

A contribution to the genus *Dyschiriodes* (Coleoptera: Carabidae: Scaritinae: Dyschiriini) with descriptions of two new species

Petr BULIRSCH

Milánská 461, CZ-109 00 Praha 111, Czech Republic
e-mail: p.bulirsch@seznam.cz

Taxonomy, new species, lectotype, keys, Coleoptera, Carabidae, *Dyschiriodes*, *Eudyschirius*, Bolivia, Iran, Portugal

Abstract. *Dyschiriodes (Eudyschirius) boliviensis* sp. nov. from Bolivia and *D. (E.) anichtchenkoi* sp. nov. from Iran are described, illustrated and compared to the related taxa. The lectotype of *D. (Dyschiriodes) impressus* Putzeys, 1846 is established, the species is redescribed and its synonymy is given. The key to the *Dyschiriodes pampicola* species group is completed and that to the eastern species of the *D. fulvipes* subgroup is presented for the first time.

INTRODUCTION

The main purpose of the present article is to describe two new species of the genus *Dyschiriodes* Jeannel, 1941: a Bolivian species from the *D. (Eudyschirius) pampicola* group and an Iranian species from the *D. (Eudyschirius) fulvipes* subgroup.

The Neotropical species of the genus *Dyschiriodes* were recently studied or overviewed by Fedorenko (1991a, 1991b, 1999) and Bulirsch (2006, 2009, 2012). Most of the Neotropical species (20 out of 21 known taxa) belongs to the *D. (Eudyschirius) pampicola* group with three subgroups established by Fedorenko (1999).

According to Fedorenko (1996) and Bulirsch & Fedorenko (2007) the *D. (Eudyschirius) fulvipes* subgroup of the *D. (E.) lafertei* group comprises about 12 known Palearctic taxa. Among them, there are five sibling species occurring in Turkey and Syria, each of them with a relatively very small area of distribution. The below described species is allied to this small group.

MATERIAL AND METHODS

The study of dry-mounted specimens, including measurements and examination of the microsculpture, was done at a magnification of 56 \times . All the type specimens were measured. Standard measurements follow Fedorenko (1996). The length of the body is given with an accuracy of 0.05 mm, other measurements, ratios and means are rounded-off to two decimal places. Label data of all the specimens are quoted verbatim except unified data of findings. Male genitalia (aedeagi) were fixed with water-soluble glue.

The following abbreviations are used to indicate the depository of specimens:
FMNH Field Museum of Natural History, Chicago, U.S.A.;
IRSN Institute Royal des Sciences Naturelles de Belgique, Bruxelles, Belgium;
PBPC collection of Petr Bulirsch, Praha, Czech Republic;

Other abbreviations:

ASP: apical setiferous puncture(s); BSP: basal (prescutellar) setiferous puncture(s); DSP: dorsal setiferous puncture(s); PHSP: posthumeral setiferous puncture(s); HT: holotype(s); PT: paratype(s).

RESULTS

Dyschiriodes (Eudyschirius) boliviensis sp. nov.

(Figs 1, 1a,b)

Type material. Holotype (♂): 'BOLIVIA: Dept. / Cochabamba, Prov. / Carrasco, Serrania de / Siberia, Chua Khocha / 5.ix.1990 // FMHD #90-215, cloud / forest, 2300m, leaf / litter, P. Parillo & / R. Rengel, No.151 / Field Museum', (FMNH). Paratypes: (2♂♂, 2♀♀): with the same labels as HT, (FMNH, PBPC); (2♂♂, 1♀): 'BOLIVIA: Dept. / Cochabamba, Prov. / Carrasco, Serrania de / Siberia, Chua Khocha / 27.viii-5.ix.1990 // FMHD #90-225, cloud / forest, 2300 m / P. Parillo & R. Rengel, / No.162, FIT / Field Museum', (FMNH, PBPC); (1♀): 'BOLIVIA: Dept. / Cochabamba, Prov. / Carrasco, Serrania de / Siberia, Chua Khocha / 27.viii-5.ix.1990 // FMHD #90-217, cloud / forest, 2300 m / P. Parillo, No.153 / FIT / Field Museum' (FMNH); (1♀): BOLIVIA: Dept. / Cochabamba, Prov. / Carrasco, Serrania de / Siberia, Chua Khocha / 25.viii-6.ix.1990 // FMHD #90-237, cloud / forest, 2300 m / P. Parillo & / M. Ledezma, No.177 / baited pitfall, beef / Field Museum', (FMNH).

Description. Habitus as in Fig. 1; length 2.95-3.25 mm (mean 3.06 mm, HT 3.05 mm, n=10). Dark brown, surface with slight bronze metallic lustre; anterior part of head, latero-apical part of elytra brownish, elytral base in some specimens indistinctly lighter; legs rusty red, antennomeres and mouth-parts slightly lighter, yellowish-red.

Head. Anterior margin of clypeus between moderately protruding lateral lobes direct to very faintly protruded; clypeofrontal area with deep, transverse furrow; facial furrows deep and long, rather strongly divergent posteriorly, slightly turned around posterior margin of eyes; distance between them broader than eyes length. Vertex and posterior part of clypeus vaulted, shiny, finely and very sparsely micro-punctate. Eyes rather small, slightly flattened. Antennae submoniliform.

Pronotum. Strongly convex, outline almost regularly rounded; slightly attenuated anteriorly; 1.06-1.11 (mean 1.08, HT 1.06) times as wide as long, 1.49-1.54 (mean 1.51, HT 1.51) times as wide as head, widest below midlength. Anterior angles narrowly rounded, posterior ones broadly rounded. Anterior transverse impression moderately deep, sparsely and finely punctate; median line rather fine, superficial; lateral channel narrow, especially in posterior part, reflexed lateral margin extended very slightly beyond posterior setiferous puncture. Surface mirror-like shiny, with very fine micropunctures.

Elytra. Short-ovate, not concave in basal fourth in lateral view; 1.51-1.58 (mean 1.55, HT 1.54) times as long as wide, 1.18-1.26 (mean 1.23, HT 1.25) times as wide as pronotum; base very strongly sloping; outline strongly broadened on sides, broadest just below anterior third, more strongly attenuated towards apex than towards strongly rounded humeri; each elytron with indistinct, very blunt humeral tooth; suture not depressed at base. Base with fine basal border, without basal tubercles; BSP rather large, slightly to moderately deeply connected with stria 1. Striae 1-2 deep throughout, striae 3-6 weakened just before base and strongly weakened in apical fourth to third; stria 7 slightly and stria 8 distinctly shortened basally;



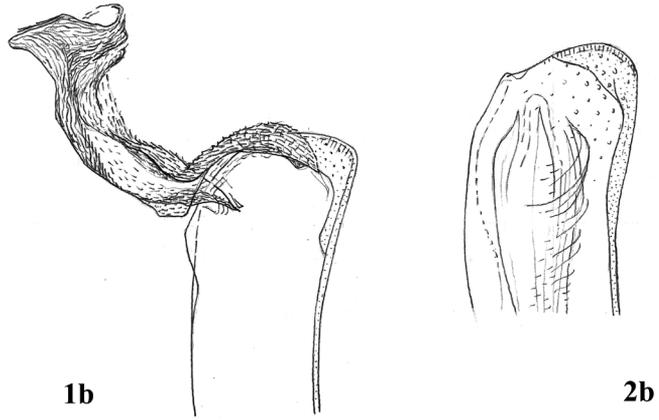
Figs. 1-2. Habitus of HT (actual length in parentheses behind the name). 1- *Dyschiriodes boliviensis* sp. nov. (3.05 mm); 2- *D. anichtchenkoi* sp. nov. (3.45 mm).

stria 7 moderately and stria 8 strongly deepened in apical third; striae punctures rather sparse and coarse on disk, disappearing in apical third; intervals moderately vaulted in basal half, flattened latero-apically. Three PHSP, 0 DSP and two large ASP (in very deep apical stria). Apterous.

Protibia. Apical spine moderately curved backwards not inwards, as long as apical spur; latter almost straight apically; distal marginal tooth large, sharp, proximal one small, moderately sharp.

Mesothorax. Peduncle with shallow vertical slot.

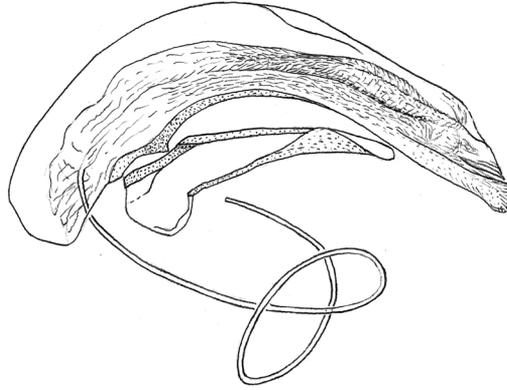
Aedeagus. Shape as in (Figs 1a,b). Median lobe in lateral view as in Fig. 1a, in HT 0.58 mm long, regularly, moderately bent down. Apical lamella in ventral view (Fig. 1b), very broad, broadly rounded, slightly asymmetric.



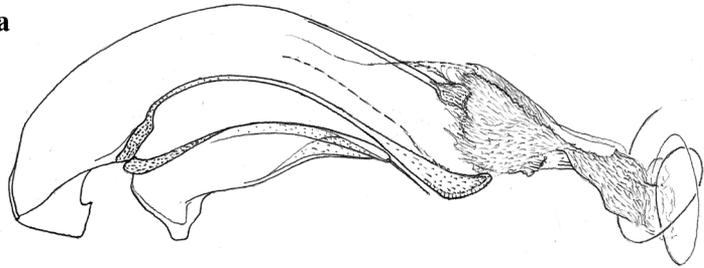
1b

2b

2a



1a



Figs. 1a,b-2a,2. *Dyschiriodes boliviensis* sp. nov: 1b- Apex of aedeagus of HT, ventral view; 1a- Aedeagus, right lateral view; *D. anichtchenkoi* sp. nov: 2b- Apex of aedeagus of HT from ventral view; 2a- Aedeagus, right lateral view. (Scale bar 0.2 mm)

Differential diagnosis. *D. boliviensis* sp. nov. belongs to the *D. pampicola* group. The combination of the strongly rounded elytra, very strongly reduced wings with missing elytral basal tubercles and missing DSP is unique within this group. *D. boliviensis* sp. nov. could be distinguished from the species of the *D. pampicola* group with missing elytral basal tubercles according to the key presented below.

Name derivation. In accordance with the origin of the type series.

ADAPTED PART OF KEY TO *DYSCHIRIODES PAMPICOLA* GROUP

The latest key to the *D. pampicola* group was published by Bulirsch (2012). I adjusted its final part and added the newly described species. Items 1-38 remain without change and are not repeated.

- 38(19) Elytral base with fine to vestigial basal border and without basal tubercles. Reflexed lateral margin of pronotum distinct to posterior setiferous puncture.
39(40) Large species, length 3.8-4.5 mm; elytra short ovate. 17. *D. erwini* Bulirsch, 2009 (part.)
40(39) Smaller species, length 2.3-3.3 mm.
41(42) Elytra short ovate; humeri rounded, wings reduced, length 2.9-3.3 mm. 21. *D. bolivianus* sp. nov.
42(41) Elytra elongate to subparallel, humeri distinct.
43(44) Larger, length 2.8-3.0 mm; dark species with metallic tinge, elytra shorter, 1.7-1.8 times as long as wide. Elytral striae 1-6 coarsely punctate, strongly impressed in second fourth, then abruptly disappearing, striae 7-8 very deep throughout; three PHSP. 8. *D. peruanus* (Fedorenko, 1991) (part.)
44(43) Smaller, length 2.35 mm; yellowish species, elytra much longer, 2.1 times as long as wide. Elytral striae strongly weakened apically, stria 8 created from few punctures before midlength; two PHSP.
..... 18. *D. clorinda* Bulirsch, 2009

Dyschiriodes (Eudyschirius) anichtchenkoi sp. nov.

(Figs 2, 2a,b)

Type material. Holotype (♂): 'IRAN, 20km SW of Yasuj / (Kohgiluyeh-va-Boyer / Ahmad); 5-6.v.2007 / Anichtchenko A. leg.', (PBPC). Paratypes: (1♂, 2♀♀): with the same labels as HT, (PBPC).

Description. Habitus as in Fig. 2; length 3.45-3.75 mm (mean 3.61 mm, HT 3.45 mm, n=4). Dark brown, surface with bronze metallic lustre; legs rusty brown, first basal antennomere, basal parts of antennomeres 2-4 and mouth-parts rusty red, rest of antennomeres and ultimate palpomeres strongly infuscated.

Head. Anterior margin of clypeus between distinctly protruding lateral lobes slightly bilobed; clypeofrontal area with deep, transverse furrow; facial furrows deep and long, distinctly divergent posteriorly, turned around posterior margin of eyes; distance between them very slightly broader than eye length. Vertex and posterior part of clypeus strongly vaulted, smooth, with fine micropunctures. Eyes moderately large, strongly convex. Antennae moniliform.

Pronotum. Strongly convex, outline in posterior half regularly, in anterior half rather slightly rounded; slightly attenuated anteriorly; 1.05-1.08 (mean 1.07, HT 1.05) times as wide as long, 1.38-1.44 (mean 1.42, HT 1.38) times as wide as head, widest before second third. Anterior angles narrowly, posterior ones broadly rounded. Anterior transverse impression deep, sparsely and very finely punctate; median line fine, posteriorly slightly deepened;

lateral channel moderately broad, reflexed lateral margin extended slightly beyond posterior setiferous puncture. Surface mirror-like shiny, with very fine micropunctures.

Elytra. Short-ovate, very broadly and gently concave in basal fourth in lateral view; 1.56-1.61 (mean 1.59, HT 1.60) times as long as wide, 1.27-1.29 (mean 1.28, HT 1.29) times as wide as pronotum; base rather slightly sloping; outline moderately broadened on sides, broadest just before midlength, slightly more strongly attenuated towards apex than towards distinctly protruding humeri; each elytron with very blunt humeral tooth; suture slightly depressed at base. Base with distinct basal border, without basal tubercles; BSP rather large, slightly to moderately deeply connected with stria 1 and slightly to indistinctly with stria 2. Striae moderately deep; densely and rather coarsely punctate; striae and its punctures much finer latero-apically, intervals moderately vaulted, slightly flattened latero-apically. Three PHSP, three large DSP (in interval 3, mostly in its middle) and two ASP (in deep apical stria).

Protibia. Apical spine moderately curved backwards, slightly longer than apical spur; latter almost straight apically; distal marginal tooth very large, sharp, proximal one small, rather sharp.

Aedeagus. Shape as in (Figs 2a,b). Median lobe in lateral view as in (Fig. 2a), in HT 0.61 mm long, regularly, apical part not bent down; flagellum with two coils; paramere without bristle. Apical lamella in ventral view (Fig. 2b), very broad, broadly rounded, asymmetric.

Differential diagnosis. *D.(Eudyschirius) anichtchenkoi* sp. nov. belongs to the *D. fulvipes* subgroup of the *D. lafertei* species group s. Fedorenko (1996). It is allied to five rather endemic, subrecently described species: *D. smyrnensis* by Fedorenko (1996) from W Turkey, *D. importunoides* and *D. beydagensis* by Jeanne (1996) from S Turkey, *D. buglanensis* by Bulirsch (1996) from E Turkey and finally *D. dostali* by Bulirsch & Fedorenko (2007) from Syria and Turkey. It can be distinguished from all these species according to a key presented below and moreover by a very broad apex of the aedeagus in the ventral view.

Name derivation. Patronymic, in honour of the collector of the type series, my friend Alexander V. Anichtchenko, a world known specialist in Carabidae.

KEY TO SPECIES OF *DYSCHIRIODES FULVIPES* SUBGROUP FROM TURKEY, SYRIA AND IRAN

- 1(2) BSP missing; pronotal lateral channel disappearing just below anterior setiferous puncture. Very widely distributed. *D. importunus* (Schaum, 1857)
- 2(1) BSP present; pronotal lateral channel reaching at least midlength of interval between lateral setiferous punctures; species with small areas of distribution.
- 3(4) Elytral striae and their punctuation very fine; intervals flat, about three times as wide as striae; length 4.1-4.5 mm. NW Syria and SE Turkey. *D. dostali* Bulirsch & Fedorenko, 2007
- 4(3) Elytral striae and its punctuation moderately deep and broad; inner intervals distinctly less than twice as wide as striae; length 3.2-3.8 mm.
- 5(8) Antennae rusty red, not infuscated outwards.
- 6(7) Base of elytra strongly sloping; humeri more rounded; elytral outline strongly broadened. S Turkey (E of Antalya). *D. importunoides* (Jeanne, 1996)
- 7(6) Base of elytra rather slightly sloping; humeri more distinct; elytral outline moderately broadened. W Turkey (Izmir). *D. smyrnensis* Fedorenko, 1996
- 8(5) Antennae darker, distinctly infuscated outwards from antennomeres 2-4.

- 9(10) Pronotal lateral channel disappearing just below posterior setiferous puncture. Elytral outline more rounded laterally; striae punctuation coarser. SW Iran. *D. anichtchenkoi* sp. nov.
- 10(9) Pronotal lateral channel disappearing before posterior setiferous puncture. Elytral striae punctuation finer. Turkey.
- 11(12) Pronotal lateral channel disappearing at about midlength between lateral setiferous punctures. Elytral base more strongly sloping. SW Turkey (Bey Daglari). *D. beydagensis* (Jeanne, 1996)
- 12(11) Pronotal lateral channel disappearing just before posterior setiferous puncture. Elytral base less strongly sloping. E, NE Turkey. *D. buglanensis* (Bulirsch, 1996)

Dyschiriodes impressus Putzeys, 1846

Dyschirius impressus Putzeys (1846): 31.

Dyschirius punctatus (= *impressus* Putzeys, 1846) Balkenohl (2003): 227.

Type material examined. Lectotype: '[handwritten on white label] impressus. P. / Portugal. [partially illegible] (...Dept) // Soc. Ent. Belg. / Coll. Putzeys // [printed on red label] Type // Lectotypus / Dyschirius / impressus Putzeys, 1846 / P. Bulirsch des. 2012', (IRSN).

Redescription. Length HT 3.45 mm. Dark brown, without distinct metallic shine, legs dark brown, mouthparts and antennae brown, antennomeres 1-2 lighter.

Head. Anterior margin of clypeus between distinct lateral lobes slightly convex, clypeofrontal suture deep, V-shaped, slightly prolonged by short and blunt carina; facial furrows deep, narrow, strongly convergent posteriorly. Surface vaulted, even, smooth. Eyes moderately large, vaulted. Antennomeres moniliform.

Pronotum. Even and smooth, convex, 0.98 times as wide as long, 1.40 times as wide as head, moderately attenuated anteriorly, broadest in second third; outline in anterior part slightly rounded; anterior angles blunt; posterior ones broadly rounded. Front transverse impression deep, impunctate; median line slightly impressed, in middle almost vanishing; lateral channel distinct, reflexed lateral margin extended just below posterior setiferous punctures.

Elytra. Oblong-ovate, strongly convex, 1.71 times as long as wide, 1.30 times as wide as pronotum; base very slightly sloping, humeri narrowly rounded, strongly protruding, each elytron with obtuse humeral tooth; outline in basal two thirds slightly convex, broadest before middle; suture slightly, broadly depressed at base. Base not bordered, without tubercles and BSP. Elytral striae 1-2 moderately deep, complete, striae 3-5 slightly, 6-7 distinctly finer, disappearing latero-apically, striae 7-8 deeper on very apex; stria 8 very fine, just recognizable in its second fourth as row of very fine punctures. Inner intervals on disk slightly vaulted, outer ones flattened latero-apically. 2-3 PHSP (two on left elytron, three on right one), two ASP (in deep and long apical stria) and three DSP (in interval 3).

Legs. Apical spine of protibia long, curved downwards, not inwards, longer than slightly curved apical spur; distal marginal tooth moderately large and sharp, proximal one very small and blunt.

Comment. *D. impressus* was treated in Balkenohl (2003) as a junior synonym of *D. punctatus* (Dejean, 1825). Fedorenko (1996) in his revision of the Palaearctic *Dyschiriini* did not mention it at all. The latter author briefly redescribed *D. subcylindricus* based on the type

specimen. The above quoted redescription of the single type of *D. impressus* perfectly fits the redescription of *D. subcylindricus* but not *D. punctatus* and therefore, *D. (Dyschiriodes) impressus* Putzeys, 1846 is a valid species and *D. subcylindricus* Motschulsky, 1849 (= *D. normandi* Puel, 1937) are his junior synonyms.

ACKNOWLEDGEMENTS. My hearty thanks are due to M. Stachowiak (Bydgoszcz, Poland) for donating Iranian specimens; to A. Drumont (IRSN) for loan of the type specimen and a to J. Boone (FMNH) for loan of unidentified Bolivian specimens and donating of doublets. I am also thankful to Pavel Moravec (Litoměřice, Czech Republic) and Martin Fikáček (Praha, Czech Republic) for preparing the figures.

REFERENCES

- BALKENOHL M. 2003: Scaritinae, pp. 219-234. In: LÖBL I. & SMETANA A. (editors): *Catalogue of Palearctic Coleoptera, Volume 1. Archostemata - Myxophaga - Adepaga*. Stenstrup: Apollo Books, 819 pp.
- BULIRSCH P. 1996: Species of the genus *Dyschirius* Bonell (Coleoptera: Carabidae) from Turkey. *Klapalekiana* 32:137-145.
- BULIRSCH P. 2006: Four new species of the genus *Dyschiriodes* from South America and notes about next species from the same region (Coleoptera: Carabidae: Scaritinae). *Studies and Reports of District Museum Prague-East. Taxonomical Series* 2: 1-14.
- BULIRSCH P. 2009: Two new species of the genus *Dyschiriodes* (Coleoptera: Carabidae: Scaritinae: Dyschiriini) from South America and notes about next species from the same region. Part 2. *Studies and Reports of District Museum Prague-East. Taxonomical Series* 5: 17-26.
- BULIRSCH P. 2012: Two new species of the genus *Dyschiriodes* (Coleoptera: Carabidae: Scaritinae: Dyschiriini) from South America and notes about next species from the same region. Part 3. *Studies and Reports. Taxonomical Series* 8 (1-2): 1-11.
- BULIRSCH P. & FEDORENKO D. N. 2007: Species of the tribe Dyschiriini (Coleoptera: Carabidae: Scaritinae) from Turkey, Syria and Cyprus. *Studies and reports of District Museum Prague-East. Taxonomical series* 3 (1-2):1-16.
- FEDORENKO D. N. 1991a: [New species of the genus *Dyschirius* Bon. (Coleoptera, Carabidae) from South America]. *Zoologicheskij Zhurnal* 70 (7): 138-140 [in Russian].
- FEDORENKO D. N. 1991b: [Two new species of Dyschiriini (Coleoptera, Carabidae) from Africa and South America]. *Zoologicheskij Zhurnal* 70 (10): 144-147 [in Russian].
- FEDORENKO D. N. 1996: *Reclassification of world Dyschiriini, with a revision of the Palearctic fauna (Coleoptera, Carabidae)*. Sofia-Moscow-St. Petersburg: Pensoft publishers, 224 pp.
- FEDORENKO D. N. 1999: Description of three new species of the genus *Dyschiriodes* Jeannel, 1941, from South America, with a review of the *pampicola*-group (Coleoptera, Carabidae, Dyschiriini), pp.139-152. In: ZAMOTAILOV A. & SCIAKY R.: *Advances in Carabidology (Papers Dedicated to the Memory of Prof. Dr. Oleg L. Kryzhanovskij)*. Krasnodar: MUIISO Publishers, 473 pp.
- JEANNE C. 1996: Carabiques nouveaux de Turquie (Coleoptera, Caraboidea). *Nouvelle Revue d'Entomologie* (N.S.) 13: 99-109.
- PUTZEYS J. A. A. H. 1846: Monographie des *Clivina* et genres voisins, precede d'un tableau synoptique des genres de la tribu des Scaritides. *Mémoires de la Société Royale des Sciences de Liège* 2: 521-663.

Received: 19.11.2014

Accepted: 22.12.2014