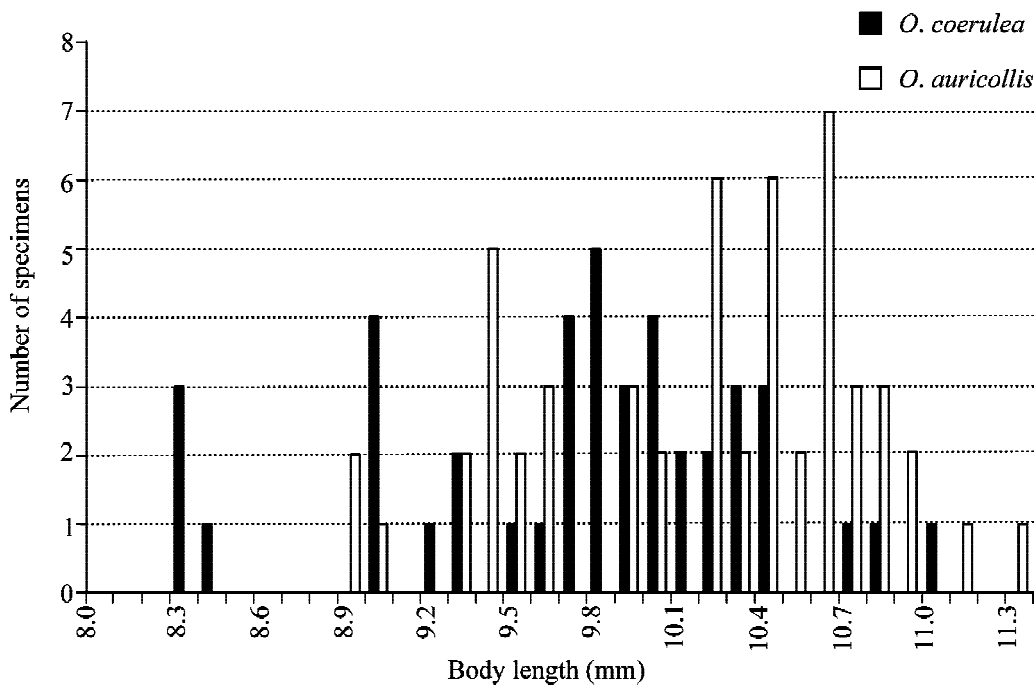


Fig. 9. Variability of the body length in the females of *Oreina coerulea* and *O. auricollis*.  
Рис. 9. Изменчивость длины тела у самок *Oreina coerulea* и *O. auricollis*.

Table. Correlation of the colouration of elytra and pronotum in *Oreina coerulea* and *O. auricollis*.  
Таблица. Соотношение окраски надкрылий и переднеспинки у *Oreina coerulea* и *O. auricollis*.

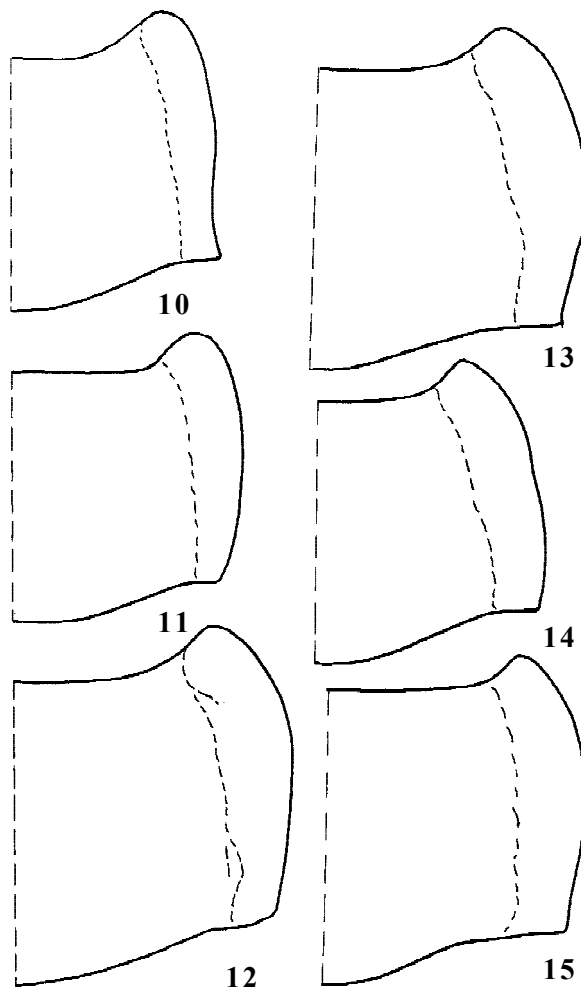
Pronotum \ Elytra	black	blackish-green	dark violet	dark green	dark bluish-green	dark blue	bright blue	bright violet	bright green	bright bluish-green	bright bronze	bright coppery
black	1	<b>12</b>	2	2	1	1	<u>1</u>	<u>1</u>				
blackish-green		4	<b>1</b>									
dark violet			33			12						
dark green				1		2						
dark bluish-green				1		2						
dark blue			33	2		3						
bright blue							<b>28</b>					
bright violet								<b>2</b>				
bright green							<b>2</b>		<b>26</b>	<b>2</b>		
bright bronze									<b>4</b>		<b>7</b>	
bright coppery									<b>2</b>			<b>7</b>

NOTATION: *O. coerulea* — simple numbers (1); *O. auricollis* — bold and underline numbers (**1**)  
ОБОЗНАЧЕНИЯ: *O. coerulea* — простые цифры (1); *O. auricollis* — жирные подчеркнутые цифры (**1**)

cies (mentioned as *tristis*) from Pyrenees. Available specimens of *O. coerulea* was collected in the Alps, Balkan Penins., Bulgaria, Germany, Hungary, Rumania, Slovakia, Pyrenees, and European Russia. This species was recorded also from France, Denmark, Finland, Poland, and Karelia [Warchalowski, 2003; Kippenberg & Döberl, 1994]. In European Russia, this species is distributed eastwards to Orenburg and Ekaterinburg [Jacobson, 1924].

I found the males of the both species from the Alps (Carinthia, Bellinzona, and Monte Rosa Mts.) and Balkan Penins. (Bosnia and Herzegovina). Moreover, the both species are reported from the Ukrainian Carpathians [Brovdiy, 1977]. Therefore, *O. auricollis* and *O. coerulea* are sympatric in part. Only one species, namely *O. coerulea* inhabits N. Europe and European Russia, whereas the both species in question are distributed in the other parts of Europe.

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Figs 10–15. *Oreina (Allorina)*, pronotum of male, variability: 10–12 — *O. coerulea* (10 — Slovakia, Liptovsky Mikulas; 11 — Italy; 12 — Hungary); 13–15 — *O. auricollis* (13 — Switzerland, Graubuenden; 14 — Italy, Monte-Rosa; 15 — Switzerland, Bellinzona).

Рис. 10–15. *Oreina (Allorina)*, изменчивость формы переднеспинки самца: 10–12 — *O. coerulea* (10 — Словакия, Liptovsky Mikulas; 11 — Италия; 12 — Венгрия); 13–15 — *O. auricollis* (13 — Швейцария, Graubuenden; 14 — Италия, Monte-Rosa; 15 — Швейцария, Bellinzona).

to study material from the respective museums, to A.O. Bienkowski for placing material to my disposal. The study of *Oreina*-collection in DEI was secured the financial backing of the DFG grant 436 RUS 17/98/02.

## References

- Bechyné J. 1958. Über die taxonomische Valenz der Namen von *Oreina* s. str. (Col. Phytophaga) // Mitt. Schweiz. Ent. Ges. Bd.31. Hf.1. S.79–95.
- Bontems Ch. 1981. Les espèces de Linné et Fabricius du genre *Oreina* Chevrolat, 1837 (Col., Chrysomelidae, Chrysomelinae) // Nouv. Rev. Ent. T.11. Fasc.1. P.93–109.
- Bontems Ch. 1984. Les *Allorina* de France et des régions Limitrophes (Coleoptera, Chrysomelidae) // Nouv. Rev. Ent. (N.S.). T.1. Fasc.2. P.179–201.
- Brovdij V.M. 1977. Chrysomelid-beetles. Chrysomelinae // In: Fauna of Ukraine. Vol.19. Beetles. Vol.16. Kiev: Naukova Dumka. 385 pp. [in Ukrainian]
- Daccordi M. & Ruffo S. 1976. Le specie appenniniche del genere *Oreina* (Coleoptera Chrysomelidae) // Boll. Mus. civ. Stor. nat. Verona. Vol.3. P.379–411.
- Daniel J. 1903. Neue, alpine Formen der Gattung *Chrysochloa* Hoppe (*Orina* Chev.) // Münch. Koleopt. Zeitschr. Bd.1. Hf.2. S.180–184.
- International Code of Zoological Nomenclature. 1999. 4 ed. The International Trust for Zoological Nomenclature Publ. Russian translation. 2000: St.-Petersburg. 221 pp.
- Jacobson G.G. 1924. Geographical distribution of the species of the genus *Chrysochloa* Hope (Coleoptera Chrysomelidae) // Comptes Rendus de l'Académie des Sciences de Russie. P. 20–21 [in Russian].
- Kippenberg H. & Döberl M. 1994. Familie: Chrysomelidae // In: Die Käfer Mitteleuropas. 3. Supplementband. Krefeld. S.17–144.
- Kühnelt W. 1984. Monographie der Blattkäfergattung *Chrysochloa* (Coleoptera, Chrysomelidae) // Sitzungsberichten Österr. Akad. Wissenschaften. Mathem.-naturw. Kl. Abt. 1. Bd.193. Hf.6–10. S.171–287.
- Stierlin G. 1887. Ueber eine neue Varietät der *Oreina luctuosa* Ol. (*tristis* F.) // Societas entomologica. J. Soc. ent. internat. Jg.1. No.18. S.137–138.
- Warchalowski A. 1993. Chrysomelidae. Stonkowate. Vol.3 // In: Fauna Polski. Vol.15. Warszawa. 279 pp.
- Warchalowski A. 2003. Chrysomelidae. The leaf-beetles of Europe and the Mediterranean area. Warszawa: Natura optima dux Foundation. 600 pp. + 56 pl.
- Weise J. 1884. Chrysomelidae. Lief. III. Naturgeschichte der Insecten Deutschlands. Coleoptera. Bd.6. Hf.3. S.369–568.
- Weise J. 1894. Zur Gattung *Orina* // Deutsch. Ent. Zeitschr. Jg.1894. Hf.1–2. S.250–256.
- Weise J. 1916. Chrysomelidae: 12. Chrysomelinae // In: Junk W. and Schenkling S. (Eds.). Coleopterorum Catalogus. Bd. 68. Berlin: W.Junk Publ. 255 pp.