

Three new species of *Othius* Stephens from the Caucasus (Coleoptera: Staphylinidae: Xantholininae)

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Three new species of the *Othius crassus* subgroup are described from the Caucasus: *O. hebes* sp. n. and its sister species *O. fastigatus* sp. n., both closely related to *O. korgei* Coiffait, and *O. ushakovi* sp. n., the sister species of *O. ponticus* Coiffait. A recent key to the Western Palearctic species of *Othius* is modified to accommodate the new species. Their phylogenetic affiliations are briefly discussed.

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In a recent revision of the Western Palearctic species of *Othius* Stephens, eight species were included in the *Othius crassus* subgroup: two species from the eastern Alps and adjacent mountain ranges, three from the Carpathians, two from northeastern Anatolia, and one from the Caucasus. The phylogenetic relationships among these species, as suggested in the revision, were considered preliminary, particularly because several undescribed species were known to occur in the Caucasus (Assing, 1997). Since both of us were studying Caucasian *Othius* simultaneously, we decided to describe the new taxa in a joint paper. I. Ushakov (Moscow), who had already recognized two of the new species, contributed considerably to the project.

In the course of the present study, a male of *O. permutatus* Assing with the following labels was discovered in the collections of the Zoological Institute, St.Petersburg: Caucasus, Swanetien. Leder. Reitter/ *Othius pallidus* Brancs. det. Reitter/ Holotypus *Othius quaesitus* sp. n. Ushakov I.A. det. 1988. This specimen is practically certain to have been mislabelled by Reitter or his staff. Like its related congeners of the *O. crassus* subgroup, *O. permutatus* has a restricted distribution, which is confined to the north, west and southwest of the Carpathians (Assing, 1997). Its occurrence in the Caucasus is, therefore, highly unlikely.

Material, measurements and abbreviations

Material from the following institutions and private collections was examined: DEI – Deutsches Entomologisches Institut, Eberswalde (L. Zerche); FMNH – Field Museum of Natural History, Chicago (A.F. Newton Jr., P.P. Parrillo); NHMW – Naturhistorisches Museum Wien (H. Schillhammer); SMTD – Staatliches Museum für Tierkunde, Dresden (O. Jäger); ZIN – Zoological Institute, St.Petersburg; ZMMU – Zoological Museum of Moscow State University (N.B. Nikitsky); cAss – private collection of V. Assing, Hannover; cSol – private collection of A.Yu. Solodovnikov, St.Petersburg.

The measurements in the descriptions and the key are indicated in mm and abbreviated as follows: HW: maximal head width; HL: head length from front margin of clypeus to neck; PW: maximum width of pronotum; PL: length of pronotum along median line; EL: length of elytra from apex of scutellum to elytral hind margin; TiL: length of metatibiae (external aspect from knee to insertion of first metatarsomere); TaL: length of metatarsi (claws not included); TL: total length from apex of mandibles to hind margin of tergum VIII.

Othius hebes sp. n.

(Figs 1-9)

Holotype. ♂, [Armenia], Caucasus, Armen. Geb., Leder, Reitter/ *crassus*/ *zlotarevi* Roubal ?! coll. Schuster (NHMW).

lapidicola Ksw./ Holotypus *Othius oberrans* sp. n. Ushakov I.A. det. 1986 (cSol); 1 ♀, Caucasus, Abastuman, Leder, (Reitter) Prof. Schneider Vermächtn. 1903 (SMTD); 1 ♂, Caucasus, Satapliysky Nature Reserve, 29.I.1984, forest litter (cSol). **Azerbaijan:** 1 ♂, Caucasus, Helenendorf [now Hanlar], Reitter/*Othius pallidus* Brancs., Dr. Eppelsheim (cAss); 1 ♂, Caucasus, Helenendorf, Reitter, *Zolotarevi* Roub./ ex coll. Skalitzky (cAss).

Description. Measurements and ratios (range, arithmetic mean; n = 17): HL: 0.76-0.85, 0.79; HW: 0.69-0.83, 0.75; PW: 0.76-0.91, 0.82; PL: 0.94-1.10, 1.02; EL: 0.54-0.68, 0.61; TiL: 0.59-0.69, 0.65; TaL: 0.47-0.56, 0.51; TL: 4.6-6.4, 5.7; HL/HW: 1.02-1.09, 1.05; HW/PW: 0.89-0.98, 0.92; PL/PW: 1.21-1.31, 1.24; EL/PL: 0.57-0.63, 0.60; TiL/TaL: 1.20-1.35, 1.28.

In size, proportions and colour resembling large *O. brevipennis* Kraatz and *O. korgei* Coiffait. Colour of body more or less uniformly yellowish to light brown, head and abdominal terga sometimes slightly darker.

Head with temples behind eyes mostly slightly widened; microsculpture of dorsal surface composed of fine and dense isodiametric meshes; frons generally with 2 pairs of deep and large punctures in more or less quadrate arrangement; the anterior punctures distinctly deeper, often accompanied by additional punctures; frontal furrows present or absent.

Pronotum with maximum width in anterior half; microsculpture variable, near anterior margin in most specimens predominantly composed of isodiametric and short transverse meshes, in posterior half mostly transverse; position of discal punctures as in *O. brevipennis* and *O. korgei*, i. e. first puncture distant from front margin.

Elytra with distinct punctation of variable density and depth, on the whole similar to *O. brevipennis* and *O. korgei*; wings completely reduced.

Abdomen with microsculpture predominantly composed of short transverse meshes, often mixed with isodiametric and long transverse meshes; palisade fringe on hind margin of tergum VII absent.

♂: protarsomeres I-IV with distinct sexual dimorphism, clearly more dilated in males than in females; hind margin of tergum VIII weakly concave, centrally often indistinctly convex (Fig. 7); posterior margin of sternum VII centrally with pronounced concavity, that of sternum VIII broadly concave (Fig. 8); sternum IX anteriorly not bifid, its hind margin more or less truncate to slightly convex, the hind corners at least weakly indicated (Figs 5, 6); lat-

eral tergal sclerites of segment IX very short and apically broadly obtuse, clearly not reaching hind margin of tergum X (Fig. 4); aedeagus with two pairs of rather weakly sclerotized internal structures, internal sac with approximately 10 thin coils; ventral process of median lobe of somewhat variable shape, slender, apically more or less dilated, and with pronounced carinae visible both in ventral and in lateral view (Figs 1-3).

♀: posterior margin of sternum VIII distinctly convex; hind margin of tergum X with modified, spine-like setae (Fig. 9); hind margin of sternum VIII centrally weakly pointed (cf. Fig. 18).

Derivatio nominis. The name (lat.: obtuse) refers to the shape of the male lateral tergal sclerites IX, a character distinguishing the species from its closest relative, which is described below.

Distribution. *O. hebes* is known only from the Likhskiy Khrebet ("Meskisches Gebirge"), the Satapliysky Nature Reserve near Kutaisi, and from various localities in the Maly Kavkaz (Caucasus Minor) both in Georgia and Azerbaijan. In the Likhskiy Khrebet and in Borzhom Nature Reserve it occurs together with the endemic *O. serratus* Assing. For comparison see below the following species.

Othius fastigatus sp. n. (Figs 10-19)

Holotype. ♂, [Georgia], Caucasus, Swanetien, Leder, Reitter/*Othius crassus*/ Lokay det./ W.H. Muche, Radeberg, Ankauf (SMTD).

Paratypes. 1 ♂, 2 ♀, same data as holotype/*pallidus* Brancs./ *crassus* Mots./ *Zolotarevi* Roub./ ex coll. Skalitzky, Scheerpeltz (NHMW, cAss).

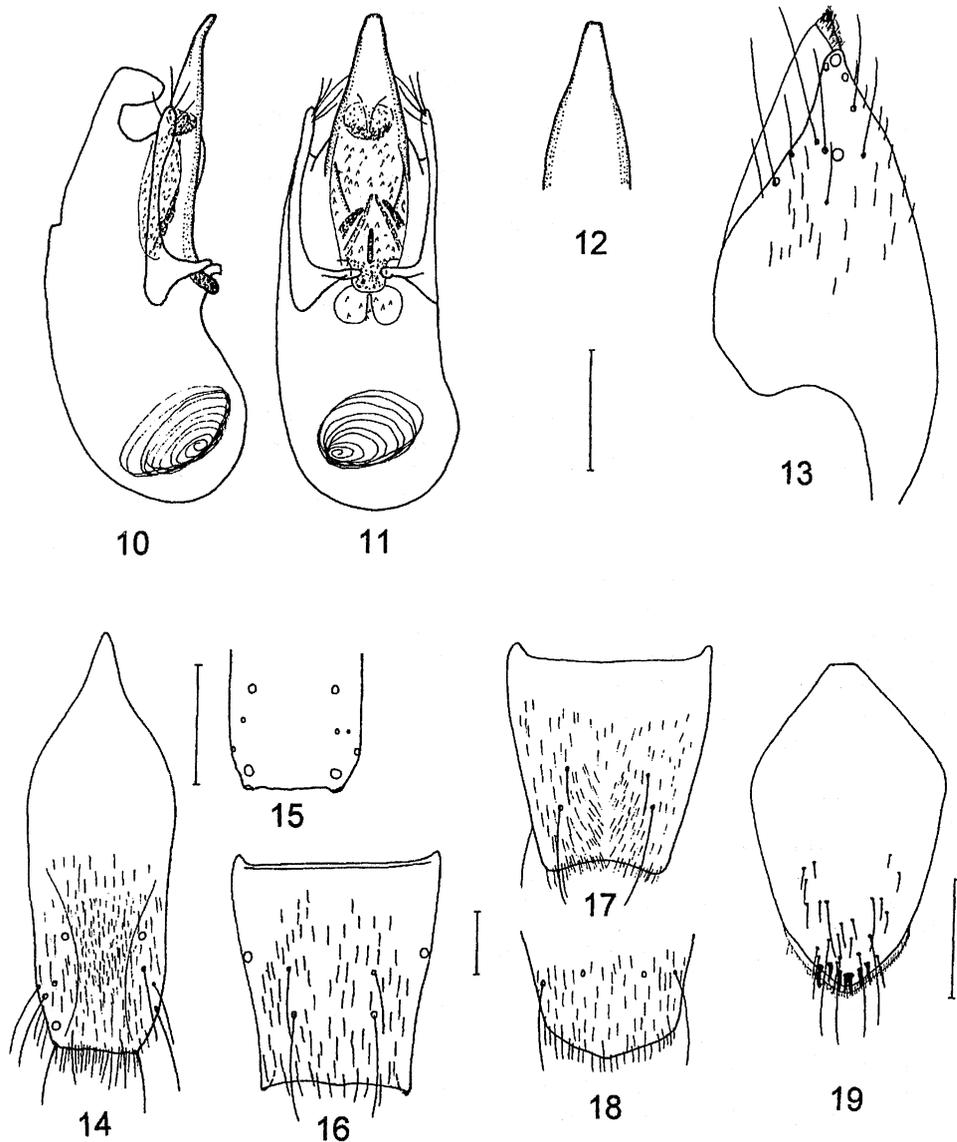
Description. Measurements and ratios (range; n = 4): HL: 0.71-0.88; HW: 0.68-0.74; PW: 0.76-0.82; PL: 0.92-1.03; EL: 0.53-0.60; TiL: 0.62-0.68; TaL: 0.45-0.56; TL: 5.5-6.3; HL/HW: 1.04-1.10; HW/PW: 0.89-0.94; PL/PW: 1.22-1.28; EL/PL: 0.56-0.61; TiL/TaL: 1.22-1.37.

External characters extremely similar to those of the very closely related *O. hebes*, from which this species is safely distinguished only by the male primary and secondary sexual characters.

Head on average relatively slenderer and more weakly dilated posteriorly; temples in two of the specimens subparallel.

Pronotum with predominantly transverse microsculpture also near anterior margin.

♂: posterior margins of tergum VIII, sternum VII and VIII as in *O. hebes*, but sternum



Figs 10-19. *O. fastigatus* sp. n.: aedeagus in lateral (10) and in ventral view (11); apex of median lobe of holotype (12); ♂ lateral tergal sclerite IX and tergum X in lateral view (13); ♂ sternum IX (14); hind margin of sternum IX of holotype (15); ♂ tergum VIII (16); ♂ sternum VIII (17); ♀ sternum VIII (18); ♀ tergum X (19); setae partly omitted in 13-18. Scales: 0.2 mm.

VIII somewhat less densely pubescent (Figs 16, 17); sternum IX as in *O. hebes* not bifid anteriorly, its hind margin truncate (Figs 14, 15); lateral tergal sclerites of segment IX apically clearly more acute than in *O. hebes* (Fig. 13); aedeagus with internal structures as in *O. hebes*, but median lobe smaller, its apex not dilated, and the carinae less pronounced (Figs 10-12).

♀: sternum VIII and tergum X as in *O. hebes* (Figs 18, 19).

Derivatio nominis. The name (lat.: acute, pointed) refers to the shape of the male lateral tergal sclerites IX.

Distribution. *O. fastigatus* has become known only from Svanetia in the Central Caucasus.

Comparison. *O. fastigatus* is the sister species of *O. hebes*; not only are the aedeagus

(shape, internal structures) and the female terminalia very similar, they also share such remarkable synapomorphies as the shape of the male sternum IX, which is not bifid anteriorly as in other Western Palaearctic congeners, the concave hind margin of the male tergum VIII, and the weakly pointed female sternum VIII. Based on the male characters both species belong to the *Othius crassus* subgroup (Assing, 1997). Within this subgroup they are most closely related to *O. korgei* Coiffait from northern Anatolia, which can be concluded from the similar shape and internal structures of the aedeagus, the shape of the lateral tergal sclerites of segment IX, the distinctly concave posterior margins of sternum VII and VIII, and the similar male sternum IX, female terminalia and external morphology.

***Othius ushakovi* sp. n.**
(Figs 20-25)

Holotype. ♂, [Georgia], Caucasus, Kodorsky range, Bakhundjara SE mt. Khodjali, h 1750 m, forest litter, 28.VI.1986, leg. I. Ushakov/ Holotypus *Othius tichomirovae* sp. n., Ushakov I.A. det. 1988 (ZIN).

Paratypes. 2 ♀, same data as holotype/ Paratypus *Othius tichomirovae* sp. n., Ushakov I.A. det. 1988 (cSol, cAss); 2 ♂, Caucasus, Kodorsky range, road to Bakhundjara, h 1100m, forest litter, 27.VI.1986, leg. I. Ushakov (cSol, cAss).

Description. Measurements and ratios (range; n=4): HL: 0.91-0.97; HW: 0.85-0.91; PW: 0.94-1.01; PL: 1.19-1.28; EL: 0.71-0.76; TiL: 0.79-0.85; TaL: 0.62-0.66; TL: 5.9-7.5; HL/HW: 1.05-1.09; HW/PW: 0.86-0.92; PL/PW: 1.25-1.31; EL/PL: 0.56-0.60; TiL/TaL: 1.25-1.30.

In external morphology (colour, proportions, microsculpture, punctation) highly similar to *O. crassus* Motschulsky, *O. ponticus* Coiffait, *O. permutatus* Assing and related species; size intermediate between an average *O. crassus* and an average *O. permutatus*.

Head with temples behind eyes slightly widened or parallel; microsculpture on dorsal surface composed of dense isodiametric meshes, which tend to be slightly transverse in the posterior area; frons with 2 pairs of shallow and small punctures in trapezoid arrangement, with anterior punctures a little closer together than the posterior ones.

Pronotum with shape and punctation similar to *O. crassus*.

Elytra relatively (i. e. in relation to pronotum) longer than in average of *O. crassus*, in other respects similar to that species; wings completely reduced.

Abdomen with predominantly transverse microsculpture and fine punctation of variable density; palisade fringe on hind margin of tergum VII absent.

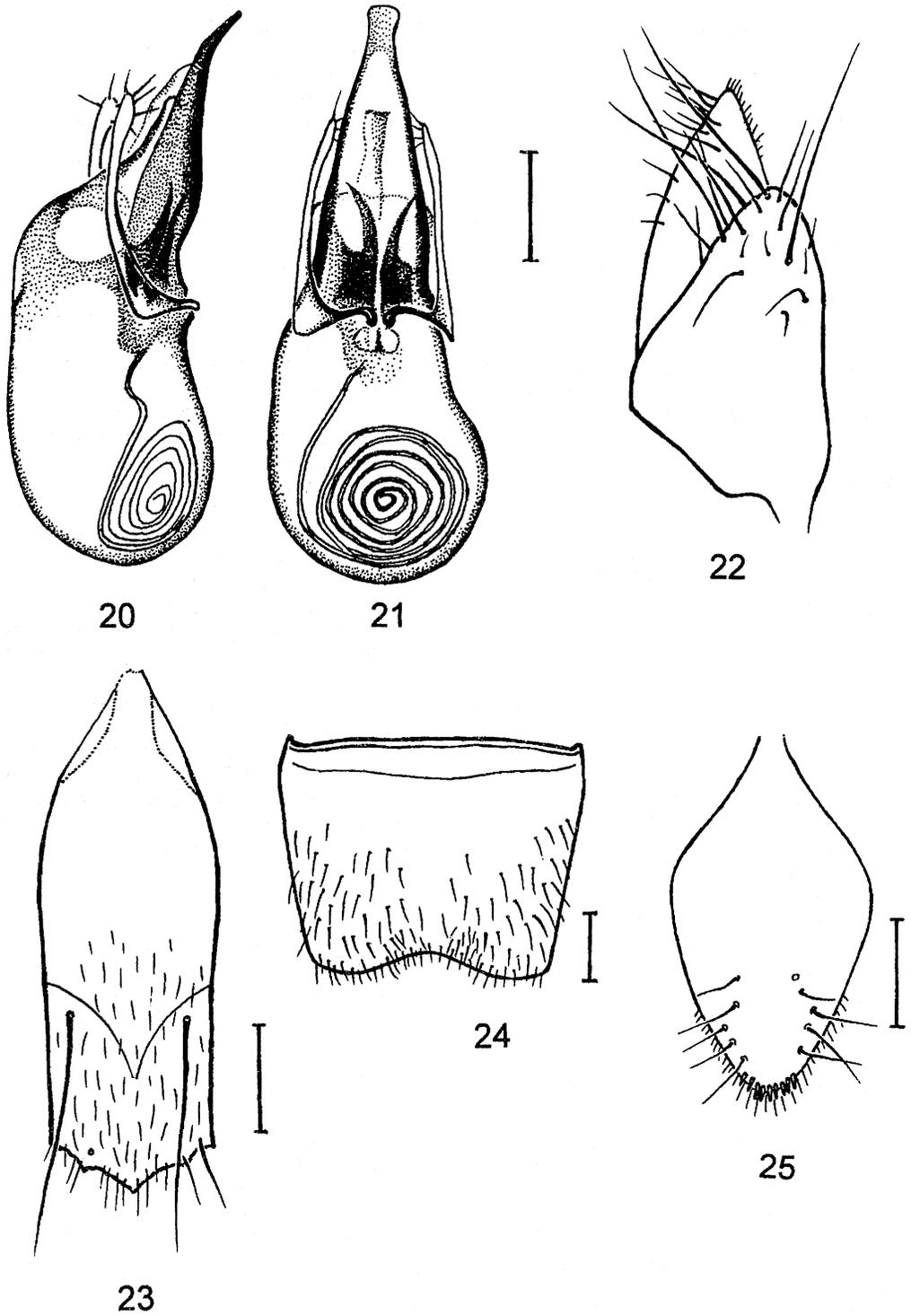
♂: protarsomeres I-IV strongly dilated, clearly more so than in females; hind margin of tergum VIII distinctly convex; sternum VIII posteriorly concave; sternum VII without distinct patches of dense setae, hind margin concave and without distinct median depression (Fig. 24); sternum IX posteriorly of characteristic shape, threepointed and with distinct hind corners (Fig. 23), the lateral points (i. e. those between the middle and the hind corners) may be more or less asymmetrically reduced; tergum X short, with long setae in symmetric arrangement; lateral tergal sclerites IX very short and in lateral view obtusely rounded, by far not reaching hind margin of tergum X (Fig. 22). Internal sac of aedeagus with characteristic, distinctly sclerotized hook-shaped structures, with a wide tube covered with numerous semitransparent spines, and with a characteristic dorso-apical membranous structure; flagellum thin and with ca. 20-25 thin coils; ventral process long and slender, apically gradually tapering, and with a pair of arcuate, apically converging carinae; apex of ventral process dilated and curved ventrally (Figs 20, 21). (A pair of oblong weakly sclerotized structures, which are present in all the closely related species, was not discovered in the internal sac of the three males available. Presumably they are present, but could not be seen due to the relatively massive sclerotized structures and the rather dark and spine-covered membranous structures. In related species with less massive and dark internal structures in the internal sac, the pair of oblong semitransparent structures is also often difficult to see. In view of the low number of males available, a dissection of the internal sac was refrained from.)

♀: tergum and sternum VIII as in the related species; hind margin of tergum X with modified, short spine-like setae (Fig. 25).

Derivatio nominis. The new species is dedicated to Mr I.A. Ushakov, who contributed to the study of Caucasian *Othius* and other Xantholininae, and who had already recognized the novelty of the species.

Distribution and bionomics. *O. ushakovi* is known only from the Kodorsky range in the south of the Western Caucasus, where it was collected in forest litter at altitudes between 1100 and 1750 m.

Comparison and phylogenetics. From the similar species of the *O. crassus* subgroup (*O. crassus*, *O. permutatus*, *O. transsilvanicus*



Figs 20-25. *O. ushakovi* sp. n.: aedeagus in lateral (20) and in ventral view (21); σ^7 lateral tergal sclerite IX and tergal X in lateral view (22); σ^7 sternum IX (23); σ^7 sternum VII (24); f tergal X (25). Scales: 0.2 mm.

Ganglbauer, *O. serratus* Assing, *O. corpulentus* Coiffait, and *O. ponticus*), *O. ushakovi* is readily distinguished by the shape and internal structures of the aedeagus and the male secondary sexual characters. It is apparently the sister species of *O. ponticus*, a hypothesis supported by several synapomorphies: (a) the very long and slender ventral process of the aedeagus, which is distinctly longer than the basal bulb; (b) the massive, basally widened and in lateral view apically acute sclerotized structures in the internal sac; (c) the dorso-lateral folds of the posterior part of the male sternum IX extending to the middle, so that approximately the posterior 1/3 of sternum IX is completely darkened. In addition, in both species the parameres are very slender and distinctly curved, the hind margin of the male tergum VIII is strongly convex, and the hind margin of the male sternum IX is not smooth, but dentate or serrate (characters shared with *O. serratus*); the ventral process is subapically very narrow and distinctly constricted (also in *O. serratus* and *O. corpulentus*), the outline of the hind margin of the male sternum IX is convex (shared with *O. serratus* and *O. permutatus*), and modified setae are present on the female sternum X (also in *O. permutatus* and *O. corpulentus*). Finally, the distribution of *O. ushakovi* supports a sister species relationship with *O. ponticus* rather than with any of the species from the Carpathians and the Alps. The short and obtuse lateral tergal sclerites of the male abdominal segment IX in *O. ushakovi* and the Caucasian *O. serratus* are unlikely to represent a synapomorphy, not only because this would conflict with several other characters, but also because this character is also found in *O. crassus*. On the other hand, there is evidence suggesting that *O. serratus* may be the adelphotaxon of the *ponticus-ushakovi* lineage (see characters referred to above).

In order to account for the new taxa, the key in Assing (1997) should be modified as follows:

20. ♂: sternum VII posteriorly not or only indistinctly concave, hind margin of sternum VIII weakly concave; ventral process of aedeagus in ventral view broader and parallel. Eastern Alps, mountain ranges of northern Czech Republic, Slovakia, Southern Poland, Hungary, Slovenia, and Northwestern Balkans *O. brevipennis* Kraatz
 - ♂: sternum VII and VIII distinctly concave posteriorly; ventral process of aedeagus apically long

- and slender, more or less acutely pointed. Distribution different 20a
 20a. ♂: tergum VIII convex; sternum IX at least weakly bifid anteriorly; ventral process of aedeagus slender and with indistinct carinae. ♀: sternum VIII evenly convex posteriorly. Northern Anatolia *O. korgei* Coiffait
 - ♂: hind margin of tergum VIII weakly concave to more or less truncate, only centrally often weakly convex; sternum IX not bifid anteriorly; ventral process of aedeagus less slender and with distinct carinae. ♀: sternum VIII weakly pointed posteriorly. Caucasus 20b
 20b. Pronotum near anterior margin with predominantly transverse microsculpture. ♂: lateral tergal sclerites in lateral view more acute (Fig. 13); aedeagus smaller, apex of median lobe not dilated, carinae of ventral process less pronounced (Figs 10, 11). Central Caucasus: Svanetia *O. fastigatus* sp. n.
 - Pronotum near anterior margin usually predominantly composed of short transverse or isodiametric meshes. ♂: lateral tergal sclerites in lateral view broadly obtuse (Fig. 4); aedeagus larger, apex of median lobe dilated, ventral process with pronounced carinae (Figs 1, 2). Likhskiy range and Maly Kavkaz (Caucasus Minor) *O. hebes* sp. n.
 [...]
 25. Species of the Carpathians 26
 - Species of the Caucasus and northeastern Anatolia 27
 27. ♂: sternum IX with serrate hind margin; lateral tergal sclerites of segment IX of characteristic shape, very short, in lateral view abruptly narrowed posteriorly and apically very acute; aedeagus with shorter, compact sclerotized internal structures of characteristic shape (see figures in Assing, 1997). Northeastern Anatolia *O. ponticus* Coiffait
 - ♂: sternum IX posteriorly of characteristic shape, threepointed and with distinct hind corners (Fig. 23); lateral tergal sclerites IX very short and in lateral view obtusely rounded (Fig. 22); internal sac of aedeagus with longer and more acute, hook-shaped sclerotized structures, dorsoapically with membranous structure (Figs 20, 21). South of Western Caucasus *O. ushakovi* sp. n.

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Reference

Assing, V. 1997. A revision of *Othius* Stephens, 1829. III. The species of the Western Palaearctic region exclusive of the Atlantic Islands (Coleoptera, Staphylinidae: Xantholininae). *Nova Suppl. Entomol.*, Berlin, 10: 1-130.
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