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SHORT COMMUNICATION

Selasia dembickyi sp. nov., the first member of Drilini (Coleoptera: Elateridae) from South East Asia, with the description of S. jenisi sp. nov. from Nepal

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Accepted: 10th November 2018 Published online: 15th November 2018 **Abstract.** We describe and figure two new Asian *Selasia* Laporte, 1838 species: *S. dembickyi* sp. nov. from northern Thailand, and *S. jenisi* sp. nov. from Nepal. *Selasia dembickyi* sp. nov. is the easternmost record for the tribe Drilini and the first species of this tribe known from South East Asia. An updated identification key to *Selasia* species from the Palaearctic Region is given, and a distribution map of *Selasia* from the southern part of Asia is provided.

Key words. Coleoptera, Elateroidea, Elateridae, Drilini, taxonomy, new species, distribution, diversity, the Himalayas, Nepal, Thailand, Oriental Region, Palaearctic Region

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Introduction

Selasia Laporte, 1838 is the most diverse genus of Drilini, a small soft-bodied beetle group which has been recently classified as a tribe in Elateridae: Agrypninae (KUNDRATA & BOCAK 2011, KUNDRATA et al. 2018). This genus was originally described from western Africa (La-PORTE 1838) and since then more than 50 species have been described from the Afrotropical Region (e.g., Pic 1946, 1954; WITTMER 1989, 1997; GEISTHARDT 2007a, b). On the other hand, only a few species are known from outside Africa. The Palaearctic fauna including the species ranging from Socotra and the Arabian Peninsula up to the eastern Himalayas has been thoroughly studied only recently (Geisthardt 2003; Kundrata 2012a,b, 2017; Trllova & Kundrata 2015), and the fauna of the Indian subcontinent including Sri Lanka is in need of revision. The purpose of this study is to describe two remarkable new Selasia species from northern Thailand and Nepal, respectively, and thereby increase our knowledge on the morphological diversity and distribution of this genus outside Africa.

Material and methods

The study is based on the morphology of adult males. The genitalia were dissected after treatment in hot 10%

KOH. Diagnostic characters were photographed using a digital camera attached to a stereoscopic microscope. The following measurements were taken with a scale bar in an eyepiece: BL—body length; WHe—head width including eyes; EL—elytral length; WHum—width at humeri; PL—pronotal length at midline; PW—pronotal width at widest part; Edist—minimum interocular distance at frontal part of cranium; Ediam—maximum eye diameter in lateral view. Body length was measured from the fore margin of head to the apex of elytra. Morphological terminology follows Kundrata (2017) and Kundrata & Bocak (2017). Label data for the examined material are cited verbatim. The type material is deposited in the Naturhistorisches Museum, Basel, Switzerland (NHMB) and Národní muzeum, Prague, Czech Republic (NMPC).

Systematics

Genus Selasia Laporte, 1838

Selasia Laporte, 1838: 19. Type species: *Selasia rhipiceroides* Laporte, 1838; by monotypy.

Diagnosis. *Selasia* species share the following combination of characters: body usually stout, frontoclypeal region short and wide, labrum more than four times wider than





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long, antenna flabellate, posterior margin of pronotum with a shallow, widely arcuate emargination, scutellar shield longer than wide, anterior margin of mesoventrite slightly concave, and abdomen with seven free ventrites.

Selasia dembickyi sp. nov.

(Figs 1-2, 5, 7, 9-13)

Type material. HOLOTYPE: ♂, **'THAILAND**, Chiang Mai Prov., Pha Hom Pok Mt., 1900–2200 m, 20°02'35"N, 99°08'45"E, 23.–30. iv. 2009, L. Dembický leg. '(NHMB).

Description of holotype. Body (Figs 1–2) 2.95 times as long as width at humeri; dark brown to black, scapus slightly lighter, prothorax light brown, head and mesothorax light brown to brown; body surface covered with yellowish semi-erect pubescence.

Head (Fig. 1) including eyes 0.75 times as wide as pronotum, surface smooth, with shallow median depression between antennal insertions, sparsely and finely punctate, covered with sparse, long, semi-erect pubescence. Fronto--clypeal region relatively wide, flattened, almost vertically sloping to base of labrum. Eyes large, their frontal distance 1.35 times eye diameter. Labrum transverse, almost smooth, finely punctate, with anterior margin slightly emarginate. Mandibles robust, long, bidentate; base with long setae, apical part bare, shiny. Maxillary palpi slender, penultimate palpomere shortest, slightly longer than wide, apical palpomere more than twice as long as penultimate palpomere, widened medially, apically flattened, obliquely cut. Antenna (Fig. 5) with 11 antennomeres, flabellate; scape robust, gradually widened apically, pedicel short, only slightly longer than wide; length ratio of antennomeres II-IV 1.00: 2.00: 1.35; antennomere III elongate, with short triangular branch, shorter than stem; antennomeres IV–X short, subequal in length, with long, flattened branches, branches about three times as long as their stems; ultimate antennomere simple, longest, slightly longer than branch of penultimate antennomere; all antennomeres covered with moderately dense pubescence.

Pronotum (Fig. 7) slightly convex, widest at posterior angles, 1.90 times as wide as long. Anterior margin almost straight, slightly emarginate medially, lateral margins slightly sinuate, posterior margin simple, widely emarginate medially. Anterior angles inconspicuous; posterior angles short but prominent, apically narrowly rounded, produced postero-laterally. Lateral pronotal carina almost complete. Surface of disc smooth, rugose at posterior angles; sparsely shallowly punctate, with sparse semi-erect pubescence, longer at posterior angles. Hypomeron smooth. Prosternum transverse, medially transversely deeply grooved, with long semi-erect setae; prosternal process reduced.

Scutellar shield flat, tongue-like, slightly longer than wide, widest near base, then gradually distinctly narrowed toward apex; sparsely punctate, anterior margin gradually declivitous, posterior margin rounded. Mesoventrite widely v-shaped, with frontal margin widely concave; mesoventral cavity very shallow. Elytra (Figs 1–2) subparallel-sided, both combined 2.10 times as long as wide, 0.70 times as long as body, 5.20 times as long as pronotum, slightly rugose, without distinct striae, with apices separately

rounded, sparsely and finely punctate, covered with long, semi-erect pubescence.

Legs slender, slightly compressed, with sparse, long, semi-erect setae; tarsomere I slightly shorter than tarsomere II, widened apically, tarsomere II elongate, slightly longer than tarsomere III, tarsomere IV shortest, minute, lobed ventrally, apical tarsomere slender, elongate; claws simple, slender, slightly curved, each with long seta basally.

Abdomen soft, ventrites with sparse shallow punctures, covered with semi-erect pubescence, denser at margins; penultimate ventrite widely emarginate medially. Tergite IX (Fig. 10) transverse, less than twice as wide as long; tergite X (Fig. 11) about as long as wide, apically rounded and partly membranous, sparsely covered with short setae. Sternite IX (Fig. 9) about 1.6 times as long as wide, narrowed and not emarginate basally, rounded apically, apex finely punctate and sparsely setose.

Male genitalia (Figs 12–13) twice as long as maximum phallobase width; median lobe narrow, elongate, about 1.6 times as long as phallobase, distinctly longer than parameres, curved in lateral view, basally with two short struts, dorsally with short sharp subapical hook; parameres distinctly elongate, apically partly membranous, with sparse long setae; phallobase short, v-shaped, slightly wider than long.

Measurements. BL 6.60 mm, WHum 2.25 mm, EL 4.70 mm, WHe 1.30 mm, PL 0.90 mm, PW 1.70 mm, Edist 0.70 mm, Ediam 0.55 mm.

Differential diagnosis. *Selasia dembickyi* sp. nov. is the only Drilini species known from South East Asia. It can be recognized by the following combination of characters: head and pronotum lighter than rest of body (Figs 1–2), weakly flabellate antennae (Fig. 5), strongly sinuate pronotal sides with distinctly diverging posterior angles (Fig. 7), and base of sternite IX not emarginate (Fig. 9). This species has uniquely shaped male genitalia among Drilini (Figs 12–13) with a very long and narrow median lobe, which is distinctly longer than the parameres, elongate parameres which are widest at the second third, and the phallobase which is short compared to the median lobe and parameres.

Etymology. The specific epithet is a patronym in honor of Luboš Dembický (Brno, Czech Republic), the collector of the holotype.

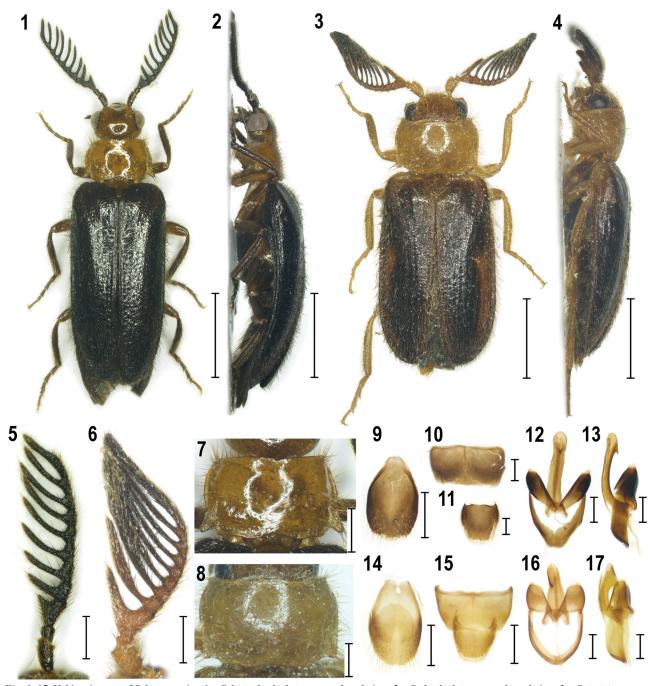
Collecting circumstances. Members of *Selasia* are usually collected at light or using Malaise traps (e.g., WITTMER 1989; KUNDRATA 2012a, 2017; TRLLOVA & KUNDRATA 2015). The exact collecting circumstances for *S. dembickyi* sp. nov. are not known but it was most probably collected at light or using a flight interception trap (L. Dembický, personal communication). The habitat of this species is shown in Figs 18–19.

Distribution. Thailand: Chiang Mai Province (Fig. 20).

Selasia jenisi sp. nov. (Figs 3–4, 6, 8, 14–17)

Type material. HOLOTYPE: ♂, 'NEPAL, from Pokhara to Dana road, 12.–25. 8. 1997, 1000–2000 m, A. Křížová lgt.' (NMPC; ex coll. Ivo Jeniš).

Description of holotype. Body (Figs 3–4) 2.60 times as long as width at humeri; brown to dark brown, antenno-



Figs 1–17. Habitus images of Selasia species. 1-Selasia dembickyi sp. nov., dorsal view; 2-S. dembickyi sp. nov., lateral view. 3-S. jenisi sp. nov., dorsal view; 4-S. jenisi sp. nov., lateral view. 5-6- antenna (5-S. dembickyi sp. nov.; 6-S. jenisi sp. nov.). 7-8- pronotum (7-S. dembickyi sp. nov.; 8-S. jenisi sp. nov.). 9-13-Selasia dembickyi sp. nov.: 9- abdominal sternite IX; 10- abdominal tergite IX; 11- abdominal tergite X; 12- aedeagus, dorsal view; 13- aedeagus, lateral view. 14-17- Selasia jenisi sp. nov.: 14- abdominal sternite IX; 15- abdominal tergites IX-X; 16- aedeagus, dorsal view; 17- aedeagus, lateral view. Scale bars = 2.0 mm (Figs 1-4), 0.5 mm (Figs 5-9, 14-15), 0.2 mm (Figs 10-13, 16-17).

mere branches and elytra darker, antennomeres I and II, prothorax and legs yellowish brown; body surface covered with yellow semi-erect pubescence.

Head (Fig. 3) including eyes 0.75 times as wide as pronotum, surface slightly uneven, with shallow median depression between antennal insertions, sparsely and finely punctate, covered with sparse, long, semi-erect pubescence. Fronto-clypeal region relatively wide, slightly convex, overreaching base of labrum. Eyes rather large, their frontal distance 1.45 times eye diameter. Labrum transverse, sparsely punctate, with several long, semi-erect setae.

Mandibles robust, relatively long, bidentate; base with long setae, apical part bare, shiny. Maxillary palpi slender, penultimate palpomere shortest, longer than wide, apical palpomere about twice as long as penultimate palpomere, slightly widened medially, apically flattened, obliquely cut. Antenna (Fig. 6) with 11 antennomeres, flabellate; scape robust, gradually widened apically, pedicel short, length ratio of antennomeres II–IV 1.00: 2.60: 1.15; antennomere III elongate, slightly longer than following antennomeres, with elongate branch which is about 1.3 times as long as stem; antennomeres IV–X short, subequal in length, with





Figs 18–19. Habitat of *Selasia dembickyi* sp. nov. in Pha Hom Pok Mt. in northern Thailand. Photos: L. Dembický.

long, flattened branches, branches about eight times as long as their stems; ultimate antennomere simple, longest, slightly longer than branch of penultimate antennomere; all antennomeres covered with moderately dense pubescence.

Pronotum (Fig. 8) transverse, slightly convex, widest at anterior third, 1.65 times wider than long. Anterior margin slightly bisinuate, lateral margins unevenly rounded, gradually narrowed toward posterior angles, posterior margin simple, widely arcuately emarginate medially. Anterior angles inconspicuous; posterior angles short, subrectangular. Lateral pronotal carina almost complete; sublateral carinae near posterior angles short. Surface of disc almost smooth, sparsely shallowly punctate, with sparse and long semi-erect pubescence. Hypomeron smooth. Prosternum transverse, medially transversely slightly grooved, with long semi-erect setae; prosternal process minute, short, sharp.

Scutellar shield flat, subtriangular, very slightly longer than wide; sparsely punctate, anterior margin convex, gradually declivitous, posterior margin narrowly rounded. Mesoventrite widely v-shaped, with frontal margin widely concave; mesoventral cavity with indistinct borders. Elytra (Figs 3–4) subparallel-sided, both combined 1.85 times as long as wide, 0.70 times as long as body, 3.85 times as long

as pronotum, rugose, basally indistinctly striate, with apices separately rounded, very sparsely punctate, covered with long, semi-erect pubescence.

Legs slender, slightly compressed, with sparse, long, semi-erect setae; tarsomere I slightly shorter than tarsomere II, widened apically, tarsomere II elongate, slightly longer than tarsomere III, tarsomere IV shortest, minute, lobed ventrally, apical tarsomere slender, elongate; claws simple, slender, slightly curved, each with long seta basally.

Abdomen soft, ventrites with moderately sparse shallow punctures, covered with semi-erect pubescence; penultimate ventrite widely emarginate medially. Tergite IX (Fig. 15) transverse, about twice as wide as long; tergite X about as wide as long, apically membranous, covered with sparse setae. Sternite IX (Fig. 14) about 1.6 times as long as wide, slightly notched basally, rounded apically, apex finely punctate and sparsely setose.

Male genitalia (Figs 16–17) 1.9 times as long as maximum phallobase width; median lobe robust, slightly longer than phallobase, curved in lateral view, basally with two short struts, dorsally with robust subapical hook; parameres relatively short and wide, widely rounded apically, apex partly membranous, with sparse short setae; phallobase

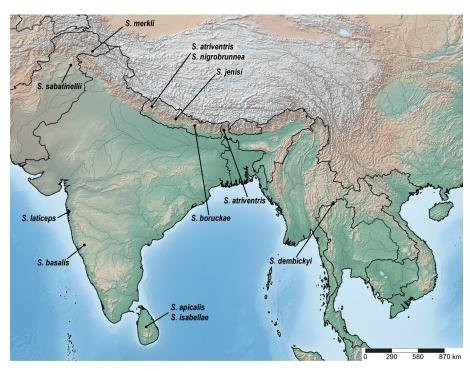


Fig. 20. The distribution of *Selasia* species in the southern part of Asia. *Selasia decipiens* Guérin-Menéville, 1843 is not included in the map because its exact distribution in India is not known

robust, u-shaped, about as wide as long.

Measurements. BL 6.80 mm, WHum 2.60 mm, EL 4.80 mm, WHe 1.55 mm, PL 1.25 mm, PW 2.05 mm, Edist 0.90 mm, Ediam 0.60 mm.

Differential diagnosis. Selasia jenisi sp. nov. can be easily distinguished from S. nigrobrunnea Kundrata, 2017 and S. atriventris Pic, 1914 (both also from Nepal) by its characteristically robust habitus and body coloration (S. nigrobrunnea has the pronotum distinctly darker than remaining body parts, S. atriventris has the whole body light-colored, i.e., yellowish brown to brown). The new species shares similar body coloration (i.e., the antennal branches and elytra darker than remaining body parts) with S. boruckae Kundrata, 2012 from central Nepal. The latter species differs in having the body narrower with relatively long elytra which are usually more than 4.50 times as long as pronotum (3.85 times in S. jenisi sp. nov.), relatively small eyes with their frontal distance 1.65–1.80 times eye diameter (1.45 times in S. jenisi sp. nov.), distinctly diverging posterior angles of pronotum (short and subrectangular in S. jenisi sp. nov.), and the phallobase longer than wide (about as long as wide in *S. jenisi* sp. nov.). **Etymology.** The specific epithet is a patronym in honor of Ivo Jeniš (Lutín, Czech Republic).

Distribution. Central Nepal (Fig. 20).

An updated identification key to the males of Palaearctic Selasia species

(modified from Kundrata 2017; without *S. homhilia* Geisthardt, 2003, see Kundrata 2012b)

- Pronotum black, darker than head and elytra (Fig. 1); aedeagus as in Fig. 10; Nepal.

 S. nigrobrunnea Kundrata, 2017

 Pronotum yellowish brown to brown, lighter or of the same color as head and elytra.

 2

- Elytra monochromatic (sometimes only small areas near pronotal margin slightly lighter); light to dark brown.
- 3 Head and abdomen light brown to brown; aedeagal median lobe with subapical hook more than three times as long as wide; Arabian Peninsula.
- with subapical hook less than two times as long as wide; Pakistan. *S. sabatinellii* Kundrata, 2017
- 4 Pronotum widest at anterior third or middle part. ... 5
- Pronotum widest at posterior angles.
 Elytra light brown; antennomere III with its branch
- much shorter than the antennomere itself; pronotum widest at middle part; pronotum width/length ratio about 1.30; Socotra.
- S. socotrana Kundrata, 2012
 Elytra dark brown (Fig. 3); antennomere III with its branch much longer than stem (Fig. 6); pronotum widest at anterior third (Fig. 8); pronotum width/
- Pronotum lighter than antennae and elytra; median frontoclypeal depression shallow; body length 4.3–7.2 mm; frontal interocular distance 1.6–1.8 times eye diameter; Nepal, northern India.
- 7 Antennae and elytra brown; branch of antennomere III triangular; phallobase wider than long.
 - S. atriventris Pic, 1914
- Antennae and elytra dark brown; branch of antennomere III almost parallel-sided; phallobase longer than wide. S. boruckae Kundrata, 2012

Discussion

Previously, the representatives of Drilini were known from the area ranging from Africa and Europe in the west through the Caucasus and the Middle East to the Indian subcontinent and the Himalayas in the east (e.g., WITTMER 1944; Kundrata et al. 2014, 2015; Kobieluszova & Kun-DRATA 2015; TRLLOVA & KUNDRATA 2015). For more than a century, the easternmost record of Drilini was Selasia atriventris Pic, 1914 from Darjeeling in West Bengal, India. The finding of Selasia dembickyi sp. nov. from Pha Hom Pok in northern Thailand is surprising because this country can be considered the region with high collecting activity but the here described specimen is the first and only available record of this species. What is more, there is a long >1000 km gap between Darjeeling and northern Thailand without any known record of Drilini. This means that S. dembickyi sp. nov. either represents an isolated South East Asian species or that a more thorough collecting effort in Myanmar or China might reveal hitherto undescribed Drilini populations. Indeed, northern Thailand might form part of the southern border of the distribution for predominantly Palaearctic elements including Himalayan species (e.g., Assing 2014, 2017). The mountainous region of the Daen Lao Range on the border of Myanmar and Thailand is characterized by diverse microhabitats which support species diversity and endemism (e.g., Srisuka et al. 2015, Assing 2017). This region, as well as Nepal, where the second here described Selasia species was collected, is considered a biodiversity hotspot (Myers et al. 2000). The here described species significantly contribute to our knowledge on the morphological diversity and distribution of Drilini outside Africa.

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References

- ASSING V. 2014: A revision of the Nazeris fauna of the Himalaya (Coleoptera: Staphylinidae: Paederinae). Stuttgarter Beiträge zur Naturkunde A, Neue Serie 7: 65–130.
- ASSING V. 2017: A revision of Nazeris X. The first record of the genus from South Vietnam and additional records from Thailand (Coleoptera: Staphylinidae: Paederinae). *Linzer Biologische Beiträge* **49**: 1017–1022.

- GEISTHARDT M. 2003: Zwei neue Arten der Gattung Selasia Castelnau, 1836 aus dem Jemen (Coleoptera: Drilidae). *Mitteilungen des Internationalen Entomologischen Vereins* 28: 99–109.
- GEISTHARDT M. 2007a: Remarks on some African Selasia-species and description of new species (Coleoptera: Drilidae). *Mitteilungen des Internationalen Entomologischen Vereins* 32: 27–43.
- GEISTHARDT M. 2007b: Neue und bekannte Selasia Laporte, 1836 Arten aus dem südliche Afrika (Coleoptera, Drilidae). *Entomologica Basiliensia et Collectionis Frey* **29**: 31–40.
- KOBIELUSZOVA L. & KUNDRATA R. 2015: Taxonomic review of Drilus Olivier, 1790 (Elateridae: Agrypninae: Drilini) from Asia Minor, with descriptions of seven new species and comments on the female antennal morphology in Drilini. *Zootaxa* **4012**: 78–96.
- KUNDRATA R. 2012a: Taxonomic review of the Himalayan species of Selasia Laporte, 1836 (Coleoptera: Elateridae: Agrypninae: Drilini). Annales Zoologici 62: 261–266.
- KUNDRATA R. 2012b: Description of Selasia socotrana sp. nov. (Elateridae: Agrypninae: Drilini) from Socotra Island, with notes on S. homhilia. *Acta Entomologica Musei Nationalis Pragae* **52** (Supplementum 2): 213–218.
- KUNDRATA R. 2017: New species of Selasia Laporte, 1836 (Elateridae: Agrypninae: Drilini) from Nepal and Pakistan. Zootaxa 4344: 380–386.
- KUNDRATA R., BAALBERGEN E., BOCAK L. & SCHILTHUIZEN M. 2015: The origin and diversity of Drilus Olivier, 1790 (Elateridae: Agrypninae: Drilini) in Crete based on mitochondrial phylogeny. *Systematics and Biodiversity* 13: 52–75.
- KUNDRATA R. & BOCAK L. 2011: The phylogeny and limits of Elateridae (Insecta, Coleoptera): is there a common tendency of click beetles to soft-bodiedness and neoteny? *Zoologica Scripta* 40: 364–378.
- KUNDRATA R. & BOCAK L. 2017: Taxonomic review of Drilini (Elateridae: Agrypninae) in Cameroon reveals high morphological diversity, including the discovery of five new genera. *Insect Systematics and Evolution* **48**: 441–492.
- KUNDRATA R., KOBIELUSZOVA L. & BOCAK L. 2014: A review of Drilini (Coleoptera: Elateridae: Agrypninae) of the Northern Levant, with description of a new species from Syria and a key to Levantine species. *Zootaxa* 3755: 457–469.
- KUNDRATA R., GUNTER N. L., JANOSIKOVA D. & BOCAK L. 2018: Molecular evidence for the subfamilial status of Tetralobinae (Coleoptera: Elateridae), with comments on parallel evolution of some phenotypic characters. *Arthropod Systematics and Phylogeny* 76: 137–145.
- LAPORTE F. L. N. C. 1838: Études entomologiques, ou descriptions d'insectes nouveaux et observations sur la synonymie. Revue Entomologique 4 [1836]: 5–60.
- MYERS N., MITTERMEIER R. A., MITTERMEIER C. G., DA FONSE-CA G. A. B. & KENT J. 2000: Biodiversity hotspots for conservation priorities. *Nature* **403**: 853–858.
- PIC M. 1946: Coléoptères du globe (suite). L'Échange, Revue Linnéenne 62: 13–16.
- PIC M. 1954: Nouveaux coléoptères de diverses familles. *Revue de Zoologie et de Botanique Africaines* **50**: 210–215.
- SRISUKA W., TAKAOKA H., OTSUKA Y., FUKUDA M., THONG-SAHUAN S., TAAI K., CHOOCHOTE W. & SAEUNG A. 2015: Seasonal biodiversity of black flies (Diptera: Simuliidae) and evaluation of ecological factors influencing species distribution at Doi Pha Hom Pok National Park, Thailand. *Acta Tropica* **149**: 212–219.
- TRLLOVA S. & KUNDRATA R. 2015: A review of the genus Selasia (Elateridae: Agrypninae: Drilini) in the Palaearctic Region. *Zootaxa* **3920**: 563–571.
- WITTMER W. 1944: Catalogue des Drilidae E. Oliv. (Coleoptera Malacodermata). Revista de la Sociedad Entomológica Argentina 12: 203–221.
- WITTMER W. 1989: Die Familie Drilidae (Coleoptera) in Südafrika, sowie Beschreibung von neuen Arten aus dem südlichen Afrika (30. Beitrag zur Kenntnis der Fauna Afrikas). *Entomologica Basiliensia* 13: 187–205.
- WITTMER W. 1997: 40. Beitrag zur Kenntnis der Fauna Afrikas. Entomologica Basiliensia 20: 393–416.