Vietelmis jablonskii, a new species of riffle beetle from Laos and Thailand and new faunistic records on Vietelmis Delève, 1968 from Malaysia
(Coleoptera: Elmidae)

JÁN KODADA¹,⁶, NARUMON SANGPRADUB², RUNGNAPA SOMNARK³, DANIEL GRUĽA⁴, DÁVID ŽIAK⁴ & HENDRIK FREITAG⁵

¹Department of Zoology, Faculty of Natural Sciences, Comenius University in Bratislava, Ilkovičova 6, SK-842 15 Bratislava, Slovakia. E-mail: kodada@fns.uniba.sk
²Applied Taxonomic Research Center, Department of Biology, Faculty of Science, Khon Kaen University, Thailand. E-mail: narumon@kku.ac.th
³Department of Zoology, Faculty of Natural Sciences, Comenius University in Bratislava, Ilkovičova 6, SK-842 15 Bratislava, Slovakia. E-mail: grula@fns.uniba.sk; ziak@fns.uniba.sk
⁴Ateneo de Manila University, Biology Department, School of Science & Engineering, Loyola Heights, Quezon City 1101, The Philippines & Senckenberg Museum of Zoology, Koenigsbruecker Landstrasse 159, D-01109 Dresden, Germany. E-mail: hfreitag@ateneo.edu
⁵Corresponding author

Abstract

A new species of riffle beetle, Vietelmis jablonskii, from Laos and Thailand is described and illustrated. Differences to other Vietelmis species are discussed and an identification key for the Vietelmis is presented. New faunistic records are provided for V. kovaci Kodada & Čiampor, 2000; the genus Vietelmis is newly recorded for Thailand.

Key words: Vietelmis, Elmidae, taxonomy, Laos, Thailand, Malaysia: Pahang, Johor

Introduction

Vietelmis represents a small riffle beetle genus occurring in Southeast Asia. It was erected in 1968 on the basis of six specimens belonging to a single species collected using a light trap in the Nghệ An province in Vietnam. For a long time, the genus was known only from the type species V. brevicornis Delève, 1968. Most of its congeners were rarely collected and, to date, only a single large sample (160 specimens) is available for V. kovaci Kodada & Čiampor, 2000 mainly from the small, shallow river Sabalangang flowing through a primary forest in southern Sabah (Malaysia). Collecting Vietelmis species in their actual aquatic habitats is difficult, as they are small, slowly moving and mainly confined to gravel substrate near the middle of the riverbeds that are usually not easily accessible during higher water levels. Examination of the fauna associated with gravel in the tributary of the Nam Song River revealed a single specimen of an additional new Vietelmis species. Few years later, a conspecific specimen was collected from the Yakruae Creek in Nam Nao National Park, Thailand.

To date six Vietelmis species are known, the type species V. brevicornis is rather widely distributed and has been reported from Vietnam and Laos. The five remaining species were described by Kodada & Čiampor (2000): V. sinensis from China (Guangxi, Hainan, Hunan), V. kovaci from western Malaysia (Johor), V. dentipes, V. ketua and V. lantiri from east Malaysia (Sabah, Sarawak). Surprisingly, the genus is not yet found in the adjacent Palawan complex of islands in the Philippines, despite of intense collection efforts (Freitag et al. 2016).

Characters distinguishing Vietelmis species are easily observable in male specimens and include: the body form, the length of carinae of prebasal pronotal gibbosities, the grade of elevation of elytral interstices, the form of elytral apices, the form and setation of parameres, the shape of penis, projections of the metatibiae and projections
on the metaventrites. Females lack the obvious characters of sexual dimorphism such as the projections on metatibiae and metaventrites. On the other hand, they are usually longer and wider than the respective males with shallowly depressed metaventrites and rounded apex of the fifth ventrites.

Material and methods

The material examined is deposited in the following collections: **CFD:** Collection of Hendrik Freitag, Dresden, Germany; **CKB:** Collection of Ján Kodada, Bratislava, Slovakia; **KKU:** Collection of Department of Biology, Faculty of Science, Khon Kaen University, Thailand; **NMW:** Naturhistorisches Museum, Wien, Austria.

Specimens examined were relaxed in warm water with several drops of acetic acid, cleaned from dirt and then disarticulated. The genitalia were cleared in cold lactic acid for several days and then washed in distilled water. The terminalia were studied under a Leica DM1000 microscope as temporary glycerol slides at magnifications up to 630×. Dry specimens were examined with a Leica M 205 microscope with diffuse lighting at magnifications up to 160×. All drawings were made with a Leica drawing device. Metric characters were measured with a Leica stereo M 205 C microscope equipped with an ocular measuring scale (5 mm: 100).

Photographs were taken under a Zeiss Axio Zoom V 16 microscope using diffuse LED lighting at magnifications up to 160×, with Canon 5D Mark II attached to the microscope. Images were captured at various focus planes and subsequently stacked using the Zerene Stacker software.

The terminology of morphological characters follows Kodada & Jäch (2005) and Kodada et al. (2016).

The following abbreviations for measured characters are used: **APW:** anterior pronotal width; **BL:** body length, length of pronotum and elytra measured along the body midline; **EL:** elytral length, length along suture from the anterior margin of elytra to the most posterior tip of elytra; **EW:** elytral width, maximum width combined; **MPW:** maximum pronotal width; **PPW:** posterior pronotal width; **PL:** pronotal length along the midline.

Taxonomy

**Vietelmis Delève, 1968**

*Type species:* *Vietelmis brevicornis* Delève, 1968

**Vietelmis jablonskii** sp.nov.

(Figs 1, 2, 7, 11, 17–19)

**Type locality** (Fig. 1). Stream ca. 6 m wide, shallow, meandering, with gravel in the stream beds; tributary of the Nam Song river near Nassom village, ca. 10 km from Vang Vieng village, 18°56'13''N, 102°21'50''E, 272 m a.s.l., Luang Prabang Province, Laos.

**Material examined.** Holotype ♂ (NMW): “Tributary of the Nam Song river near Nassom village, ca. 10 km from Vang Vieng village, 18°56’13’’ N 102°21’50’’E 272 m a.s.l., Luang Prabang Province, Laos, 18. 11. 2011”.

Paratype 1 ♂ (KKU): “Yakruae Creek, a second-order stream in Nam Nao National Park, ca. 50 m from the Visitors’ Center, 16°44’20’’N 101°34’26’’ E, 840 m a.s.l., Phetchabun Province, Thailand, 16. 12. 2013”.

**Diagnosis.** *V. jablonskii* sp. nov. is a moderately large species with: densely and finely punctate to nearly reticulate pronotum, moderately raised pronotal gibbosities, long carinae of sublateral pronotal gibbosities extending along posterior 0.55 of pronotal length, slightly raised and granulate elytral intervals 5, 7 and 8. The new species most resembles *V. brevicornis* and *V. kovaci* Kodada & Čiampor, 2000 in the general appearance (Figs 8, 9).

Within the genus, *V. jablonskii* sp.nov. is characterised by the following features: (1) parameres very strongly narrowed in apical third, acuminate, with long and conspicuous setae; (2) penis strongly and abruptly narrowed apically with tip acuminate; (3) metatibia with strong tibial spur; (4) claws of forelegs short, one quarter as long as terminal tarsomere.

**Description of holotype.** Habitus (Fig. 7). Body elongate, 2.31 times as long as wide (BL/EW). Length (BL): 1.76 mm, width (EW): 0.76 mm. Coloration brown with pronotum slightly darker, femora and tibiae paler, cranium nearly black, antennae and tarsi reddish-brown.
FIGURES 1–6. Localities of *Vietelmis* species: 1) the type locality of *Vietelmis jablonskii* sp.nov.: tributary of the Nam Song river near Nassom village, Luang Prabang Province, Laos; 2) the second locality of *V. jablonskii*: Yakruae Creek in the Nam Nao National Park, Phetchabun Province, Thailand; 3) habitat of *V. kovaci*: the Endau River in Endau-Rompin Park, Johor, Malaysia; 4) the type locality of *V. lantiri*, *V. dentipes* and *V. ketua*: the Sabalangang River, tributary of the Sapulut River, Sabah, Malaysia; 5) a rather atypical habitat of *V. ketua* and *V. dentipes*: a rivulet near Batu Punggul Resort in dense primary forest, Sabah, Malaysia; 6) an another habitat of *V. ketua*: a shaded stream in primary forest, tributary of the Kuant River near Kampung Pisang Pisang, Sabah, Malaysia.

Head. Clypeus about 3.1 times as wide as long; anterior margin feebly convex; surface reticulate and granulate, with short setae; granules distinctly smaller than facets, irregularly spaced. Frontoclypeal suture hardly discernible. Frons moderately declined, with plastron and granules; granules about one quarter as coarse as a facet size, smaller anteriorly than posteriorly, nearly regularly spaced. Antennal insertions separated by distance nearly equal to width of labrum. Eyes large, moderately protuberant, separated by a distance of 0.20 mm, nearly round in lateral view.
**Thorax.** Pronotum (Fig. 11) slightly wider than long (MPW/PL: 1.18), broadest across posterior 0.4; lateral margins indistinctly crenate and very narrowly explanate; lateral sides slightly arcuate in posterior 0.4, more strongly arcuate in anterior 0.6; anterior margin sinuate; anterior angles slightly produced anteriad; anterolateral portion declined. Median sulcus deep and long, beginning at anterior fifth of pronotal length and reaching posterior margin, with bottom very densely and finely punctate. Sublateral gibbosities slightly convex, each with a distinct longitudinal carina beginning slightly before middle of pronotum; pronotal surface densely, finely punctate to nearly reticulate except for small sparsely punctate anterior and posterior areas; APW: 0.39 mm; PPW: 0.58 mm; MPW: 0.60 mm; PL: 0.51 mm. Anterior portion of prosternum at midline as long as prosternal process, finely punctate and nearly wrinkled medially; prosternal process longer than wide, nearly triangular, densely punctate/microreticulate, anterior portion raised at middle. Metaventrite ca. 1.4 times as long as length of pronotum in front of coxae; disc depressed, surface microreticulate, with a few shallow coarse punctures; discrimen slightly raised; transverse groove absent; metaventral process wide, strongly raised and microreticulate on sides, smooth and declined on median portion. Scutellum flat, subtriangular, longer than wide; surface scarcely punctate, shiny. Elytra subparallel between anterior 0.10 and 0.65, then gradually convergent posteriorly; 1.65 times as long as wide, 2.45 times as long as pronotum; sides serrate, teeth smaller anteriorly and posteriorly; elytral apices nearly meeting at suture, but not conjoinedly rounded; elytra moderately convex in lateral view, with highest point at 0.55; EL: 1.26 mm, EW: 0.76 mm. Elytron with eight rows of punctures; punctures round, coarse and deeply impressed anteriorly, smaller and shallower posteriorly; rows 1–3 with coarse punctures along anterior 0.4, row 4 along anterior 0.6, row 5 and 6 along anterior 0.7, row 7 and 8 around 0.5. Intervals wider than rows; intervals 5, 7 and 8 slightly raised and granulate; granules closely arranged, interval 8 with granules smaller and more widely spaced than those on the preceding intervals; surface of remaining intervals punctate, punctures fine, sparse and setigerous, interstices smooth. Protibia moderately longer than pronotum, thickened close to distal portion, almost straight, mesal face with fringe of yellowish setae along distal 0.7. Mesotibia straight, distinctly longer than pronotum, mesal face with fringe of yellowish setae along distal 0.7. Metatibia moderately longer than mesotibia, widest near middle, curved at distal portion, with long distal spur; mesial surface with numerous small denticles at distal third. Tarsi slightly shorter than tibiae, tarsomeres 5 shorter than combined length of preceding segments; claws of foreleg short, one quarter as long as terminal tarsomere, moderately curved, other claws ca. 0.4 times as long as terminal tarsomere.

**Abdomen.** Ventrites with plastron and very small scattered granules; median portion of ventrite 1 without plastron, finely and very sparsely punctate, shiny; admedian carinae moderately raised, reaching posterior margin of ventrite; posterior angles of ventrite 2 slightly produced posterolaterad; lateral portion of ventrites 3 and 4 distinctly projecting posterolaterad; ventrite 5 granulate on sides, apex truncate; posteromesal keel of ventrite 5 raised, short and with numerous granules.

Aedeagus (Fig. 17). Length 0.84 mm, phallobase 0.35 mm long, cylindrical. Penis very strongly narrowed apically with apex narrow, acuminate, apical portion not curved ventrally. Parameres nearly reaching tip of penis, 1.54 times as long as phallobe; strongly narrowed in apical 0.4, with numerous long setae on apical 0.3, separated along distal 0.6, flattened on apical portion; apices acuminate, feebly curved ventrally. Membranous ventral sac developed in distal half of penis. Male sternite VIII (Fig. 18) with a few long setae near posterior margin, median strut 0.37 mm long; pregynatal segments (Fig 19) with posterior portion of sternite IX 1.98 times as long as anterior median strut.

**Etymology.** The species is named according to Daniel Jablonski from the Department of Zoology, Comenius University in Bratislava. Daniel is an excellent herpetologist, photographer, great explorer and adventurist travelling across the world.

**Variability.** The paratype of the new species varies slightly from the holotype in the following characters: 1) generally black colour (probably an older specimen) with dark brown femora and tibiae, antennae and tarsi reddish-brown; 2) body and elytra slightly larger: BL: 1.91 mm, EL: 1.35 mm; 3) elytral apices not meeting at suture; 4) punctures of elytral rows 1–5 moderately larger; 5) punctures on pronotal surface less densely arranged, so the surface appears to be more shiny. Due to the overwhelming similarity in all other characters examined, and almost to the exact match of their aedeagus: both specimens show the same unusual shape and proportions of the aedeagus with conspicuous and exceptional setation of the parameres, we consider the two specimens conspecific. This is also supported by the relatively short distance of ca. 280 km between the two collection sites, which are both tributaries of the Mekong River system.
FIGURES 7–10. Habitus of: 7) *Vietelmis jablonskii* sp. nov., holotype ♂, BL: 1.76 mm; 8) *V. brevicornis*, ♂, BL: 1.80 mm; 9) *V. kovaci*, ♂, BL: 1.74 mm; 10) *V. dentipes*, paratype ♂, BL: 1.64 mm.
FIGURES 15–16. Habitus of: 15) Vietelmis lantiri, paratype ♂, BL: 1.54 mm; 16) V. ketua, paratype ♂, BL: 1.47 mm.

FIGURES 17–19. Vietelmis jablonskii sp. nov., holotype: 17) aedeagus, ventral view; 18) ♂ sternite VIII; 19) ♂ pregenital segments. Scale bars 0.1 mm.
**Habitat.** The holotype was collected in a shallow, meandering tributary stream of the Nam Song River near Nassom village (Fig. 1); sampling was performed in gravel substrate. The paratype specimen from Thailand was collected from the Yakruae Creek (Fig. 2), a second-order unpolluted and shaded stream, ca. 3–5 m wide, and surrounded by secondary forest. Yakruae Creek has a heterogeneous channel morphology with cobble and gravel deposits, blank bedrock, as well as decaying leaf litter deposits. In general it flows only moderately fast, with slow pool sections, interrupted by riffles and run sections with distinctly higher current velocity. The specimen was retrieved from bottom gravel in a run section ca. 50 m from the Visitor’s Center of Nam Nao National Park.

**Collecting remarks.** In Thailand, *Vietelmis jublonskii* sp. nov. was collected by using a D-frame dip net to sample the gravel sediments described above (for details on the collection method, see Freitag 2015). Although samples were collected monthly, only a single male specimen was found. The species obviously occurs in low densities and is probably rare.

**Distribution.** So far known only from two localities, one in Laos and one in Thailand.

**Identification key to *Vietelmis* males**

1. Metatibia with distinct tibial spur, projection or tooth (Figs 7, 10, 16) ................................................................. 2
2. Metatibia without any distinct tibial spur, projection or tooth (Figs 8, 9, 15) ................................................................. 4

1. Metatibia without tooth-like projection at distal portion, apex with single or more spurs or projections ............................. 3
2. Metatibia at distal quarter with tooth-like projection bearing a row of spine-like setae (Fig. 10) ........................................ 4

Moderately large *Vietelmis* species (♂♂ 1.70–1.84 mm, ♀♀ 1.76–1.86 mm) is characterised by: eyes with ca. 85 facets; sublateral pronotal carinae confined to ca. posterior third of pronotal length; most of pronotal surface densely punctate/reticulate (Fig. 13); male metatibia with tooth-like projection bearing row of spine-like setae; parameres ca. 2.33 times as long as phallobase, not reaching tip of penis, with short setae apically; penis moderately narrowed in apical portion with sides nearly straight; tip of penis broadly rounded and curved ventrally. *Vietelmis dentipes* has been so far collected in five lowland streams and small rivers of Sabah (Figs 4, 5). [For more details see Kodada & Čiampor 2000]

3. Metatibia with distinct large spur (Fig. 7), parameres narrow, apices prolonged and acute with numerous long lateral setae (Fig. 17), metaventrite without a pair of sublateral projections ................................................................. *V. jublonskii* sp. nov. [Habitus Fig. 7]
4. Metatibia without distinct spur, but with distal projections bearing spine-like setae, parameres wide, apices acute, lateral setae short, metaventrite with a pair of sublateral projections .......... *V. ketua* Kodada & Čiampor, 2000 [Habitus Fig. 16]

The smallest *Vietelmis* species (♂♂ 1.47–1.66 mm, ♀♀ 1.63–1.75 mm) is characterised by: eyes with ca. 100 facets; sublateral pronotal carinae very short and confined to posterior quarter of pronotal length; most of pronotal surface densely punctate/reticulate; male metatibia with a pair of sublateral projections; male metatibia with distal projections bearing spine-like setae; parameres ca. 2.33 times as long as phallobase, not reaching tip of penis, apically with numerous moderately long setae; penis strongly narrowed in apical portion, tip of penis narrowly rounded and curved ventrally. *Vietelmis ketua* represents the most widespread *Vietelmis* of northern Borneo; it has been collected in eleven lowland streams and small rivers of Sabah and Sarawak (Figs 4–6). [For more details see Kodada & Čiampor 2000]

5. Pronotum with longitudinal carina of prebasal gibbosities short, confined to posterior third only; third elytral interval raised anteriorly, with at least a few granules ................................................................. *V. lantiri* Kodada & Čiampor, 2000 [Habitus Fig. 15]

One of the smallest *Vietelmis* species (♂♂ 1.54–1.56 mm, ♀♀ 1.66–1.72 mm) is characterised by: eyes small with ca. 50 facets; disc of pronotum with puncture interstices smooth on anterior third to half (Fig. 14); anterior angles of pronotum not or indistinctly produced; each elytral apex posteriorly forms a tooth larger than surroundings teeth; parameres ca. 1.75 times as long as phallobase; penis gradually narrowed apically, apex with arcuate sides. *Vietelmis lantiri* has been so far collected in the Sabalangang River in south-western Sabah (Fig. 4). [For more details see Kodada & Čiampor 2000]

6. Parameres very narrow and acuminate apically, reaching tip of penis ................................................................. *V. sinensis* Kodada & Čiampor, 2000

The largest *Vietelmis* species (♂♂ 1.91–2.00 mm, ♀♀ 1.88–1.94 mm) is characterised by: eyes with ca. 80 facets; sublateral pronotal carinae present along posterior half of pronotal length; most of pronotal surface finely punctate with interstices smooth, shiny, reticulation confined to posterior angles and small area anterolaterally of prebasal gibbosities; male metatibia
without any teeth-like projection/spurs; parameres ca. 1.9 times as long as phallobase, reaching tip of penis, apically without setae, apices acuminate and flattened, feebly curved ventrally; penis progressively narrowed apically with sides slightly arcuate, tip of penis acuminate and slightly curved ventrally. Vietelmis sinensis was so far collected in three localities in SW Hunan, Guangxi and Hainan in China. [For more details see Jäch & Ji 1998; Kodada & Čiampor 2000]

- Parameres wider, not narrowly acuminate apically, not reaching tip of penis .............................................................. 6

6 Granulate elytral intervals 5, 7 and 8 feebly raised (Fig. 8); apex of penis abruptly narrowed, tip acute, parameres ca. 1.9 times as long as phallobase, apices with strongly arcuate outer side and moderately arcuate inner side. .............................................................. V. brevicornis Delève, 1968 [Habitus Fig. 8]

Moderately large Vietelmis species (♂♂ 1.69–1.84 mm, ♀♀ 1.72–1.88 mm) is characterised by: eyes with ca. 120 facets; sublateral pronotal carinae present along posterior half of pronotal length; major part of pronotal surface densely punctate/reticulate, appears matt; pronotal sulcus moderately deep and distinct; pronotal gibbosities moderately raised; male metatibia without any teeth-like projection/spurs; elytral intervals 5, 7 and 8 feebly raised; parameres ca. 1.9 times as long as phallobase, nearly reaching tip of penis, apically with a few short setae; apices acuminate and flattened with outer sides strongly arcuate and inner side moderately arcuate; penis abruptly narrowed apically with sides feebly sinuate, tip of penis nearly acuminate and not bent ventrally. Vietelmis brevicornis has been recorded in several localities from Vietnam and Laos. [For more details see Kodada & Čiampor 2000]

- Granulate elytral intervals 5, 7 and 8 strongly raised (Fig. 9); apex of penis gradually narrowed, tip rounded, parameres ca. 2.1 times as long as phallobase, apices with outer side slightly arcuate and inner side nearly straight. .............................................................. V. kovaci Kodada & Čiampor, 2000 [Habitus Fig. 9]

Moderately large Vietelmis species (♂♂ 1.62–1.76mm, ♀♀ 1.62–1.78 mm) is characterised by: eyes with ca. 100 facets; sublateral pronotal carinae present along posterior half of pronotal length; pronotal surface densely punctate/reticulate in posterolateral portion and on areas in front of admedian prebasal gibbosities, remaining surface usually sparsely and finely punctate with interstices shiny (Fig. 12); pronotal sulcus deep and very distinct; pronotal gibbosities strongly raised, very distinct; male metatibia without any teeth-like projection/spurs; elytra with strongly raised and granulate intervals 5, 7 and 8; elytra strongly convex dorsally near middle; parameres ca. 2.1 times as long as phallobase, not reaching tip of penis, apically with short setae; apices acuminate and flattened, inner side nearly straight outer side moderately arcuate; penis gradually narrowed apically with sides feebly sinuate apically, tip of penis rounded and slightly bent ventrally. Vietelmis kovaci has been recorded from three localities in Pahang and Johor (Malaysia). [For more detail see: Kodada & Čiampor 2000]

New faunistic records

Vietelmis kovaci Kodada & Čiampor, 2000

MALAYSIA: Johor: 17 ♂♂, 33 ♀♀, 9 specimens, sex not examined (CFD, CKB, NMW): Endau Rompin Park, Endau river, 18.V.2001, riv. 15–30 m wide, 0.5–3.0 m deep, partly shaded by the primary forest, substrate stones and gravel.

The specimens listed, represent first faunistic records for Pahang and a second record for Johor; until now the species was known only from two type specimens from Endau Rompin Park.

Remarks on the additional distribution records. At the collecting site in the Tabpong River, the watercourse was ca. 5–10 m wide and ca. 0.5–1.0 m deep, meandering along remnants of the primary forest, the riverine bottom was covered with stones and gravel; the single male specimen was collected from gravel substrate. Some species of Stenelmis Dufour, 1835 and Grouvellinus Champion, 1923 were collected together with V. kovaci. In the same river section, the following taxa were recorded on several trunks of wood: Ancyronyx acaroides Grouvelle, 1896, Graphelmis anulata Čiampor, 2006, G. hintoni Čiampor, 2006, G. grouvellei Delève, 1970 and several species of Elmomorphus Sharp, 1888 (Čiampor 2006).

The single male specimen from Kenong Rimba Park was found in the Kesong River. At the sampling section, the river was 7–10 m wide, 0.3–0.9 m deep, slowly flowing through the primary forest with substrate containing sand, gravel, submerged wood and dense macrophytes. Okalia globosa Kodada & Čiampor, 2003, two Leptelmis Sharp, 1888 spp., Graphelmis boukali Čiampor, 2004 and at least two Elmomorphus spp. co-occurred at the locality (Čiampor 2004, Kodada & Čiampor 2003).
Most specimens of *V. kovaci* were sampled in the large Endau River with strong current, flowing through the Endau Rompin Park (Fig. 3).

**Acknowledgement**

Thanks are due to Peter Vďačný and Fedor Čiampor Jr. from Bratislava as well to Cincia Monte from Firenze for their comments. Peter Letovanec from Carl Zeiss in Bratislava assisted at the first use of the Axio Zoom V16 microscope and helped to optimise our workflow. This work was supported by the Slovak Research and Development Agency under the contract APVV-15-0147 and partly by the Slovak Scientific Grant Agency VEGA Project No. 2/0101/16.

A workshop organized by the Department of Biology, Khon Kaen University, as part of the SEABIO Project (A SE Asian—EU Scientific Consortium for Interdisciplinary Biodiversity Research) funded by the National Science & Technology Cooperation Agency (NSTDA) of Thailand, the Philippine Department of Science and Technology (DOST), and other national funding agencies of participating countries gave some authors the opportunity to study the paratype specimen in detail. The third author’s studies were supported by a Science Achievement Scholarship of Thailand. She also wants to thank the Department of National Parks, Wildlife and Plant Conservation for permitting the sampling in the Nam Nao National Park.

**References**


