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Three new species of the genus *Dyschiriodes* (Coleoptera: Carabidae: Scaritinae: Dyschiriini) from East Asia and re-assessment of *Dyschirius vanhillei* Basilewsky, 1962

Petr BULIRSCH[1)] & Dmitry N. FEDORENKO[2)]

[1)]Milánská 461, CZ-109 00 Praha 111, Czech Republic
e-mail: p.bulirsch@seznam.cz
[2)]A. E. Severtsov Institute of Ecology and Evolution,
Leninsky pr. 33, Moscow 119071, Russia

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Abstract. *Dyschiriodes* (*Paradyschirius*) *safraneki* sp. nov. from Laos, *D.* (*P.*) *tonkinensis* sp. nov. and *D.* (*Dyschiriodes*) *insularis* sp. nov. from Vietnam are described, illustrated and compared to the related taxa. *D.* (*Dyschiriodes*) *kaliki* (Kult, 1950) is redescribed and placed into the *D. minutus* group. *Dyschirius vanhillei* Basilewsky, 1962 is redescribed based on holotype and a fresh material from a new locality and transferred to the genus *Striganoviella* Fedorenko, 2012.

INTRODUCTION

The genus *Dyschiriodes* Jeannel, 1941, comprises about 250 species and is world-wide in distribution. The species from South-East Asia were revised and keyed by Kult (1949) following Andrewes (1929) who dealt with the fauna of the former British India including India prope, Sri Lanka and Myanmar. A number of species have been described since 1994 (Balkenohl 1994, Bulirsch 2009, Bulirsch & Magrini 2006, Fedorenko 1994, 1997a,b, 1999, 2001, 2003, 2012), some species groups being revised, with establishing a new genus, *Striganoviella* Fedorenko, 2012, for a single species from Vietnam. The present paper presents an addition of next three species to the fauna of the region in question.

Fresh material on *Dyschiriodes vanhilei* (Basilewsky, 1962), originally described based on a single specimen from the Eastern Cape in South Africa makes it possible to improve its description and re-assess its position within the tribe Dyschiriini. A comparison across the tribe suggests that this species shares a particular character combination with the genera *Akephorus* LeConte, 1851, and especially *Striganoviella.*

MATERIAL AND METHODS

The specimens were dry-mounted and studied, including measurements and examination of the microsculpture, at a magnification of 56×. Up to 13 specimens of each new species were measured. Standard measurements follow Fedorenko (1996). Length of body is given with 0.05 mm accuracy; other measurements including ratios and means are rounded down to two decimal places. Label locality data of all specimens are quoted verbatim except

standardized dates. Having been examined in glycerol, male genitalia (aedeagi) were fixed with water-soluble glue.

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

ADWA Alexander Dostal, private collection (inclusion collection of K. Kult), Wien, Austria;
PBPC Petr Bulirsch, private collection, Prague, Czech Republic;
MRAC Royal Museum of Central Africa, Tervuren, Belgium;
NKME Naturkunde Museum, Erfurt, Germany;
SIEE Dmitry Fedorenko reference collection at A.N. Severtsov Institute of Ecology and Evolution, Moscow, Russia;
TMSA Ditsong National Museum of Natural History, Pretoria, South Africa;
ZMMU Zoological Museum of the Moscow State University, Russia.

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; PT: paratype(s).

RESULTS

Dyschiriodes (*Paradyschirius*) *safraneki* sp. nov.

(Fig. 1)

Type material. Holotype (♂): 'LAOS, Oudom Xay prov./ Muang Pakbong env./ 4-8.v.2003/ O. Šafránek leg.', (PBPC). Paratypes: 3 (♀♀), with the same label data as HT, (PBPC); all specimens more or less immature.

Description. Habitus as in Fig. 1. Body length 2.75-2.90 mm (HT 2.75 mm, n=4). Colour rusty brown, surface with slight or very slight bronze metallic lustre; elytra at base and latero-apically yellowish, legs rusty red, mouth-parts and antennal base yellowish, antennae slightly infuscated apically.

Head. Anterior margin of clypeus with distinctly protruding lateral lobes, between them more or less distinctly bisinuate; clypeofrontal field with fine, irregular ridges on each side of rather short to moderately long lengthwise carina adjoining transverse one anteriorly, thus forming T-shaped figure; facial sulci deep, moderately strongly divergent posteriorly, distance between them slightly exceeding eye length. Vertex even and smooth, minutely and sparsely punctate. Eyes moderately large, strongly convex. Antennomeres 5-10 moniliform.

Pronotum. Strongly convex, outline regularly and rather strongly rounded; slightly attenuated anteriorly; 0.97-1.02 (HT 1.01) times as wide as long, 1.30-1.33 (HT 1.33) times as wide as head, broadest at second third, with blunt anterior angles. Anterior transverse impression deep, conspicuously punctate; median line moderately deep, slightly shallower at middle, much deeper and broader just before anterior transverse impression, lateral channel moderately broad, reflexed lateral margin slightly surpassing posterolateral setiferous puncture. Surface glossy, minutely punctate.

Elytra. Oblong, 1.81-1.86 (HT 1.82) times as long as wide, 1.19-1.25 (HT 1.19) times as wide as pronotum, slightly broadened on sides, broadest at less than one third length

from base, more strongly attenuated backwards than forwards, subconvex in anterior fifth in lateral view. Base slightly oblique towards strongly prominent humeri without humeral teeth, with suture barely depressed, without basal border and tubercles. Striae moderately deep, distinctly punctate in basal half to two thirds, punctures much smaller than width of intervals, stria 8 very fine, just traceable in middle third, striae 2-3 and 6-7 shallower basally, 4-5 deeper and broader behind base, stria 1 entire, adjoining and deeper at BSP, striae 2-3 obliterated behind posterior DSP, striae 4-7 slightly longer; intervals 1-2 moderately strongly, lateral ones slightly convex. One PHSP, three DSP in stria 3, two ASP in deep apical stria.

Protibia. Apical spine broad and blunt at tip, strongly curved backwards, slightly shorter than slightly or moderately uncinate apical spur; distal marginal tooth large, moderately sharp, proximal one small and blunt.

Aedeagus. Not illustrated, strongly damaged due to immaturnity; apical lamella small, strongly attenuated apically; flagellum with about three basal coils. Parameres without setae.

Differential diagnosis. The new species belongs to the *D. verticalis* subgroup of the *D. substriatus* group (s. Fedorenko 1996, 1997a). It differs from the Oriental members of the group by the apically obliterated striae 2-7. It is also distinguishable from *D. verticalis* (Putzeys, 1878), *D. hingstoni* (Andrewes, 1929) and *D. tenuescens* (Andrewes, 1929) chiefly by two instead of only one ASP. What separates the new species from *D. verticalis* and *D. hingstoni* is the pronotum less strongly attenuated anteriorly and less vaulted laterally. Finally, *D. sabahensis* Bulirsch, 2009, differs from *D. safraneki* sp. nov. by a larger body, combined with two or three PHSP.

Name derivation. Patronymic, in honour of our friend Ondřej Šafránek, collector of the type series, specialist in Cicindelinae.

Dyschiriodes (*Paradyschirius*) *tonkinensis* sp. nov.

(Figs 2, 2a, b, c)

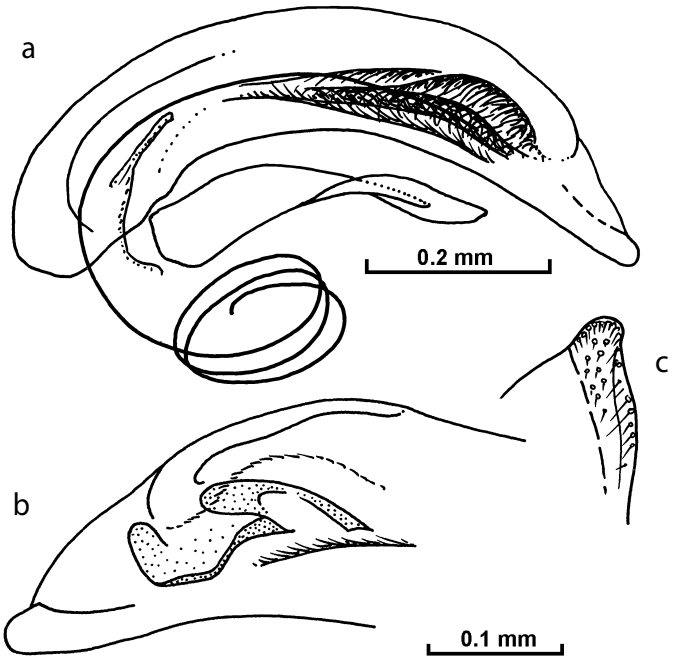
Type material. Holotype (♂): '[VIETNAM], Tonkin/ Thai-nien, Banks/ of Fleuve Rouge', (PBPC). Paratypes: (3 spec.): with the same label data as HT, (PBPC); (1 spec.): 'VIETNAM, N (Na Hang)/ 160 km NNW Hanoi/ NE env. of Na Hang/ 28.v-10.vi.1996, LF/ 150-200 m NN, leg. A./ Napolov & I. Roma', (NKME).

Description. Habitus as in Fig. 2. Body length 3.05-3.50 mm (HT 3.05 mm, n=5). Colour fuliginous, surface with bronze metallic lustre, elytra at base and latero-apically barely or slightly paler, legs rusty red, mouth-parts and antennal base yellowish, antennae slightly infuscated apically.

Head. Anterior margin of clypeus with distinctly protruding lateral lobes, between them almost straight; clypeofrontal field with T-shaped carina, on each side of it short to moderately long lengthwise integrant with irregular carinae/rugosities; facial sulci deep, slightly divergent posteriorly, distance between them slightly exceeding length of eye. Vertex smooth, sparse and fine punctures near posterior margin of each eye, these moderately large and strongly convex. Antennomeres 5-10 moniliform.

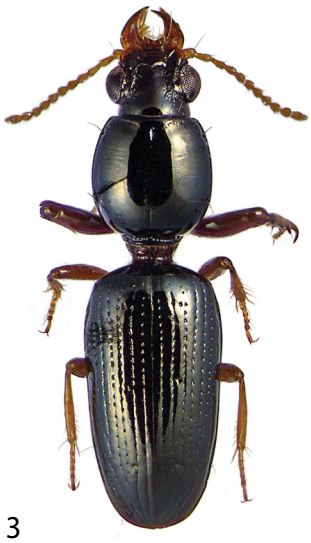
Pronotum. Strongly convex, outline regularly and poorly rounded; rather strongly attenuated anteriorly; 0.92-0.97 (HT 0.92, PT from Thai-nien 0.95-0.97) times as wide as long, 1.39-1.45 (HT 1.41, PT from Thai-nien 1.39-1.45) times as wide as head, widest at third fourth, with slightly rounded anterior angles. Anterior transverse impression deep, conspicuosly punctate, with few indistinct and sparse cross striae; median line moderately deep, deeper and broader where adjoining and just before anterior transverse impression; lateral channel moderately broad, reflexed lateral margin slightly surpassing posterolateral setiferous puncture. Surface glossy, minutely punctate.

Elytra. Oblong, 1.77-1.86 (HT 1.86, PT from Thai-nien 1.77-1.82) times as long as wide, 1.18-1.25 (HT 1.21) times as wide as pronotum, slightly broadened on sides, broadest at less than one third length from base, more strongly attenuated backwards than forwards, very lightly and broadly depressed in anterior fifth in lateral view. Base moderately strongly oblique towards prominent humeri without humeral teeth, with suture barely depressed, without basal border and tubercles. Stria 1 entire, adjoining and deeper at BSP, striae 1-7 deep, moderately coarsely punctate, stria 8 very fine, just traceable in middle third, striae 2-3 and 6-7 shallower basally, 4-5 deeper and broader behind base, stria1 and 4-7 subequally deep all along, 2-3 slightly shallower just before apex. Punctures much smaller than width of moderately convex intervals, disappearing from third fourth in stria 1 to midlength in striae 5-7. Three PHSP (in one PT unilaterally two), three DSP in stria 3, two ASP in deep apical stria.



Figs 2a-c. *D. tonkinensis* sp. nov., HT: 2a- Aedeagus, left lateral view. 2b- Apex of aedeagus, right dorsolateral view. 2c- Apex of aedeagus, ventral view.

Figs 1-5. Habitus. 1- *D. safraneki* sp. nov., PT (2.80 mm); 2- *D. tonkinensis* sp. nov., HT (3.05 mm); 3- *D. insularis* sp. nov., PT (3.30 mm); 4- *D. kaliki*, HT (3.55 mm); 5- *S. vanhillei*, male, Mkhambati (3.60 mm).



Protibia. Apical spine broad and blunt at tip, strongly curved backwards, as long as uncinate apical spur; distal marginal tooth large, moderately sharp, proximal one very small and blunt.

Aedeagus (Figs 2a-c). Flagellum with three basal coils. Parameres without setae.

Variability. The paratype from Na Hang is distinctive in having the pronotum slightly broader, 1.04 times as wide as long, 1.35 times as wide as head, and more strongly attenuated forwards, combined with slightly shorter elytra, only 1.73 times as long as wide.

Differential diagnosis. *D. tonkinensis* sp. nov. belongs to the same group and subgroup as the previous species. It is distinguishable from the most similar species, *D. verticalis* and *D. tenuescens*, in the pronotum being narrower and less strongly attenuated forwards, as well as in more coarsely punctured elytral striae, especially striae 6-7 and 7 in basal half. PHSP is one, combined with a single ASP, in the latter two species besides. Among the other species of the group, *D. hingstoni* (Andrewes, 1929), is larger, with the pronotum shaped differently and two ASP present, while *D. sabahensis* shows a wider pronotum which is less strongly attenuated forwards, elytral stria 3 being shortened basally. *D. safraneki* sp. nov. is smaller, its pronotum is broader, more strongly rounded on sides and more strongly attenuated forwards, elytral striae 2-7 are obliterate apically and only one PHSP is present.

Name derivation. The name is derived from the type locality, Tonkin, former name of North Vietnam.

Dyschiriodes (*Dyschiriodes*) *insularis* sp. nov.

(Figs 3, 3a, b)

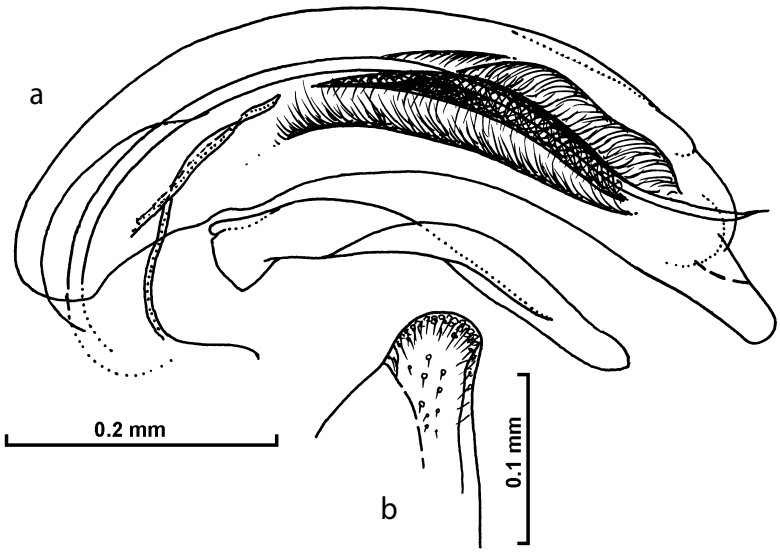
Type material. Holotype (♂): 'N-Vietnam, ~ 25 km E of/ Hai Phong, Cat Ba is.,/ W shore opposite Cat Hai/ is., Ao Coi/ 20°48´ N/ 106°57´E/ D. Fedorenko leg. 20.x.2011', (ZMMU). Paratypes: (39 spec.): with same data as HT, except date '20. or 23.x.2011', (SIEE, PBPC).

Description. Habitus as in Fig. 3. Body length 3.15-3.60 mm (mean 3.40, HT 3.30 mm, n=10). Black, with green-bronze lustre, clypeus and elytral base sometimes brownish, legs red or brownish-red, profemora more or less strongly infuscated, mouth-parts and antennae reddish-yellow, often barely infuscated apically. Underside dark red, with prothorax infuscated laterally and apical margin of last abdominal sternite paler at sides. Smooth and shining, without microsculpture.

Head. Anterior margin of clypeus between moderately distinct lateral lobes straight or barely convex, clypeofrontal suture deep, v-shaped, without median longitudinal carina; facial sulci deep, almost parallel between eyes, then curved outwards. Surface vaulted, with distinct group of punctures and/or short strioles starting from facial sulci just behind anterior supraorbital seta. Antennomeres 5-10 moniliform.

Pronotum. Convex, 0.89-0.96 (mean 0.93, HT 0.96) times as wide as long, 1.26-1.37 (mean 1.31, HT 1.27) times as wide as head, slightly attenuated anteriorly, moderately strongly rounded on sides, slightly less in anterior than in posterior half, broadest slightly behind middle. Anterior transverse impression fine to indistinct, impunctate or almost so, median line fine, finer at middle, with more or less deep and oblong pit where crossing anterior transverse impression, reflexed lateral margin surpassing posterolateral setiferous puncture.

Elytra. Oblong-oval, 1.91-1.98 (mean 1.94, HT 1.94) times long as wide, 1.14-1.19 (mean 1.16, HT 1.16) times as wide as pronotum, slightly rounded on sides, broadest forth from base, more strongly attenuated backwards than forwards. Base moderately to strongly



Figs 3a,b. *D. insularis* sp. nov., HT: 3a- Aedeagus from left lateral view. 3b- Apex of aedeagus, ventral view.

oblique to rather rounded humeri, each with minute denticle, with suture slightly depressed, basal border very fine but more or less distinct externally, without basal tubercles and BSP. Striae moderately deep to shallow, moderately strongly and moderately densely punctate, slightly deeper before apex, obliterated at base, stria 8 and usually also 7 arranged into rows of punctures, stria 8 shortly obsolete behind middle, minutely to almost indistinctly punctate. Striae punctures distinct up to apex, albeit punctures very small there. Intervals subconvex to flat. Three DSP at middle of interval 3, one PHSP, two ASP two in long and deep apical stria.

Legs. Apical spine on protibia moderately long, slightly curved backwards, as long as slightly curved apical spur, distal marginal tooth large, proximal one small and blunt.

Aedeagus (Figs 3a-b). Flagellum thick and short, barely protruding from basal orifice, looking shorter as very poorly sclerotized at base; apical lamella subquadrate, very widely rounded at tip, without internal channels.

Differential diagnosis. *D. insularis* sp. nov. belongs to the *D. minutus* group (s. Fedorenko, 1996) and among its members is closest to *D. kaliki* (Kult, 1949). It differs from the latter species by the narrower pronotum which is slightly attenuated forwards and supplied with a fine to indistinct anterior impression, combined with the elytra narrower, with the striae, especially 7-8, shallower.

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

Dyschiriodes kaliki (Kult, 1949)
(Fig. 4)

Type material examined. Holotype (♀): 'Formosa/ Tainan/ H. Müller// [printed on red label with black borders] Type// D. Kalíki Kt/ det. K. Kult, 1948// Kalíki/ det. K. Kult', (ADWA).

Redescription. Habitus as in Fig. 4. Body length 3.55 mm. Fuliginous, elytra slightly darker, with slight bronze lustre, legs brownish, mouth parts and antennae dark red, antennomeres indistinctly infuscated apically.

Head. Convex and shiny; anterior margin of clypeus between moderately protruding lateral lobes straight, clypeofrontal suture deep, broadly v-shaped, with indistinct longitudinal carina, with very fine, barely traceable transverse line between eyes; facial sulci deep, almost parallel on frons, then curved outwards. Eyes moderately large, convex. Antennomeres 5-10 moniliform.

Pronotum. Moderately convex, 0.94 times as wide as long, 1.47 times as wide as head, broadest below second third, conspicuously attenuated anteriorly, poorly rounded in anterior half, anterior angles highly obtuse. Anterior transverse impression deep, sparsely and rather finely punctate, without cross striae; median line lightly impressed, very fine at middle; reflexed lateral margin slightly surpassing posterolateral setiferous puncture. Disc very sparsely and minutely punctate, meshed microsculpture barely traceable along anterior transverse impression.

Elytra. Ovate elongated, 1.87 times long as wide, 1.13 times as wide as pronotum, slightly broadened on sides, broadest slightly less than one third from base. Base moderately oblique towards strongly prominent humeri, each with minute humeral tooth, with suture not depressed at base, without basal border, tubercles and BSP. Striae 1-7 entire, moderately deep, moderately coarsely and fairly densely punctate in basal half, weakened to obsolete latero-apically, stria 8 shallower, more so at extremities. Intervals slightly convex. Three DSP at middle of interval 3, one PHSP, two ASP in long and fairly deep apical stria.

Legs. Apical spine on protibia moderately long, slightly curved backwards, as long as slightly curved apical spur; distal marginal tooth moderately large, proximal one small and blunt.

Striganoviella vanhillei (Basilewsky, 1962) stat. nov.
(Figs 5, 5a,b,c)

Dyschirius vanhillei Basilewsky, 1962: 152.

Type material. Holotype (♂): '[South Africa] Boknes, E[astern]. C[ape]. P./ 8.ii.1947/ J.C. van Hille// Holotype// Coll. Mus. Congo// Dyschirius/ vanhillei n. sp./ P. Basilewsky det. 1961', (MRAC).

New material examined: 'South Africa, Eastern Cape/ Mkhambati NR, sandy banks of/ Ngwegwe r[iver]; 31°17.2'S; 30°0.6'E/ 27-29.i.2012, P. Bulirsch', 12 spec., (PBPC, TMSA, SIEE).

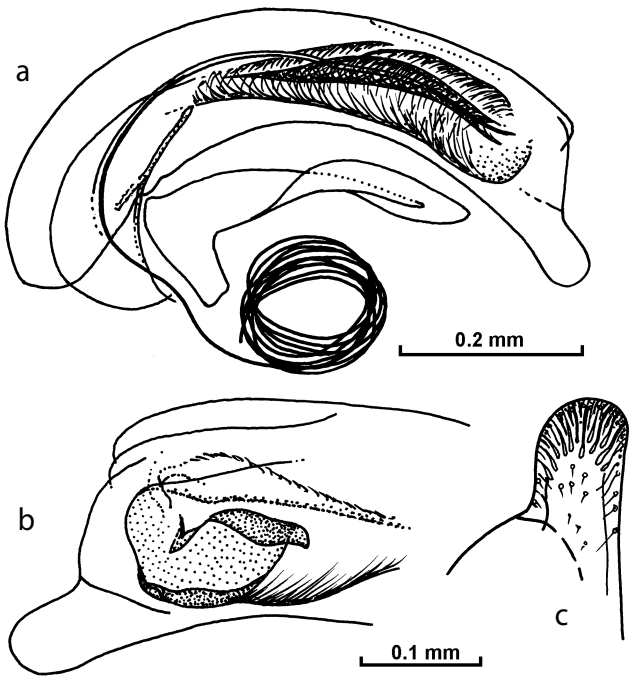
Redescription. Habitus as in Fig. 5. Body length 3.55-4.05 mm (mean 3.73 mm, HT 4.05 mm, n=12); rusty brown, with very slight bronze lustre, elytra barely infuscate, legs rusty red, antennae and mouth-parts yellowish-red (HT without metallic lustre on head and pronotum).

Traces of granulate microsculpture confined to basal slope of pronotum and base of elytra.

Head. Anterior margin of clypeus with distinctly protruding lateral lobes, between them straight to barely bisinuate; frons and vertex irregularly rugose behind broad and blunt ridge on clypeus, less so posteriorly; frontal sulci superficial and broad, slightly divergent posteriorly; distance between them almost twice longer than eye length. Eyes strongly convex and fairly small. Antennae short, antennomeres 5-10 distinctly transverse.

Pronotum. Strongly convex, almost parallel-sided in middle third, not or barely attenuated anteriorly, 0.85-0.94 (mean 0.90; HT 0.90) times as wide as long, 1.26-1.35 (mean 1.29, HT 1.35) times as wide as head, broadest at or mostly behind middle. Anterior margin convex, anterior angles obtuse and very slightly protruding, posterior ones widely rounded. Front transverse impression very broad, superficial, with conspicuous and dense cross striae, median line moderately deep, shallower medially, lateral channel moderately broad, much more so before anterolateral setiferous puncture, reflexed lateral margin surpassing posterolateral setiferous puncture. Disc glossy, minutely punctate, densely transversely wrinkled over basal slope.

Elytra. Oblong-oval;1.90-2.03 (mean 1.97, HT 1.92) times as long as wide, 1.08-1.16 (mean 1.12, HT 1.08) times as wide as pronotum, slightly broadened on sides, slightly more strongly attenuated backwards than forwards. Base strongly oblique towards strongly rounded humeri, each elytron with nearly indistinct humeral tooth; base with conspicuous



Figs 5a-c. *S. vanhillei*, male, Mkhambati: 5a- Aedeagus, left lateral view. 5b- Apex of aedeagus, right dorsolateral view. 5c- Apex of aedeagus, ventral view.

border adjoining 2-3 blunt, close or fused, basal tubercles and broadly depressed suture; BSP large, adjoining and very deep at stria 1 and sometimes also 2, latter either obsolete just before or adjoining stria 1 before BSP. Striae entire, narrow and moderately deep, very finely and densely punctate all along, occasionally some of them shortly interrupted at apex, striae 7-8 obliterated basally; intervals regularly subconvex. One PHSP, (1)-2 DSP (anterior and rarely unilaterally middle pores missing, posterior one in/near stria 3), two ASP in deep apical stria.

Wings. Vestigial.

Legs. Protibial apical spine long, blunt, moderately curved backwards and very slightly inwards, distinctly shorter than slightly curved apical spur; distal marginal tooth large and rather blunt, proximal one small and blunt. Metatarsomere 1 shorter than those 2+3 combined.

Aedeagus (Figs 5a-c). Apical lamella of penis large and broad, with distinct internal channels. Flagellum thin, strongly sclerotized, at base with about 15 close coils. Parameres without setae.

Underside. Mentum and submentum fused without suture in between, each with one, median, pair of setae, lateral setae absent, ringed pores very small. Proepisterna rather dull, with distinct meshed microsculpture and fine, dense transverse wrinkles. Metacoxae slightly separated, abdominal sternite III with lengthwise, rather deep and narrow, median depression, angulate between and parallel-sided behind metacoxae and somewhat flattened at bottom.

Comments. *Dyschirius vanhillei* is transferred here to the recently described, originally monobasic, genus *Striganoviella* based on the evidence that it shares with *S. subopaca* Fedorenko, 2012 a particular combination of characters, mostly apomorphic ones. Namely, the mentum and submentum are fused without suture in between or lateral setae on either. The abdominal sternite III between and behind the slightly separated metacoxae is furnished with a narrow median depression. This depression has substituted for a flat and wide median area limited laterally by the divergent borders, which is so characteristic of the other dyschiriines. Furthermore, the elytral base is bordered, the tarsi, especially tarsomere 1, and the antennae are short, the head is rugose dorsally, with a wide frons and rather shallow facial sulci. The dorsal microsculpture is more or less developed in addition and the anterior transvere impression on the pronotum is shallow and conspicuously cross-striated. The North American genus *Akephorus* LeConte, 1851also shares this character combination but it differs in two principal peculiarities: a quadrisetose (instead of bisetose) submentum and abdominal sternite III bordered between, while unbordered behind the metacoxae, borders strongly diverging posteriorly. *Akephorus* can also be distinguished by longer tarsi and antennae.

Despite the characters shared, the species of *Striganoviella* are quite dissimilar in appearance. This is due chiefly to some interspecific variation in the above mentioned characters, combined with some other peculiarities. Thus, *S. subopaca* shows the head more strongly rugose, the dorsal microsculpture well-developed throughout, the elytra with a much less oblique base, much more distinct humeri and a finer basal border while lacking basal tubercles. Yet, the most strongly different structures are the flagella of the aedeagus, stout and very short in *S. subopaca* but thin and composed of many basal coils in *S. vanhillei*

which share this plesiomorphic character with *Akephorus*. The two latter taxa are also much more similar to each other in appearance due to a similar shape of the body, especially elytra, combined with a particular head sculpture.

Finally, the aedeagal structure in *S. vanhillei* strongly resembles that of *D. dispar* (Péringuey, 1896) provisionally included by Fedorenko (1996) in the subgenus *Paradyschirius* Fedorenko, 1996, implying the latter species being near of *Striganoviella,* too.

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