

Paolo Neri & Luca Toledano

***Bembidion (Diplocampa) osellai* n. sp. from Turkey
and *Bembidion (Diplocampa) acutangulum* n. sp. from Armenia**

(Insecta: Coleoptera: Carabidae: Bembidiina)

Abstract

Bembidion (Diplocampa) osellai n. sp. from Turkey and *Bembidion (Diplocampa) acutangulum* n. sp. from Armenia are described and compared with other species of the subgenus. New identification keys, both in English and in Italian, update those by Netolitzky (1943). *Bembidion (Diplocampa) blandulum* Netolitzky, 1910 is also reported from Turkey.

Key words: *Bembidion*, *Diplocampa*, Armenia, Turkey, new species, taxonomy.

Riassunto

[*Bembidion (Diplocampa) osellai* n. sp. di Turchia e *Bembidion (Diplocampa) acutangulum* n. sp. di Armenia (Insecta: Coleoptera: Carabidae: Bembidiina)].

Bembidion (Diplocampa) osellai n. sp. di Turchia e *Bembidion (Diplocampa) acutangulum* n. sp. di Armenia vengono descritti e comparati con le specie del sottogenere di cui si redigono anche le chiavi di determinazione aggiornando quelle di Netolitzky (1943). Viene inoltre segnalata la presenza di *Bembidion (Diplocampa) blandulum* Netolitzky, 1910 per la Turchia.

Introduction

From the collections PN (specimens collected by Giuseppe Osella in Turkey) and NHMW (specimens collected by Helena Shaverdo & Harald Schillhammer in Armenia) we examined a few specimens that by exoskeletal and aedeagal characters can be assigned to two new species of subgenus *Diplocampa* Bedel, 1896.

Materials and methods

We examined all the numerous publications dealing with the *Diplocampa* species, and specimens of almost all the species, except for *Bembidion skoraszewskyi* Korge, 1971 and *B. clarkii aquitanum* (Aubry, 1970), we were able to study only by the literature.

Of *B. blandulum* Netolitzky, 1910 we examined: 1 ♂, holotype, “Persia sett. /

Doria 62 [handwritten] // Mus. Civ. / Genova [printed] // *Diplocampa / blandulum*
Net. [handwritten] / det. Netolitzky [printed] // Holotypus [printed] / *Bembidion*
(*Diplo / campa*) *blandulum* / Netolitzky, 1910 [pink, handwritten]" (MCSNG);
the specimen is in rather good condition, missing only the left antenna, two right
antennomeres and a few tarsomeres of the right median leg.

Of *B. loeffleri* Jedlička, 1963 we examined: 1 ♂, holotype, "Persien / Dr. Löffler
// Holotype (pink) // Montage / Morvan / 1974 n. 474 (handwritten) // Mus. Nat.
Pragae (red, printed) / inv. 66303 (handwritten) // *Diplocampa / löffleri* sp. n.
(handwritten) / det. Ing. Jedlička (pink, printed)" (NMPC); the specimen, in good
conditions, lacks the last antennomeres of both antennae; unfortunately we were
not able to examine the male genitalia of the holotype because the specimen had
already been dissected by Morvan (see label "montage Morvan 1974 n. 474")
but the slide with the genitalia was not pinned to the specimen and was therefore
probably lost (fig. 9).

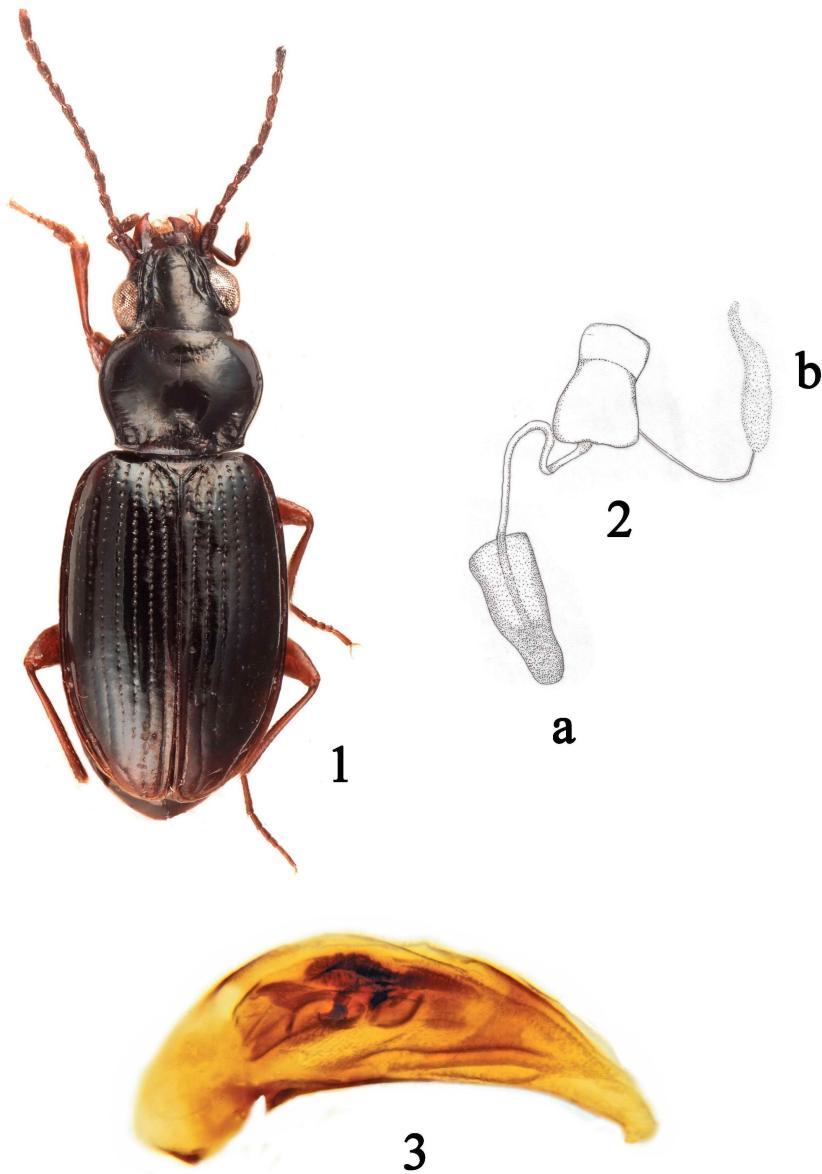
One paratype ♂, "Persien / Dr. Löffler // Paratypus (pink) // Mus. Nat. Pragae
(red, printed) / inv. 66304 (handwritten) // *löffleri* sp. n. (handwritten) / det. Ing.
Jedlička (pink, printed)" (NMPC).

The systematic treatment follows NETOLITZKY (1943) and MARGGI *et al.* (2017).
The body length was measured, in mounted specimens, from the front margin of
the labrum to the apex of the elytra. Dissections were made using standard tech-
niques. Genitalia and small parts were preserved in Euparal, on label-size acetate
sheets and mounted on the same pins as the specimens.

The photographs of the habitus, made by LT, are composite images with progres-
sive focusing obtained with a Nikon DSFi1 digital camera controlled by Nikon
DS-L2 stand alone remote controller mounted on a Leica Z6 microscope equipped
with a 1.0x Leica lens and a customized motorized stand made by LT, then pro-
cessed with Helicon Focus® 6.4.3 and optimized with Photoshop® Elements 14.
Photographs of the aedeagi, were made by Gabriele Fiumi with a Nikon D300 on
a Leitz Dialux 20 EB microscope. The drawings of the spermathecae and prono-
tum were made by Ivo Gudenzi.

The specimens are from or will be deposited in the collections of the following
institutions and individuals:

CTVR	Luca Toledano private collection, Verona, Italy
MCSNG	Museo Civico di Storia Naturale di Genova, Italy
NHMW	Naturhistorisches Museum, Vienna, Austria
NMPC	Narodni Museum, Prague, Czech Republic
PN	Paolo Neri private collection, Forlì, Italy



Figs 1-3. *Bembidion (Diplocampa) osellai* Neri & Toledano: 1. Habitus, holotype, (3.40 mm); 2. Spermatheca, paratype (0.10 mm) with annulus receptaculi (0.13 mm - a) and spermathecal gland (0.13 mm – b); 3. Median lobe of the aedeagus, holotype (0.64 mm).

***Bembidion (Diplocampa) osellai* n. sp. (figs 1, 2, 3)**

Diagnosis. A *Bembidion* belonging to subgenus *Diplocampa*, characterized by blackish colour, pronotum lacking microsculpture, brown antennae, including first antennomere, and legs reddish-brown.

Type locality. Turchia, vil. Gümüşhane, Bayburt, m 1200.

Type series. 1 ♂, Holotype, “Turchia – vil. Gümüşhane / Bayburt / m 1200, 1.VII.75 / Osella leg. [printed]” (PN); the specimen is not in good conditions, lacking the two terminal right antennomeres, fore right leg, median left leg and left hind tarsomeres. We added to the specimen the following label [red, printed]: “*Bembidion (Diplocampa) osellai* P. Neri & L. Toledano, 2022 – HOLOTYPE”; 1 ♂, paratype, with the same, printed label and collecting data as the holotype, missing four right antennomeres, right median leg and left hind tarsomeres; right elytron and the distal portion of the abdomen are detached and glued on the label (CTVR); 1 ♀, paratype, with the same collecting data as the holotype, but handwritten label (PN). We added to the paratypes the following label [red, printed]: “*Bembidion (Diplocampa) osellai* P. Neri & L. Toledano, 2022 – PARATYPE”.

Description of the holotype (fig. 1) 3.40 mm long. Colouration: head and pronotum blackish; antennae completely dark brown, palpi dark brown except the last yellow article, legs reddish brown.

Head: maximum width, including eyes, 0.74 mm; interocular distance 0.40 mm; smooth between eyes, with only trace of microsculpture, which becomes more evident at neck. Eyes poorly protruding, temples hardly visible. Frontal furrows deep and doubled all along their extension, parallel between eyes, convergent on clypeus. Antennae 1.60 mm long.

Pronotum: length along median line 0.71 mm; width at anterior margin 0.68 mm, maximum width 0.94 mm, at base 0.74 mm; pronotal width / pronotal length ratio 1.32; transverse, posterior margin slightly convex, anterior margin rectilinear with rounded corners; sides entirely rebordered, narrowing with evident sinuation towards base, with which they form an obtuse angle; lateral gutter narrow, of homogeneous width all along its extension; basal narrowing very short; laterobasal foveae subquadrate, almost smooth; median longitudinal line very narrow, anterior transverse impression evident, with some punctures near middle; basal transverse depression, between laterobasal foveae, short, with sharp punctures. Microsculpture absent, glossy.

Elytra: length 2.06 mm, maximum overall width, at middle, 1.33 mm; shape gently oval, with evident shoulders; completely microsculptured, with narrow, transverse polygonal sculpticells, less evident on disc; intervals flat, all striae with evident puncturation, visible also at apex.

Brachypterous.

Aedeagus (fig. 3) small (0.64 mm), with ventral margin rectilinear in the median third and evidently bent ventrally at apical third; apex tapered, apical tip with a small tooth at the ventral side. Parameres with three apical setae each.

Paratypes. Both paratypes match the holotype regarding colouration and morphology; the paratype ♀ is 3.50 mm long; the aedeagus of the paratype ♂, is 0.68 mm long. Antennomeres 2 to 4 may have a reddish base. Head with microsculpture slightly more evident than in the holotype. Spermatheca (fig. 2) with distal cavity half the size of the proximal one (0.10 mm), annulus receptaculi (0.13 mm - a) and spermathecal gland (0.13 mm - b).

Derivatio nominis. During his 1975 search trip to Turkey, Giuseppe Osella, a very well-known specialist in Coleoptera Curculionidae, formerly Professor of Zoology at the University of L'Aquila, Italy, collected some specimens of *Bembidion* Latreille, 1802. He donated these to Gianfranco Sama, and later Sama himself donated the specimens to P.N. In this material we found the three specimens belonging to the undescribed species we herewith dedicate to our friend Beppe Osella, recently deceased, to whom we are also grateful for having formed, when he was Curator of Zoology at the Museo Civico di Storia Naturale di Verona (Italy), a true entomological school from which we both took our first steps as taxonomists.

Distribution. The new species is known only from the type locality, in NE Turkey.

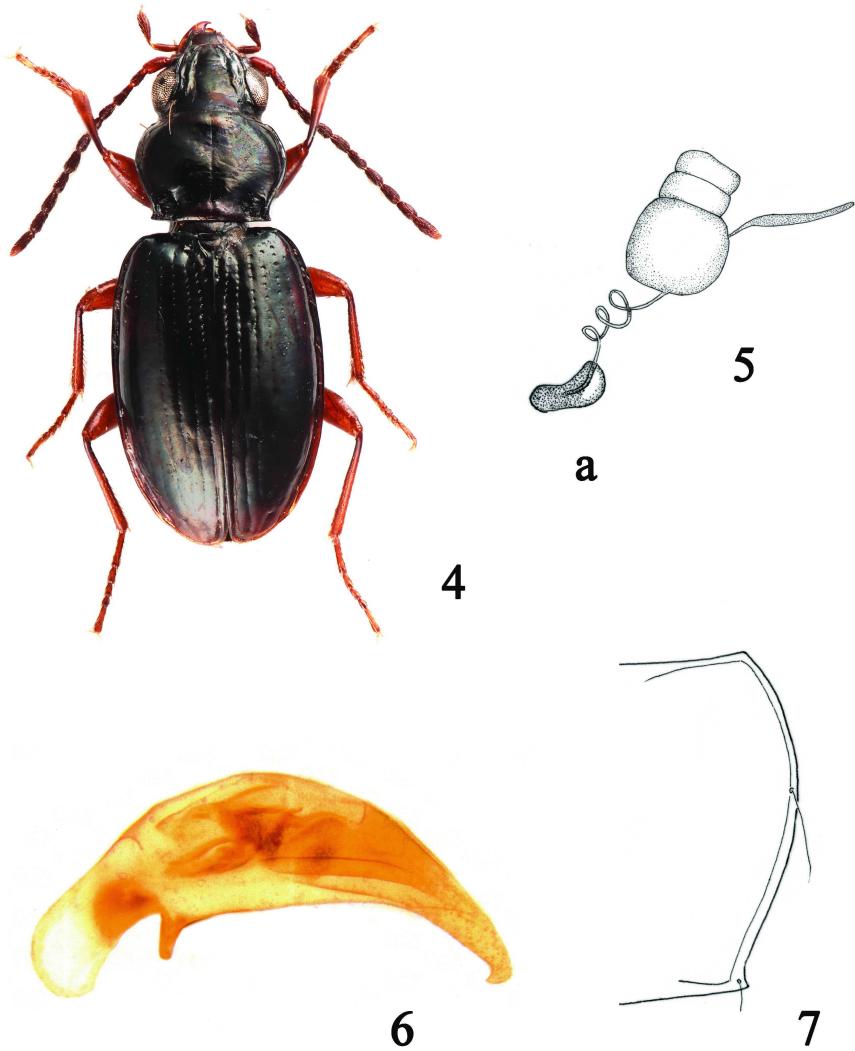
Comparative notes. *B. osellai* is distinguished from all the Palearctic *Diplocampa* species for having pronotum without microsculpture and completely blackish elytra.

***Bembidion (Diplocampa) acutangulum* n.sp. (figs 4, 5, 6, 7)**

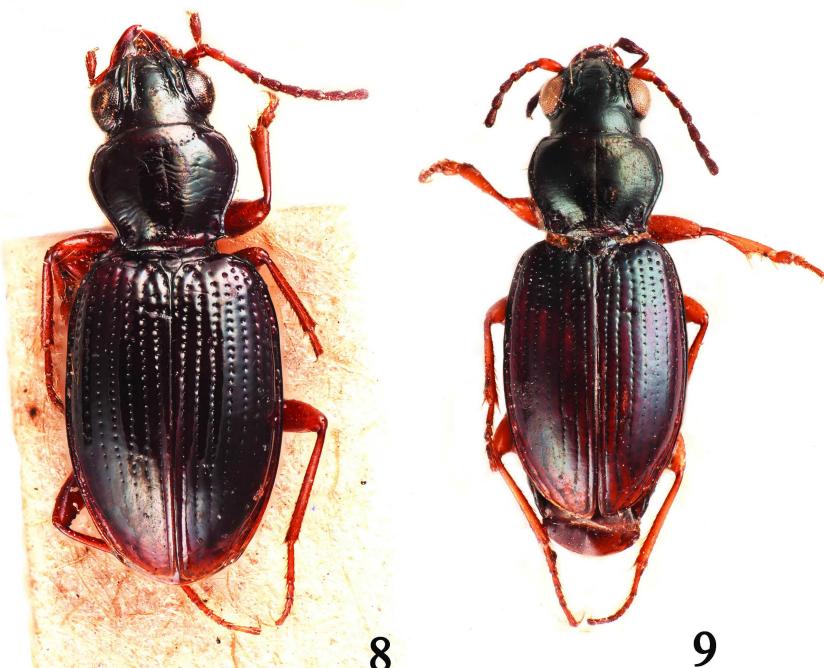
Diagnosis. A *Bembidion* belonging to subgenus *Diplocampa* Bedel, 1896, characterized by the pronotum with acute hind angle and basal margin wider than the anterior one, elytral striae visible almost up to the apex and apical third of aedeagus narrow and tapered.

Type locality. Armenia, N Sevan nr. Tsovagyugh village, m 1940, 40°36'48"N 44°57'29"E.

Material examined. 1 ♂, holotype, "Armenia: ca. 10 km N Sevan / 40°36'48"N 44°57'29"E / nr. Tsovagyugh village / 22.5.2001, ca. 1940m / Shaverdo & Schilhamer [printed]" (NHMW); we added to the specimen the following label [red, printed]: *Bembidion (Diplocampa) acutangulum* P. Neri & L. Toledano, 2022 – HOLOTYPE; 1 ♀, paratype, with the same label and collecting data as the holotype (NHMW); the specimen lacks the last three right antennomeres and the right middle leg; 1 ♀, paratype, with the same label and collecting data as the holotype (CTVR). We added to the specimen the following label [red, printed]: *Bembidion (Diplocampa) acutangulum* P. Neri & L. Toledano, 2022 – PARATYPE.



Figs 4-7. *Bembidion (Diplocampa) acutangulum* Neri & Toledano: 4. Habitus, paratype, (3.50 mm); 5. Spermatheca, paratype (0.12 mm) with annulus receptaculi (0.07 mm - a) and spermathecal gland; 6. Median lobe of the aedeagus, holotype (0.68 mm); 7. Pronotum, Holotype.



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Figs 8-10. *Bembidion (Diplocampa) blandulum* Netolitzky: 8. Habitus, holotype, (3.80 mm). *Bembidion (D.) loeffleri* Jedlička: 9. Habitus, holotype, (3.45 mm); 10. Median lobe of the aedeagus, paratype (0.73 mm).

Description of the holotype (fig. 4). 3.60 mm long. Colouration: head and pronotum blackish, elytra blackish with a faint reddish reflection near shoulders and at apex; antennae completely dark brown with extreme of the base of antennomeres 2 to 4 yellow, palpi dark brown except for the last palpomere yellow, legs reddish brown.

Head: maximum width, including eyes, 0.78 mm; interocular distance 0.44 mm; between the eyes, isodiametric microsculpture. Eyes poorly protruding, temples vanishing. Frontal furrows deep and doubled all along their extension, parallel between eyes, convergent on clypeus. Antennae 1.75 mm long.

Pronotum (fig. 7): length along median line 0.77 mm; width at anterior margin 0.73 mm, maximum width 1.02 mm, at base 0.77 mm; transverse, pronotal width / pronotal length ratio 1.32; posterior margin rectilinear and wider than anterior margin, which is rectilinear and with rounded corners; sides entirely rebordered, narrowing with evident sinuation towards base, with which they form a small, acute angle; lateral gutter narrow, of homogeneous width all along its extension; basal narrowing very short; laterobasal foveae subquadrate and deep, almost smooth; median longitudinal line very narrow, anterior transverse impression evident; basal transverse depression, between laterobasal foveae, short, with very sharp punctures. Microsculpture present but surface with a glossy appearance.

Elytra: length 2.16 mm, maximum overall width, at middle, 1.40 mm; shape gently oval, with evident shoulders; completely microsculptured, with narrow, irregular sculpticells, that in the apical half seem a satin-finishing, less evident on disc; intervals flat, all striae visible, even though more superficial at apex.

Brachypterous.

Aedeagus (fig. 6): small (0.68 mm), with ventral margin rectilinear in the mid third and evidently bent ventrally at apical third; apex evidently tapered, apical beak shaped. Parameres with three apical setae each.

Paratypes. Both paratypes ♀♂ match the holotype regarding colouration and morphology, with a few small differences: the two paratypes are respectively 4.00 and 3.50 mm long; reddish reflections at shoulders and apex may be more evident; the first antennomere can be reddish brown; the narrowing portion of the pronotal side near base is more extended than in the holotype, forming an evidently acute angle with the base (fig. 4); the laterobasal foveae may be rugose.

Spermatheca (fig. 5 - 0.12 mm) with distal cavity showing anular narrowing, larger than half of the proximal one, annulus receptaculi (0.07 mm - a) and spermathecal gland.

Derivatio nominis. The name recalls the evidently acute angle at the pronotal base.

Distribution. The new species is known only from type locality.

Comparative notes. *B. acutangulum* differs from all the *Diplocampa* species by

the hind pronotal angles from slightly acute to evidently acute; from *B. blandulum* by the microsculptured elytra, from *B. osellai*, by the microsculptured pronotum; from *B. fumigatum* (Duftschmid, 1812), *B. assimile* Gyllenhal, 1810, *B. loeffleri* and *B. transparens prostratum* Motschulsky, 1844 by the less evident microsculpture and the more glossy pronotum, from *B. bisulcatum* Chaudoir, 1844 by the less evident puncturation at elytral apex, from *B. skoraszewskyi* Korge, 1971 by the less evident elytral pattern, from *B. loeffleri* and *B. transparens* Gebler, 1829 by stria 5 at apex almost vanishing and not engraved, from *B. clarkii* Dawson, 1849 by the elytra in the apical half lacking satin-finishing.

Key to the species of subgenus *Diplocampa* Bedel, 1896

PW/PL = pronotal width / pronotal length ratio

- 1 dorsal surface lacking microsculpture, glossy, shiny; blackish, elytra with preapical and apical reddish reflections at shoulders; legs and first two antennomeres yellowish; pronotum barely wider than long (PW/PL = 1.17 to 1.22), cordiform, convex, hind angles right or almost so, anterior margin slightly wider than the posterior one; rounded elytral shoulders and apex, parallel median third; elytral striae coarsely punctured up to the hind discal pore, then almost vanishing, only stria 1 visible, not punctured; 3.50 – 4.00 mm long (fig. 8); aedeagus, 0.70 mm long, with apical quarter evidently bent ventrally, elongated extreme of apex short beak shaped; AB, IN, IQ (MARGGI *et al.*, 2017), **TR** ***blandulum*** Netolitzky, 1910
In the original description the pronotum is mistakenly described as longer than wide; the holotype shows also two light reddish areas at shoulders, preapical and at apex, all difficult to see, mainly considering the immaturity of the specimen; the aedeagus studied belongs to a specimen from Iran (CTVR), not to the holotype, that we preferred do not dissect, being a specimen of 1862, also because both specimens are extremely similar to one another.
We also saw 2 ♀♀ from Turkey (Konya, Eregli, Yassikaya, 2300 m; Niğde, Darboğaz, Bolkar daglari, 2200 m, coll. PN) where it is mentioned for the first time.
 - head or pronotum or elytra with microsculpture 2
- 2 pronotum lacking microsculpture, glossy, shiny; dorsal surface blackish, legs reddish-brown, antennae and palpi dark brown (sometimes the extreme base of antennomeres 2 to 4 may have reddish basal end); pronotum transverse (PW/PL = 1.32) with slightly obtuse hind angles; elytral striae with evident puncturation, visible also at apex; 3.40 to 3.50 mm long (fig. 1); aedeagus 0.64 to 0.68 mm long, with ventral margin rectilinear in the median third and evidently bent ventrally at apical third; tapered apex, slightly beak shaped (fig. 3); **A:** **TR** ***osellai*** sp. n.
 - pronotum entirely microsculptured 3

- 3 whole pronotum with isodiametric microsculpture, also at disk, sometimes so evident that it appears matt 4
- pronotum with faint microsculpture isodiametric or almost so, much less evident, mainly on disc, then surface more glossy 7
- 4 larger species (3.50 to 4.00 mm long), both elytra and pronotum more depressed; legs, antennomere 1 or also antennomere 2 yellow, the remaining darkened; head and pronotum light bronze; pronotum transverse (on average PW/PL = 1.33), with anterior margin as long as the posterior one and isodiametric microsculpture very evident, matt; elytra with several vertical spots in the anterior half, a transverse fascia of irregular yellowish vertical *Notaphus*-like spots in the posterior half and apex; aedeagus 0.73 to 0.79 mm long, with apical quarter bent ventrally and elongated, extreme of apex short beak shaped; almost whole Europe; A: KZ, TR, WS (MARGGI *et al.*, 2017)
fumigatum Duftschmid, 1812
- smaller species (2.80 to 3.50 mm long); elytra and pronotum more convex; dark bronze head and pronotum, pronotal microsculpture isodiametric but less evident 5
- 5 three internal elytral striae deep, coarsely punctured and slightly convex intervals; legs and first two antennomeres yellow; dark brown elytra with preapical spots and apex yellow; the variability in elytral colouration is anyway very wide, from specimens almost completely dark brown to variously spotted; pronotum transverse (on average PW/PL = 1.27), anterior pronotal margin slightly wider than the posterior one; 2.80 to 3.30 mm long; aedeagus 0.58 to 0.62 mm long, with apical quarter gently bent ventrally and extreme of apex short beak shaped; almost whole Europe; A: JP, TR, WS (MARGGI *et al.*, 2017) *assimile* Gyllenhal, 1810
- internal elytral striae less deeply punctured, intervals flat; antennae slightly darkened from antennomere 2 6
- 6 upper side of mature specimens dark, metallic greenish black. In the immature specimens the whole elytra or their apical half are yellowish-brown and the intervals with reddish reflections, first antennomere and legs yellowish-red and palpi brown. Elytra with rounded shoulders, striae with sharp punctures, stria 1 and 2 reaching apex, the remaining almost vanishing only towards apex; pronotum transverse (PW/PL = 1.29 to 1.39), with hind angle slightly obtuse. Elytral microsculpture almost isodiametric; 3.00 to 3.50 mm long (fig. 9), aedeagus 0.73 mm long, with apical third moderately bent ventrally, more stout, less tapered and apex bent with a beak (fig. 10); A: IN (MARGGI *et al.*, 2017) *loeffleri* Jedlička, 1963

The pronotal microsculpture seems more evident in the ♀♀.

- elytra with preapical spot normally distinct and well defined, anterior half with vertical “*Notaphus*-like” spots variously placed side by side and more or less visible; pronotum transverse, (PW/PL = 1.33 to 1.40) with right hind angles. Smaller and darker than *B. fumigatum*; 3.30 to 3.50 mm long; aedeagus 0.64 to 0.67 mm long, with apical third elongate, tapered, evidently bent ventrally and with apex short beak shaped; A: CH, ES, FE, JA, KZ, MG (MARGGI *et al.*, 2017).....
..... *transparens prostratum* Motschulsky, 1844
- 7 striae and elytral puncturation evident and visible up to the apex, including striae 5, 6, 7, that still are visible at the extreme apex even though more faintly punctured; elytra black with preapical yellow spot more or less distinct, and apex from dark to yellowish; pronotum transverse (on average PW/PL = 1.37) with hind angles from right to slightly obtuse; 3.15 to 3.65 mm long; aedeagus 0.62 to 0.65 mm long, with apical quarter bent ventrally and of uniform thickness, short beak shaped apex; E: MD, ST, UK; A: IN (MARGGI *et al.*, 2017) *bisulcatum* Chaudoir, 1844
- elytral striae 3, 4, 5 and their puncturation evanescent at apex 8
- 8 according to KORGE (1971) at a first glance it seems a *fumigatum*; reddish elytral pattern very large with reddish-yellow apex, large preapical spot that is separated forward from a smaller humeral spot that appears divided in strips; antennae brown with at least half of antennomeres 1 to 3 and base of 4 reddish; elytra and forebody black with greenish iridescent reflections; legs reddish yellow; pronotum with hind angles slightly obtuse, glossy, with faint microsculpture barely visible at middle; 3.30 mm long; A: TR (Benliahmét, Kars, 1800 m, NE Turkey) *skoraszewskyi* Korge, 1971
Characters from the original description, based upon a single ♀.
 - elytral pattern much smaller and sometimes indistinct; only antennomere 1 or 1 and 2 yellowish, for a single species completely brown..... 9
 - 9 elytral striae 3, 4, 5 still visible at apex, stria 5 still slightly impressed ...
..... 10
 - elytral striae 3, 4, 5 almost vanishing at apex, stria 5 not impressed..... 11
 - 10 pronotum transverse (on average PW/PL = 1.36) with right hind angles; elytra with microsculpture not showing a satin-finishing in the apical half, with preapical spot always present even though sometimes hardly visible, yellowish apex more or less visible; brachypterous; 3.00 to 3.60 mm long; aedeagus 0.69 mm long, with apical quarter stout, bent ventrally

and extreme apex short beak shaped; E: BE, DE, FR, GB, GE, IR, LU, MD, PT, SP, ST, SV, UK; A: WE (MARGGI *et al.*, 2017)
..... *clarkii clarkii* (Dawson, 1849)

Subspecies from shoreline of “Gironde” (France, Atlantic coast); pronotum with basal sinuosity very short, almost absent; antennae darkened from antennomere 3, sometimes from antennomere 2 (specimens from NE); edges of shoreline ponds (from the original description).....
..... *clarkii aquitanum* (Aubry, 1970)

Subspecies from Apennines (S Italy: Abruzzo, Calabria); well developed wings suitable for flight; aedeagus identical to that of typical form.....
..... *clarkii magistretti* De Monte, 1947

- pronotum transverse (on average PW/PL = 1.32) with hind angles from slightly acute to evidently acute; elytral microsculpture in the apical half looking like a satin-finishing; elytral reddish areas at shoulders and at apex more or less evident; 3.50 to 4.00 mm long (fig. 4); aedeagus 0.68 mm long with apical third more evidently bent ventrally, more tapered and with short beak shaped apex (fig. 6); E: AR *acutangulum* sp.n.
- 11 upper side of mature specimens dark, metallic greenish black. In the immature specimens whole elytra or their apical half yellowish-brown and the intervals with reddish reflections, first antennomere and legs yellowish-red and palpi brown. Elytra with rounded shoulders, striae with sharp punctures, stria 1 and 2 reaching apex, the remaining present and almost completely evanescent towards apex; pronotum transverse (PW/PL = 1.29 to 1.39), with hind angles slightly obtuse. Elytral microsculpture with short sculpticells, almost isodiametric; 3.00 to 3.50 mm long (fig. 9), aedeagus 0.73 mm long (fig. 10), with apical third moderately bent ventrally, more stout, less tapered and apex bent with a beak; A: IN (MARGGI *et al.*, 2017).... *loeffleri* Jedlicka, 1963
The pronotal microsculpture seems more evident in the ♀♀.
.....
- upper side black with a small preapical reddish-yellow spot, sometimes barely visible; pronotum transverse (on average PW/PL = 1.30) with hind angles right or slightly obtuse; elytra with outer striae almost vanishing at apical third, elytral microsculpture with short, transverse or irregular sculpticells; 3.00 to 3.40 mm long; aedeagus 0.75 mm long, with apical third evidently tapered and elongate, bent ventrally, extreme of apex short beak shaped; E: DE, EN, FI, GE, LA, NR, NT, PL, SV; A: WS; NAR (MARGGI *et al.*, 2017)
..... *transparens* Gebler, 1830

Chiavi del sottogenere *Diplocampa* Bedel, 1896

PW/PL = rapporto larghezza / lunghezza del pronoto

- 1 parte superiore senza microscultura, lucida, brillante; nerastro, elitre con sfumature rossicce omerali, preapicali ed apicale; zampe e primi due articoli delle antenne giallastri; pronoto appena più largo che lungo (PW/PL 1.17 – 1.22), cordiforme, convesso, angoli posteriori retti o quasi retti, anteriormente appena più largo che posteriormente; lati delle elitre ad omeri ed apice arrotondati, terzo mediano parallelo; strie elitrali grossolanamente punteggiate fino appena dopo il poro posteriore, poi quasi svaniscono, solo la prima prosegue senza punteggiatura; 3.50 – 4.00 (fig. 8);edeago, 0.70 mm, con quarto apicale bruscamente piegato ventralmente, allungato, estremo apice a becco corto; AB, IN, IQ (MARGGI *et al.*, 2017), **TR**.....
.....**blandulum** Netolitzky, 1910

Nella descrizione è segnalato erroneamente “pronoto più lungo che largo”; l'HT presenta anche due leggerissime sfumature rossicce agli omeri, preapicali e all'apice, tutte di difficile visibilità, soprattutto se considerato l'immaturità dell'esemplare; l'edeago studiato è di un ex. dell'Iran (CTVR), non dall'HT che è un ex del 1862, e per questo abbiamo preferito non rischiare l'estrazione, data l'estrema somiglianza tra gli esemplari. Abbiamo visto anche 2 ♀♀ di Turchia di cui è nuovo, coll. PN (Konya, Eregli, Yassikaya, 2300 m, leg. Neri; Niğde, Darboğaz, Bolkar daglari, 2200 m, leg. Gudenzi).

- pronoto o elitre con microscultura 2
- 2 pronoto senza microscultura, lucido, splendente; superiormente nerastro, zampe bruno rossastre, antenne e palpi bruno scuri (a volte le antenne possono avere l'estrema base degli articoli 2, 3 e 4 rossastri); pronoto trasverso (PW/PL 1.32) con angoli posteriori leggermente ottusi; strie delle elitre con punteggiatura evidente, visibili anche all'apice; 3.40 – 3.50 mm (fig. 1); edeago 0.64 – 0.68 mm, con margine inferiore rettilineo nel terzo centrale e terzo apicale evidentemente piegato ventralmente e affusolato; apice leggermente a becco (fig. 3); A: **TR** **osellai** sp. n.
- pronoto completamente reticolato 3
- 3 pronoto con completo reticolo isodiametrico compreso il disco, a volte talmente evidente da renderlo opaco 4
- pronoto con reticolo isodiametrico o quasi isodiametrico molto meno evidente, soprattutto sul disco, quindi più lucido; oppure reticolo appena accennato 7
- 4 specie più grande (3.50 – 4.00 mm), più piatta sia nelle elitre che nel pronoto; zampe, primo articolo delle antenne o anche il secondo, gialli, i ri-

manenti oscurati; capo e pronoto bronzo chiaro; pronoto con reticolo isodiametrico molto evidente, opaco, trasverso (PW/PL 1.33 mediamente), largo anteriormente quanto posteriormente; elitre con numerose macchie verticali nella metà anteriore, una fascia trasversa di macchie verticali poste irregolarmente nella metà posteriore e l'apice, giallastre; edeago 0.73 – 0.79 mm, con quarto apicale piegato ventralmente e affusolato, estremo apice a becco corto; Europa (quasi tutta); A: KZ, TR, WS (MARGGI *et al.*, 2017)..... ***fumigatum*** Duftschmid, 1812

- specie più piccole (2.80 – 3.50 mm); elitre e pronoto più convessi; capo e pronoto bronzo scuro, pronoto con reticolo isodiametrico chiaro ma meno evidente..... 5
- 5 elitre con le tre strie interne profonde, fortemente punteggiate e interstrie leggermente convesse; zampe e primi due articoli antennali gialli; elitre bruno scure con macchie preapicali ed apice gialli; la variabilità della colorazione elitrale è però molto grande, si va da esemplari quasi totalmente scuri, bruni o variamente maculati; pronoto trasverso (PW/PL 1.27 mediamente), anteriormente appena più largo che posteriormente; 2.80 – 3.30 mm; edeago 0.58 – 0.62 mm, con quarto apicale appena piegato ventralmente ed estremo apice a becco corto; Europa (quasi tutta); A: JP, TR, WS (MARGGI *et al.*, 2017)..... ***assimile*** Gyllenhal, 1810
- elitre con strie interne e punteggiatura meno profonde, interstrie piane; antenne leggermente oscurate dal secondo articolo 6
- 6 lato superiore degli esemplari maturi nero-verde metallizzato scuro, negli esemplari immaturi le elitre o la metà posteriore sono giallo-brune e le interstrie con riflessi rossastri; il primo articolo delle antenne e le zampe sono giallo-rosse e il palpo è bruno; elitre con omeri arrotondati, strie con punti fini, le prime due si estendono fino all'apice, le altre sono presenti e quasi scomparse solo verso l'apice; pronoto trasverso (PW/PL 1.29 – 1.39), con angoli posteriori leggermente ottusi; reticolazione elitrale a maglie corte quasi isodiametriche; 3.00 – 3.50 mm (fig. 9), edeago 0.73 mm, con terzo apicale moderatamente piegato ventralmente, più tozzo, meno affusolato ed apice piegato a becco (fig. 10); A: IN (MARGGI *et al.*, 2017)..... ***loeffleri*** Jedlička, 1963

La reticolazione del pronoto pare più evidente nelle ♀♀.

- elitre con macchia preapicale solitamente distinta e ben delimitata, metà anteriore con macchie verticali affiancate poste in modo variabile e più o meno visibili; pronoto trasverso, (PW/PL 1.33 – 1.40) con angoli posteriori retti. Più piccolo e più scuro del *fumigatum*; 3.30 – 3.50 mm; edeago 0.64 – 0.67 mm, con terzo apicale lungo, affusolato, piegato ventralmente in modo evi-

- dente ed apice a becco corto; A: CH, ES, FE, JA, KZ, MG (MARGGI *et al.*, 2017)..... *transparens prostratum* Motschulsky, 1844
- 7 strie e punteggiatura elitrale evidenti e visibili fino all'apice, compreso le strie 5, 6, 7, che all'estremo apice sono ancora ben visibili anche se più leggermente punteggiate; elitre nere con macchia preapicale gialla più o meno distinta ed apice da scuro a giallastro; pronoto trasverso (PW/PL 1.37 mediamente) con angoli posteriori da retti a leggermente ottusi; 3.15 – 3.65 mm; edeago 0.62 – 0.65 mm, con quarto apicale piegato ventralmente e di uniforme spessore, apice a becco corto; E: MD, ST, UK; A: IN (MARGGI *et al.*, 2017)..... *bisulcatum* Chaudoir, 1844
- strie elitrali 5, 6, 7 e relativa punteggiatura, all'apice appena distinguibili o svanite..... 8
- 8 disegno elitrale (“....a prima vista sembra di avere innanzi un *fumigatum*....” da KORGE, 1971) rossiccio molto esteso con apice giallo rossiccio, macchia preapicale grande che appare separata in avanti da una più piccola macchia omerale che pare divisa in singole striscioline; antenne brune con i primi tre articoli almeno per metà rossastri e base del quarto rossastro; elitre e avan-corpo neri con riflesso verdastro iridescente; zampe giallo rossicce; pronoto con angoli posteriori leggermente ottusi, con debole microscultura al centro appena visibile, lucente; 3.30 mm; A: TR (Benliahmet, Kars, 1800 m, NE turco)..... *skoraszewskyi* Korge, 1971
- Caratteri tratti dalla descrizione, realizzata su una sola ♀.
- disegno elitrale molto più ridotto e a volte indistinto; antenne con solamente il primo articolo (o i primi due) giallastri, per una sola specie completamente bruni..... 9
- 9 strie elitrali 3, 4, 5, all'apice ancora visibili, la 5a ancora leggermente incisa 10
- strie elitrali 3, 4, 5, all'apice quasi svanite, la 5a non incisa..... 11
- 10 pronoto trasverso (PW/PL 1.36 mediamente) con angoli posteriori retti; elitre con reticolo che non presenta nella metà apicale una satinatura, con macchia preapicale sempre presente anche se a volte di difficile visibilità, apice giallastro più o meno visibile; ali brachittere; 3.00 – 3.60 mm; edeago 0.69 mm, con quarto apicale tozzo, piegato ventralmente ed estremo apice a becco corto; E: BE, DE, FR, GB, GE, IR, LU, MD, PT, SP, ST, SV, UK; A: WE (MARGGI *et al.*, 2017)..... *clarkii clarkii* (Dawson, 1849)

Sottospecie del litorale della “Gironde” (Francia, coste dell’Atlantico); pronoto con sinuosità basale molto corta, quasi inesistente; antenne oscurate dal

- terzo articolo, a volte dal secondo (esemplari del nord est); bordi di stagni litorali (da descrizione)..... *clarkii aquitanum* (Aubry, 1970)
- Sottospecie degli Appennini (sud Italia: Abruzzo, Calabria); ali macrottere; edeago identico a quello della forma tipica.....
..... *clarkii magistretti* De Monte, 1947
- pronoto trasverso (PW/PL 1.32 mediamente) con angoli posteriori da solo leggermente acuti ad evidentemente acuti; elitre con reticolo nella metà apicale che pare una satinatura; le sfumature rossicce agli omeri e all'apice possono essere più o meno evidenti; 3.50 – 4.00 mm (fig. 4); edeago 0.68 mm, con terzo apicale più piegato ventralmente e più affusolato, apice a becco corto (fig. 6); E: AR..... *acutangulum* sp. n.
- 11 lato superiore degli esemplari maturi nero-verde metallizzato scuro, negli esemplari immaturi le elitre o la metà posteriore sono giallo-brune e le interstrie con riflessi rossastri; il primo articolo delle antenne e le zampe sono giallo-rosse e il palpo è bruno; elitre con omeri arrotondati, strie con punti fini, le prime due si estendono fino all'apice, le altre sono presenti e quasi scomparse solo verso l'apice; pronoto trasverso (PW/PL 1.29 – 1.39), con angoli posteriori leggermente ottusi; reticolazione elitrale a maglie corte quasi isodiametriche; 3.00 – 3.50 mm (fig. 9), edeago 0.73 mm, con terzo apicale moderatamente piegato ventralmente, più tozzo, meno affusolato ed apice piegato a becco (fig. 10); A: IN (MARGGI *et al.*, 2017)
..... *loeffleri* Jedlička, 1963
- La reticolazione del pronoto pare più evidente nelle ♀♀.
- superiormente nero con una piccola macchia preapicale giallo rossastra a volte appena visible; pronoto trasverso (PW/PL 1.30 mediamente) con angoli posteriori retti o appena ottusi; elitre con strie esterne del terzo apicale quasi sparite, reticolazione a maglie corte trasverse o irregolari; 3.00 – 4.40 mm; edeago 0.75 mm, con terzo apicale molto affusolato e allungato, piegato ventralmente, estremo apice a becco corto; E: DE, EN, FI, GE, LA, NR, NT, PL, SV; A: WS; NAR (MARGGI *et al.*, 2017)..... *transparens* Gebler, 1830

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Indirizzi degli autori/Authors' addresses:

Paolo Neri
via Alfredo Nobel, 11 scala A
I – 47121 Forlì (FC)
e-mail: nerolit.paolo.neri@gmail.com

Luca Toledano
Museo Civico di Storia Naturale
Lungadige Porta Vittoria 9
I – 37129 Verona
e-mail: lucatole2@libero.it

