New data on Lachnophorini and Odacanthini (Coleoptera: Carabidae) of Vietnam, with description of two new species and one new subspecies of *Pseudophorticus*

Новые данные о Lachnophorini и Odacanthini (Coleoptera: Carabidae) Вьетнама с описанием двух новых видов и нового подвида *Pseudophorticus*

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The Neotropical genus *Pseudophorticus* Erwin, 2004 is reported from the Eastern Hemispere for the first time. Two new species, *P. constricticollis* **sp. nov.** and *P. tetragonoderoides* **sp. nov.** are described from Vietnam; within the former species, two subspecies are recognized: the nominotypical one (central Vietnam) and *P. constricticollis tonkinensis* **ssp. nov.** (northen Vietnam). Additional records of *Selina westermanni* Motschulsky, 1858 in Vietnam are given. *Aeolodermus emarginatus* (Chaudoir, 1872) is first reported from Vietnam.

Неотропический род *Pseudophorticus* Erwin, 2004 впервые обнаружен в Восточном полушарии. Два новых вида – *P. constricticollis* **sp. nov.** с новым подвидом *P. constricticollis tonkinensis* **ssp. nov.** и *P. tetragonoderoides* **sp. nov.** описаны из Вьетнама. Приведены новые находки во Вьетнаме *Selina westermanni* Motschulsky, 1858. *Aeolodermus emarginatus* (Chaudoir, 1872) впервые указан для Вьетнама.

Key words: ground beetles, taxonomy, Vietnam, Coleoptera, Carabidae, Lachnophorini, Odacanthini, *Pseudophorticus*, *Selina*, *Aeolodermus*, new species, new subspecies, new records

Ключевые слова: жужелицы, таксономия, Вьетнам, Coleoptera, Carabidae, Lachnophorini, Odacanthini, *Pseudophorticus*, *Selina*, *Aeolodermus*, новый вид, новый подвид, новые указания

INTRODUCTION

According to Erwin & Zamorano (2014), the mostly Neotropical tribe Lachnophorini includes 19 genera with 159 described and many undescribed species. The genera *Aeolodermus* Andrewes, 1929 (monobasic Oriental), *Homethes* Newman, 1842 (nine species, southern Oriental Region to Australia), and three Neotropical monobasic genera, *Diplacanthogaster* Liebke, 1932, *Quammenis* Erwin, 2000, and *Stenocheila* Laporte de Castelnau, 1832, have recently been placed in the subtribe Homethina Liebherr, 2016 of the tribe Odacanthini (Liebherr, 2016), which makes the Lachnophorini restricted to the Neotropics, except for the monobasic Palaeotropical genus *Selina* Motschulsky, 1858.

During two expeditions sponsored by the Joint Russia-Vietnam Tropical Center in 2015–2016, an unknown lachnophorine was collected in central and northern Vietnam. Dr Terry L. Erwin (personal communication) has kindly identified a photographed specimen of that species as *Pseu-*

dophorticus sp. The genus *Pseudophorticus* Erwin, 2004 was erected for *P. puncticollis* Erwin, 2004 (type species) from Costa Rica and three species earlier described in the genera *Lachnophorus* Dejean, 1831 or *Euphorticus* Horn, 1881. In a later paper (Erwin & Zamorano, 2014), the genus was said to include one described species and many undescribed ones.

A member of a rather large Neotropical genus found in Vietnam may suggest a recent introduction; however, another *Pseudophorticus* species was subsequently discovered in central Vietnam, which suggests that both may be native to the area and apparently still undescribed.

Descriptions of the two new species are provided below, along with new records and notes on habitats of *Selina westermanni* Motschulsky, 1858 and *Aeolodermus emarginatus* (Chaudoir, 1872).

MATERIAL AND METHODS

The acronyms used are as follows: MPSU, Moscow Pedagogical State University; SIEE, the author's reference collection at A.N. Severtsov Institute of Ecology & Evolution, Russian Academy of Sciences, Moscow; ZIN, Zoological Institute, Russian Academy of Sciences, St Petersburg; ZMMU, Zoological Museum of the Moscow State University.

The following parameters were analyzed: BL, maximum body length measured between apices of closed mandibles and elytra; EL, maximum length of elytron; EW, maximum width of elytra; HW, maximum width of head across eyes; PL, length of pronotum along mid-line; PW, maximum width of pronotum; PWa, width of pronotum between apical angles; PWb, width of pronotum between basal angles.

Measurements were taken using an ocular micrometer within the accuracy of two decimal places. The means are given in round brackets for the ratios, with the number of measured specimens (n) indicated for the first ratio in the description.

TAXONOMY

Order **COLEOPTERA**

Family **CARABIDAE**

Subfamily **HARPALINAE** Bonelli, 1810

Tribe **LACHNOPHORINI** LeConte, 1853

Genus ***Pseudophorticus*** Erwin, 2004

***Pseudophorticus constricticollis* sp. nov.**
(Figs 1, 2, 4–8, 12)

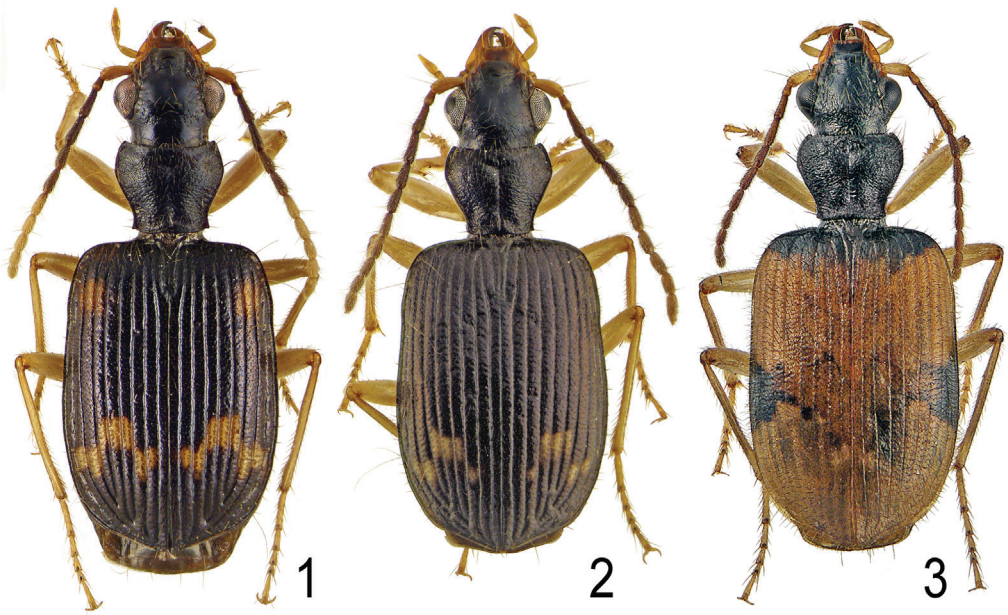
Diagnosis. The species from Vietnam with distinctive colour pattern as described below. For additional differences from the Neotropical species see 'Remarks' on *P. tetragonoderoides* **sp. nov.**

Description. Macropterous, body (Figs 1, 2). BL 4.7–5.9 mm. Moderately shiny black, less shiny on pronotum and head behind mid-eye level; elytra with nearly indistinct blue violet tinge. Mouthparts, including labrum, antennal scape and apex of pedicel reddish-yellow; mandibular apices slightly infuscated; legs flavous. Elytron a third from apex with a yellow flexuose fascia spanning intervals 2–8 or 2–9; the fascia narrow, generally consisting of three subquadrate patches. Metaventrite red medially, sides of metaventrite and often also prosternum along middle reddish; abdomen medially reddish-black.

Pubescence rather dense; eyes, center of head, clypeus, labrum and mandibles glabrous. Setae of dorsal pelage slightly longer, directed slightly forward, slightly longer on vertex and pronotal apex. Elytral pelage double, short and dense setae mixed with slightly longer and sparser ones. Terminal maxillary and labial palpomeres very sparsely setulose in basal half.

Microsculpture isodiametric, distinct on frons before eyes, behind mid-eye level and over pronotal disc, with not well delimited meshes here and there; almost obliterate on elytra and between eyes, obsolete on clypeus, nearly so along pronotal apex and base.

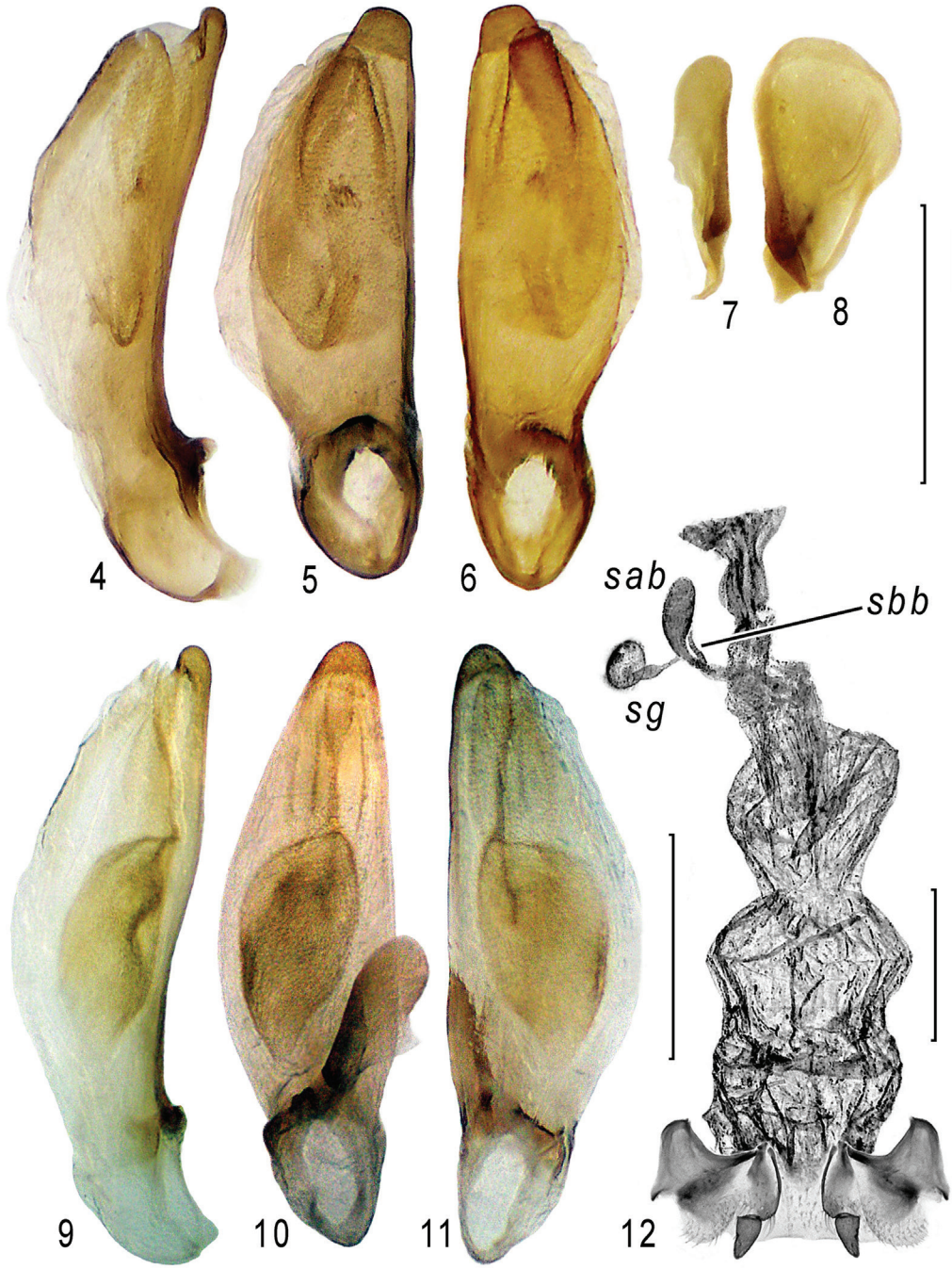
Head bisetose above each eye, posterior seta situated just in front of the level of eye



Figs 1–3. *Pseudophorticus*, dorsal habitus. **1**, *P. constricticollis constricticollis* **ssp. nov.**, female paratype; **2**, *P. c. tonkinensis* **ssp. nov.**, male paratype; **3**, *P. tetragonoderoides* **sp. nov.**, paratype.

posterior margin. Temples about a third as long as moderately convex eyes, barely converging basad and extended into neck at very obtuse angle. Frons and vertex moderately convex; neck constriction almost imperceptible. Frons transversely, finely and densely, rugulose behind clypeus, with a shallow subtransverse impression at the level of eye anterior margin, often followed by small and shallow median pit or weak V-shaped impression. Frontal foveae angulate, deep and divergent before eyes; shallower and strongly diverging toward, and almost reaching, anterior supraocular setae. Clypeus bisetose, convex, subsinuate apically. Antennae long, surpassing elytral base by apical 3–3.5 segments; antennomeres 3, 4 and scape subequally long, slightly longer than antennomere 5, more than twice as long as pedicel. Labrum truncate, sexsetose, with a distinct transverse impression. Mandibles imperceptibly concave laterally, with widely explanate ventral scrobal ridge. Submentum bisetose; mentum bisetose at base of a large and acute median tooth; lateral lobes and epilobes with pointed apices combined. Ligula short, apically trapezoidal and quadrisetose; inner setae being longer and closer to outer ones than to each other. Terminal labial palpomere subfusiform; penultimate palpomere bisetose.

Pronotum cordate, convex, as wide as head, broadest about a fourth from apex. Sides rounded in apical half, often subangulate at the widest point, converging basad, sinuate a fifth from base. Basal margin evenly subconvex to nearly straight. Apex subtruncate medially to evenly sinuate between acute and pointed apical angles. Basal and apical beads traceable just laterally. Median line fine, moderately deep, deeper basally, reaching base, obliterate apically. Basal transverse impression angulate forward, deep medially, obliterate laterally; apical transverse impression shallow. Basal foveae linear, moderately deep, slightly converging apicad, almost reaching middle. Disc densely rugulose, more so basally. Lateral groove fine yet deep, with anterolateral seta at the widest point; lateral bead edged,



Figs 4–12. *Pseudophorticus*. **4–8, 12**, *P. constricticollis constricticollis* **ssp. nov.**; **9–11**, *P. tetragonoderoides* **sp. nov.** 4–6, 9–11, median lobe of aedeagus, left (4, 9), ventral **(**5, 10**)** and dorsal (6, 11) aspects; **7**, right paramere; 8, left paramere; 12, female reproductive tract; *sab* – spermathecal apical bulb, *sbb* – spermathecal basal bulb, *sg* – spermathecal gland. Scale bar: 0.5 mm.

reflexed, with much shorter posterolateral seta in or just before basal angle, 1–3 additional setae of similar length in apical angles, and a few shorter setae in basal half. Propleura invisible in dorsal view.

Elytra square, convex, slightly flattened on disc, EL/EW 1.41–1.51 (1.46, n=16), twice as wide as pronotum, nearly truncate at bases, with square humeri, broadest a third from apex; outer angles widely rounded; apical truncature oblique and almost indistinctly sinuate; apices slightly pointed combined but blunt tips. Sides subparallel, diverging slightly apicad, usually gently sinuate a fourth from base. Basal ridge entire, straight, indistinctly angulate between striae 4 and 5. Striae entire, indistinctly crenulate, deep, slightly deeper before apex. Intervals nearly flat, convex in apical third, each with about three irregular rows of fine setigerous punctures. Parascutellar striole long and deep; parascutellar setigerous pore adjoining striae 1 and 2. Interval 3 with three discal setigerous pores (d1–d3); these subequally spaced; interval 7 with two apical setae; umbilical seta series continuous, consisting of 15 setigerous pores adjoining stria 8, except for pore 14 adjoining stria 9; pores 1–3 and 10 adjoining both striae.

Abdominal sternites IV–VI with one pair of ambulatory setae, sternite VII apically bisetose in male, quadrisetose in female.

Legs. Metatarsomere 1 as long as those 2 and 3 combined. Protarsomeres 1–3 not dilated in male, each with adhesive ventral scales. Metafemur without fixed setae.

Aedeagus (Figs 4–8) widely membranous dorsally, parameres subequally long. Internal sac behind middle with a patch of several tiny spicules.

Female genitalia (Fig. 12): basal gonocoxite (gonosubcoxite) with 10–11 apical setae; apical gonocoxite triangular, with two outer (ventral) ensiform setae and a double apical nematiform seta. Female reproductive tract (Fig. 12) as described for the tribe (Liebherr, 1988; Liebherr & Will, 1998); *bursa copulatrix* with four, inversely trapezoidal telescoped parts. Spermatheca bipartite U-shaped, basal part being very slender, half as long as ovally elongated apical part.

Etymology. Refers to the shape of the pronotum, from Latin *constrictus* (tied up) and *collum* (neck).

Distribution. Central and northern Vietnam.

Bionomics. A riparian psammophilous species. All the adults were collected along forest streams in bare fine gravel amid small stones, with negligible or no admixture of mud.

Remarks. The species description is based on two isolated populations treated here as subspecies.

Pseudophorticus constricticollis constricticollis ssp. nov.

(Figs 1, 4–8, 12)

Holotype. Male, "Vietnam, Kon Tum Prov[ince]., Chu Mom Ray Nat[io]n[al]. Park, 14°30′N 107°43′E, dak Car river bank, h = 700–850 m, 28.III–4.IV.2015, D. Fedorenko leg." (ZMMU).

Paratypes. 21 males and females taken together with the holotype (SIEE, ZIN).

Diagnosis. Body (Fig. 1): Labrum reddish-yellow; antennomeres 7–11 flavous or whitish; antennomeres 2–6 black to brown black, sometimes with antennomeres 5 and 6 barely paler. Preapical elytral fascia spanning intervals 2–8 or 2–9. Some specimens exhibiting slightly infuscated labrum or elytra with a vague posthumeral spot on intervals (6–)8.

Pronotum: PW/HW 0.96–1.01 (0.99, n=8), PW/PL 1.23–1.29 (1.26); sides slightly diverging in basal fifth. Basal angles projecting slightly laterad, right and sharp or with acute apices due to base gently indented just inside. Apex a fifth wider than base, PWa/PWb 1.15–1.28 (1.21).

Elytra: EW/PW 1.96–2.10 (2.0); discal setigerous pores slightly yet distinctly foveate, either adjoining stria 2 or d1 adjoining stria 3.

Distribution. Central Vietnam.

Pseudophorticus constricticollis tonkinensis ssp. nov.
(Fig. 2)

Holotype. Male, "N[orthern]-Vietnam, Phu Tho Prov[ince]., ~ 90 km W of Hanoi, Xuan Son N[ational]. P[ark]., h = 300 m, 21°07′58′′N 104°55′45′′E, in moist gravel, 6–15.VI.2014, D. Fedorenko leg." (ZMMU).

Paratypes. 34 males and females taken together with the holotype (SIEE, ZIN).

Diagnosis. Distinctive from the nominotypical subspecies in the following points: Antennae more or less gradually paling apicad, with segment 7 intermediate in colour between brown to dark brown segments 3–6 and pale brown to brown segments 8–11; scape red, pedicel red to reddish-brown; segments 7–11 slightly darker than legs (*versus* same coloured or slightly paler than legs). Labrum mostly infuscated, indistinctly reddish. Elytral posthumeral spot absent, preapical fascia slightly narrower, spanning intervals 3–8, with inner patch reduced to interval 3 and sometimes separated. Pronotum on the average barely more transverse, PW/PL 1.24–1.33 (1.28, n = 8), and narrower basally, PWa/PWb 1.19–1.28 (1.24), due mainly to sides parallel before, instead of diverging towards, base; base and apex less arcuate, often subtruncate medially; basal angles mostly not or barely projecting laterad. Elytral discal setae not or barely foveate, situated mostly at middle of interval 3. PW/HW 0.94–1.01 (0.97), EW/PW 1.94–2.11 (2.0).

Etymology. Refers to the provenance of the type series.

Distribution. Northern Vietnam.

Pseudophorticus tetragonoderoides sp. nov.
(Figs 3, 9–11)

Holotype. Male, "Vietnam, Gia Lai Province, ~55 km ENE Pleiku, 14°17′45′′N/ 108°26′57′′E, Kon Ka Kinh Nat[io]n[al]. Park, h = 600 m, 8–20.V.2017, D. Fedorenko leg." (ZMMU).

Paratype. Female, "Vietnam, Gia Lai Province, ~55 km ENE Pleiku, 14°17′24′′N/ 108°27′47′′E, Kon Ka Kinh Nat[io]n[al]. Park, h = 570 m, dak Lar Pa river bank, 8–20.V.2017, D. Fedorenko leg." (SIEE).

Diagnosis. The species from Vietnam with distinctive colour pattern as described below.

Description. Similar to *P. constricticollis* **sp. nov.**, except as follows: Body (Fig. 3) larger, BL 6.5–6.8 mm, yellow (including gula, prosternum and mesosternum along middle), with whitish scape, maxillary palpomere 2 and femora. Head, pronotum, elytral base and epipleura, and metasternum laterally black. Elytra in middle third with a vaguely infuscated macula spanning intervals 1–5 and laterally merging into a darker subtriangular patch. Elytral dark parts, including central macula, with slight (holotype) or no (paratype) metallic green tinge. Labrum dark brown, mouthparts largely yellow. Antennae rather pale brown, with reddish-yellow segments 2–4 and barely infuscated segment 5. Dorsum dull due to coarse sculpture: head and pronotum rugose and thence indistinctly microsculptured; frons rugulose, finely yet densely punctate, except for a small smooth spot between eyes. Dorsal pubescence dense and slightly longer than in *P. constricticollis* **sp. nov.**, with pronotal lateral edge minutely tuberculate in basal half; elytral intervals each with 4–5 rows of setigerous punctures.

Pronotum: PW/PL 1.24–1.28, just as wide as head, PWa/PWb 1.15–1.18; basal angles projecting slightly laterad, right and sharp. Base finely beaded in lateral 1/4–1/5; apical bead fine yet entire, faint just medially. Median line entire and deep, deeper basally and apically. Apical transverse impression fairly deep, basal transverse impression wide and deep.

Elytra very slightly oblique at bases; humeri slightly more widely rounded than in *P. constricticollis* **sp. nov.**; apices narrowly rounded; EL/EW 1.51–1.53, EW/PW 1.96. Striae rather shallow; intervals flat, interval 3 along middle with three feebly impressed discal setigerous pores; interval 7 with two apical setae. Interval 9 with 17 umbilical setae, not constricted behind the middle (*versus* constricted at setigerous

pore 10); pores of umbilical seta series adjoining stria 8, with pores 1–3 additionally adjoining stria 9; pore 16 adjoining stria 9 only.

Legs. Protarsomeres 1–3 slightly dilated and squamose ventrally in male.

Aedeagus (Figs 9–11): apical lamella in dorsal/ventral view triangular.

Remarks. The genus *Pseudophorticus* has not been described in detail; only a diagnosis had been provided, a brief comparison with *Euphorticus* and *Lachnophorus* (Erwin, 2004), and a key to genera of Lachnophorini (Erwin & Zamorano, 2014). As long as the genus is still formally monobasic (Erwin & Zamorano, 2014), I can only compare *Pseudophorticus constricticollis* **sp. nov.** and *P. tetragonoderoides* **sp. nov.** with *P. puncticollis* and *Pseudophorticus* sp. from Peru (illustrated in Erwin & Zamorano, 2014, Fig. 19). In the latter two species, the pronotum is wider (*versus* as wide as, or slightly narrower) than the head, and about three quarters (*versus* half) as wide as the elytra. According to Erwin (2004), the two Neotropical species, including *P. puncticollis*, are not periaquatic, have wings strongly reduced, and one species is wing-polymorphic (Erwin, 2004; Erwin & Zamorano, 2014). On the other hand, both species from Vietnam are macropterous and riparian, like many *Anchonoderus*. This, combined with the disjunct range, suggests that the Oriental *Pseudophorticus* may deserve at least subgeneric status. The relationships within *Pseudophorticus* need further study.

Etymology. Reflects similarity between the new species and some psammophilous species of the carabid genus *Tetragonoderus* Dejean, 1829 in elytral pattern.

Distribution. Known from the type locality only.

Bionomics. The holotype specimen was collected in bare fine sand along a forest stream, and the paratype in plant debris on sandy riverbank with a thick facial layer of mud. This means riparian and, given the distinctive body pattern, apparently psammophilous way of life.

Genus ***Selina*** Motschulsky, 1858

Selina westermanni Motschulsky, 1858

Material. **Vietnam.** *Dong Nai Prov.*: 10 males and females, Nam Cat Tien National Park, 11°25′18′′N 107°25′44′′E, Expedition of the Joint Russian-Vietnamese Tropical Center, 20.XI.2004 D. Fedorenko leg. (SIEE); 1 female, same data, except for 21.X.2004, at light HQL 450 (SIEE). *Song Be Prov.*: 1 specimen, 60 km N of Ho Chi Minh, Phu Gia Vill., 3–13.X.1994, A. Napolov leg. (MPSU). *Gia Lai Prov.*: 2 specimens, ~ 55 km ENE of Pleiku, Kon Ka Kinh National Park, 14°17′45′′N 108°26′57′′E, h = 600 m, at light, 8–20.V.2017, D. Fedorenko leg. (SIEE).

Distribution. Africa, Madagascar, Sri Lanka, India, Thailand, Cambodia, Vietnam, southern China (Hong Kong, Macao), and Sumatra.

Bionomics. Bates (1886) noted that *S. westermanni* as the only member of "Subfamily Lachnophorinae" in Ceylon ran "in moist places in the half-dry river". In the Cat Tien National Park, most of the adults were taken at the extreme edge of a pool where they dwelt in leaf litter on slimy mud.

Tribe **ODACANTHINI** Laporte, 1834

Genus ***Aeolodermus*** Andrewes, 1929

Aeolodermus emarginatus (Chaudoir, 1872)

Material. **Vietnam.** *Dong Nai Prov.*: 1 male, Nam Cat Tien National Park, 11°25′18′′N 107°25′44′′E, Expedition of the Joint Russian-Vietnamese Tropical Center, at light, 10.VI.2005, D. Fedorenko leg. (SIEE). *Lam Dong Prov.*: 2 males, 25 km NNW of Bao Loc, Loc Bao env., 11°44′18′′N 107°42′08′′E, h = 800 m, 5–20. IV.2013, D. Fedorenko leg. (SIEE).

Distribution. Malay Peninsula, Borneo, Sumatra, Celebes, Philippines. The first record for Vietnam.

Andrewes (1929, 1933) reported *Ae. emarginatus* from Celebes, Borneo, Sumatra (Medan), and the Malay Peninsula, and supposed that Melbourne, Australia, was wrongly indicated as the type locality. Darlington (1956) also noted that the

species was not probably Australian, while occurring from the Malay Peninsula to the Philippines.

Bionomics. The listed specimens from Loc Bao were taken on moist ground with dense vegetation at the edge of a swamp.

Remarks. This species was illustrated by Louwerens (1952) for comparison with *Homethes microguttatus* (Louwerens, 1952), with reference to neither examined material nor locality.

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