

**Three new species of the tribe Dyschiriini
(Coleoptera: Carabidae: Scaritinae) from Asia**

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Abstract. Three new species of the tribe Dyschiriini are described as follows: *Dyschirius weigeli* sp. nov. from Nepal, *Dyschiriodes mulwiji* sp. nov. from Iran and *Reicheiodes (Reichonippodes) taiwanensis* sp. nov. from Taiwan. All new species are figured and differentiated from the nearest species.

INTRODUCTION

The genus *Dyschirius* Bonelli, 1810 (in the sense of Fedorenko, 1996) comprises 22 almost exclusively Palaearctic taxa; all of them were revised by Fedorenko (1996) so that the described species below is the first new taxon described since then.

The genus *Dyschiriodes* Jeannel, 1941, comprises about 300 taxa and it is almost worldwide in distribution. Its Palaearctic species were revised and keyed by Fedorenko (1996) who raised this taxon described by Jeannel as a subgenus to the genus *Dyschirius*. A number of the Asian species have been described in the last two decades among others by Balkenohl & Schmidt (2015), Bulirsch (2009, 2015, 2017), Bulirsch & Fedorenko (2007, 2013), Bulirsch & Magrini (2006) and Fedorenko (1997, 2000, 2001, 2004).

The genus *Reicheiodes* Ganglbauer, 1891 comprises about 30 taxa and can be divided according to Dostal (1993) and Fedorenko (1996) to five subgenera: the broadly distributed subgenus *Reicheiodes* s. str. (the Alps, the Apennines, S Turkey, W Caucasus), the Iberian subgenus *Iberiodes* Dostal 1993, the Himalayan subgenus *Himalayodes* Dostal 1993, the East-Siberian monotypic subgenus *Sinodyschirius* Fedorenko 1996, and finally, the Japanese subgenus *Reichonippodes* Dostal, 1993. To date the latter subgenus is known in five species from Japan: first two were reviewed in Fedorenko (1996) from main Japanese Islands, next species was described by Morita & Bulirsch (2010) from Iriomote-Jima Island and another two by Morita (2015) from Honshu Island. The species described below is the first known taxon outside Japan, nevertheless its occurrence in Taiwan has been quite expected as the Iriomote-Jima Island is located not far from Taiwan.

The target of the present article is to describe a new species belonging to each of the above quoted genera.

MATERIAL AND METHODS

The study of dry-mounted specimens, including measurements and examination of microsculpture, was done under magnification up to 56×. All specimens were measured. Length of body (including closed mandibles) is given with accuracy 0.05 mm, ratios and means are rounded off down to two decimal places. Label data of all specimens are quoted verbatim except standardized data. Aedeagus of the male holotype was embedded in Canada Balsam.

Most to date known taxa from all genera mentioned were studied for comparison: several specimens including numerous samples of the type material from diverse museums, very extensive material from the author's collection, and finally, next material from many other collections.

The following abbreviations are used to indicate the depository of specimens:

BMHH The Natural History Museum, London, United Kingdom;
JMLN Jan Muilwijk collection, Leiden, Netherlands;
NBCL Naturalis Biodiversity Center, Leiden, Netherlands;
NKME Naturkundemuseum, Erfurt, Germany;
NMPC National Museum, Praha, Czech Republic;
PBPC Petr Bulirsch collection, Praha, Czech Republic;
RFBN Ron Felix collection, Berkel Enschoot, The Netherlands.

Other abbreviations:

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

RESULTS

Genus *Dyschirius* Bonelli, 1810

Dyschirius weigeli sp. nov.

(Fig. 1)

Type material. Holotype (♀): NEPAL, Annapurna / Birethanti, 28°19'04'' N / 83°34'65'' E, 1100 m, 20. / iv.2000, leg. A. Weigel, (NKME).

Description. Habitus as in Fig. 1. Body length 3.35 mm. Colour dark fuliginous, with slight green-bronze lustre, femora fuliginous, tibia, tarsi, mouth parts and basal antennomeres castaneous, last labial palpomere and outer antennomeres very gently infuscated.

Head. Anterior margin of clypeus between distinctly protruded, narrowly rounded lateral lobes forming rather short and blunt medial tooth, transverse clypeofrontal furrow moderately deep and very broad; facial furrows deep, moderately broad, directly converging posteriorly, diminishing just below posterior margin of eyes. Surface vaulted, with irregular, sparse and very fine rugosity. Eyes moderately large, distinctly vaulted. Antennomeres 5-10 slightly transverse.

Pronotum. Strongly vaulted, 1.05 times as wide as long, 1.39 times as wide as head; distinctly attenuated anteriorly, broadest below second third; outline rather slightly convex; anterior angles blunt, posterior ones moderately rounded. Front transverse impression deep, sparsely, roughly cross striate; median line fine anteriorly, strongly broadened and deepened posteriorly; lateral channel rather broad, reflexed lateral margin extended slightly below posterior SP. Surface moderately shiny, with fine, irregular wrinkles, antero-laterally with irregular rests of fine reticulation.

Elytra. Long-ovate, indistinctly concave in basal fourth in lateral view; 1.72 times as long as wide, 1.21 times as wide as pronotum; base slightly sloping, humeri narrowly rounded, strongly protruding; outline in basal half slightly convex, broadest above midlength; suture slightly depressed at base. Surface shiny, very apex with rest of reticulation. Base bordered, without tubercles and with distinct BSP, latter deeply connected with stria 1 and superficially with stria 2. Elytral striae 1-8 distinct; striae 2-3 strongly weakened, stria 8 shortened basally, striae 2-6 very slightly weakened apically; striae 1-3, 8 with moderately rough, 4-7 with rough punctures, rather dense in basal half, disappearing in apical half. Intervals 1-2 in middle and 6-8 on apex strongly, others moderately convex. Three DSP (near stria 3), two PHSP and two ASP (in rather deep apical stria).

Protibiae. Apical spine slightly curved downwards not inwards, gently shorter than moderately curved apical spur; distal marginal tooth large, proximal one smaller and rather sharp.

Differential diagnosis. *D. weigeli* sp. nov. is closely related to *D. tricuspis* Andrewes, 1929. It differs by its gently smaller body (body length is about 3.5 mm in *D. tricuspis*) and by having lighter appendages; by the head having slightly smaller, more vaulted eyes; the pronotum slightly narrower (especially compared to the elytral width) and having anteriorly rests of reticulation and the outline distinctly less convex and especially by the elytra distinctly narrower (*D. tricuspis* has the elytra about 1.6 times as long as wide and about 1.4 times as broad as pronotum) and the striae finer, more weakened basally.

Name derivation. Patronymic, in honour of my friend Andreas Weigel (Wernburg, Germany), collector of the new species.

Comment. Fedorenko studied this specimen in 2005 and preliminary identified it as “*Dyschirius ?tricuspis* (Andr.)”. After comparison of this specimen with the type specimen of *D. tricuspis* Andrewes, 1929, labelled: Syntype: ‘3330 // Kosi R., 3000ft. / Ranikhet Dn. / iii.1920, HGC // H.E. Andrewes coll. / BM 1945-97. // [circle with blue border] Syntype // *Dyschirius / tricuspis* Andr. / Cotype / H.E. Andrewes det., (BMNH), I recognized it as a separate species, described above.



Figs. 1-3. Habitus (actual length in parentheses behind the name). 1- *Dyschirius weigeli* sp. nov., HT (3.35 mm); 2- *Dyschiriodes muilwijki* sp. nov., HT (3.30 mm); 3- *Reicheiodes taiwanensis* sp. nov., HT (2.75 mm).

Genus *Dyschiriodes* Jeannel, 1941

Dyschiriodes (Dyschiriodes) muilwijki sp. nov.

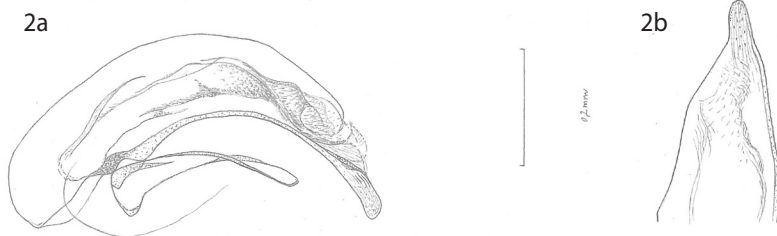
(Figs. 2, 2a,b)

Type material. Holotype (♂): Iran, Isfahan / lake Hanna / 18.v.2016 / Muilwijk leg., (NBCL). Paratypes: (2 ♂♂, 4 ♀♀, 4 spec.): with the same label data as HT, (JMLN, PBPC); (3 ♂♂, 7 ♀♀, 14 spec.): IR[an], Lake Hanna / N 31°13.053' E 51°45.998' / 2333 m, 18.v.2016 / R.F.F.L. Felix leg., (RFBN, PBPC); (1 ♂, 1 spec.): IR[an], Fars / Kafer Lake / 1.v.2006 / Muilwijk J., (JMLN, PBPC).

Description. Habitus as in Fig. 2. Body length 3.10-3.80 mm (mean 3.47, HT 3.30 mm, n=37). Colour black, surface with slight bronze metallic lustre; legs, mouth-parts and antennae fuliginous to dark fuliginous, antennomeres 1 and base of 2-3(4) and base of maxillae dark ferruginous.

Head. Anterior margin of clypeus with moderately protruding lateral lobes, between them in middle more or less distinctly protruding anteriorly, forming indistinct to very blunt tooth; clypeofrontal field with V-shaped furrow, prolonged by long, blunt, irregular and rather strongly elevated keel, facial sulci deep, slightly, almost directly diverging behind, distance between them slightly exceeding eye length. Surface between median keel and facial sulci with few irregular, rough wrinkles, vertex laterally below eyes with few fine wrinkles and with very few, almost indistinct (in some PT) to rather rough (in HT and few PT) punctures, in middle even and smooth, minutely and sparsely punctate. Eyes moderately large, moderately strongly convex. Antennomeres 5-10 moniliform.

Pronotum. Strongly convex, outline between lateral SP rather slightly rounded; slightly



Figs. 2a,b. *Dyschiriodes muilwijki* sp. nov., HT: 2a- Aedeagus, right lateral view; 2b- Apex of aedeagus, ventral view.

to moderately strongly attenuated anteriorly; 1.03-1.10 (mean 1.06, HT 1.05) times as wide as long, 1.35-1.46 (mean 1.40, HT 1.35) times as wide as head, broadest below second third, with rounded anterior angles. Anterior transverse impression deep, impunctate, mostly with sparse, very to moderately fine, rather long, irregular cross striae; median line moderately deep, slightly shallower at middle, deeper and broader just before anterior transverse impression, lateral channel narrow and strongly shortened, reflexed lateral margin gently surpassing antero-lateral SP, in few PT slightly longer, disappearing at above midlength. Surface moderately glossy, minutely micropunctate, with sparse, very fine and irregular striae.

Elytra. Ovate, 1.63-1.70 (mean 1.67, HT 1.65) times as long as wide, 1.29-1.46 (mean 1.34, HT 1.34) times as wide as pronotum, slightly broadened on sides, broadest below midlength, more strongly attenuated backwards than forwards, very indistinctly and broadly concave in anterior fifth in lateral view. Base slightly to very slightly oblique towards strongly prominent humeri, without humeral teeth; suture barely depressed, base without basal border and tubercles. Striae medio-basally moderately deep, distinctly punctate in basal half to two thirds, punctures smaller than width of intervals; stria 1 strongly deepened and broadened at basal inclination; base without BSP; striae 1-(2) rather deep up to apex, striae (2)3-7 and its punctation strongly weakened latero-apically, very fine, just traceable in posterior fourth to third; stria 8 much finer, composed from few punctures in middle third; striae 7-8 abruptly deeper at very apex; intervals rather slightly convex medio-basally, flattened latero-apically. Three PHSP, three DSP in interval 3, near stria 3, one ASP in deep apical stria.

Protibiae. Apical spine moderately long, rather strongly curved downwards, indistinctly longer than moderately strongly curved apical spur; distal marginal tooth large, sharp, proximal one small and blunt.

Aedeagus as in Figs. 2a, b. In lateral view (Fig. 2a) its lower outline strongly, regularly curved; apical lamella long, narrow, parallel; flagellum thin, moderately long. Paramere without setae.

Differential diagnosis. The new species belongs to the subgenus *Dyschiriodes* Jeannel, 1941 (s. Fedorenko, 1996). *D. muilwijki* sp. nov. has the head with the peculiar surface of the clypeofrontal area as described above; the pronotum with strongly shortened lateral channel

and the elytra with the distinctly protruding humeri, with the striae strongly weakened latero-apically, with the stria 1 deepened basally, with the base without BSP, and finally, the aedeagus with the asetose paramere.

Due to this peculiar combination of the characters it differs from all Palaearctic members of the subgenus; there is no allied species. Only three to date known species have partially the combination of the above mentioned characters. Two of them belong to the *D. minutus* subgroup: *D. cariniceps* (Baudi, 1864) and *D. luticola reductus* (Müller, 1936) and the remaining species, *D. microthorax* (Motschulsky, 1844), to the *D. chalybeus* group (s. Fedorenko, 1996). *D. muilwijki* sp. nov. could be differentiated from the former two species by the body being larger (2.6-3.0 mm in both compared species); the head having the clypeofrontal area more rugose; the pronotum being less convex between lateral SP and having cross striate anterior transverse impression and by the elytra having the humeri more prominent, with elytral stria 1 being strongly deepened at the base. *D. cariniceps* moreover differs by the pronotal channel being not to very slightly shortened and *D. l. reductus* by the much shorter elytra. It differs from *D. microthorax* by the body being slightly larger (2.6-3.2 mm in *D. microthorax*); by the head having more rugose clypeofrontal area and a distinct keel; the pronotum being less convex between lateral SP; and by the elytra without BSP, being longer, having the striae much finer latero-apically and having only one ASP.

Name derivation. Patronymic, in honour of my friend Jan Muilwijk, collector of the new species, well known specialist in Carabidae.

Genus *Reicheiodes* Ganglbauer, 1891

Subgenus *Reichonippodes* Dostal, 1993

***Reicheiodes (Reichonippodes) taiwanensis* sp. nov.**

(Fig. 3)

Type material. Holotype (♀): Taiwan, Taichung / Dasyueshan forest / 24.2334 120.9664 / 2140m; 10.viii.2013, sift / TW01, V Grebennikov, (NMPC).

Description. Habitus as in Fig. 3. Body length 2.75 mm. Colour of dorsal surface fuliginous without bronze lustre, pronotum, elytral base and especially anterior part of head indistinctly to slightly brownish translucent; ventral surface dark fuliginous; mouthparts, antennae and legs brownish, palpi lighter, anterior legs darker.

Head. Clypeus margined, indistinctly, regularly concave anteriorly, with lateral teeth moderately sharp, distinctly projecting, margined, obtuse at tip, divided from supraantennal plates by very obtuse notch; clypeal field square, strongly convex posteriorly, smooth, separated from frons by very deep and broad transverse furrow; frons convex, smooth; supraantennal plates strongly convex, with distinct carina at top of vault. Frontal furrows deep, broad, slightly diverging anteriorly and strongly posteriorly of transverse furrow. Neck with minute isodiametric reticulation laterally, constriction absent. Eyes rather small,

moderately convex, facets distinct; genae small, gently enclosing eyes posteriorly. Antennae moderately long, antennomeres 5-10 moniliform.

Pronotum. Subglobose, in lateral view flattened posteriorly; outline between lateral SP gently convex; gently attenuated anteriorly; 1.18 times as wide as long, 1.59 times as wide as head, broadest in about second third, with rounded anterior angles. Anterior transverse impression deep, almost diminish at middle, impunctate, sparse and rough cross striate; median line moderately deep, deeper basally, lateral channel deep and very broad, gently broadened anteriorly, reflexed lateral margin distinctly surpassing posterior SP. Surface shiny, with few fine transverse wrinkles and sparse micropunctures, lateral channel dull, with rough reticulation.

Elytra. Convex on disk, in lateral view more distinctly convex at base; 1.40 times as long as wide, 1.22 times as wide as pronotum. Outline slightly short ovate, widest just below anterior third; base sloping to moderately rounded humeri without humeral tooth; lateral channel rather broad from pedunculus to humeri, broadened apically; reflexed lateral margin distinct. Basal tubercle and scutellar striole absent; BSP very distinct, situated in projected extension of interval 2. Three PHSP, three PASP, two very large ASP and three DSP (in interval 3). Stria 1 irregular, rather deep, superficially joining BSP, joining lateral channel at apex; striae 2-7 finely impressed, weakened latero-apically, especially 5-6; 7 slightly more distinct apically; 2-6 very roughly, 7 much more finely punctured; intervals moderately vaulted anteriorly, broader than width of striae punctation, flattened latero-apically.

Hind thoracical wings. Atrophied.

Protibiae. Apical spine distinctly curved ventro-laterally; apical spur smaller than spine, feebly curved; distal marginal tooth large, moderately sharp, proximal one much finer, very blunt.

Differential diagnosis. *R. taiwanensis* sp. nov. is most similar to *R. (Reichonippodes) nishii* Morita & Bulirsch, 2010, described from Japan, Iriomote-jima Island. It could be distinguished by the body being slightly larger, having the colour much darker (*R. nishii* is ferruginous), by the head having the clypeus regularly, gently concave (by *R. nishii* has the clypeus two very fine and blunt submedial teeth); by the pronotum having the lateral channel much broader and by the elytra having the base less sloping to the more distinct humeri and much deeper striae punctures especially latero-apically.

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

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