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## Beetles World

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ਨੂੰ of *Hexarthrius fiedleri* from Sumatra

### Remarks on the genus Falcicornis (Coleoptera, Lucanidae)

### Klaus-Dirk Schenk & Luca Bartolozzi

### **Abstract**

The new taxa Falcicornis innae, Falcicornis sophiae, Falcicornis giselae laoticus and Falcicornis elsiledis ngoclinensis are described and figured. A large and medium sized F. zhongi of black colour are figured. Hemisodorcus rufonotatus is confirmed as synonym of Falcicornis bisignatus.

### **Key words**

Coleoptera, Lucanidae, Falcicornis innae, Falcicornis sophiae, Falcicornis giselae laoticus, Falcicornis elsiledis, Hemisodorcus rufonotatus, Falcicornis bisignatus, Laos, Vietnam

### Introduction

Huang & Chen (2013, page 78) redefined the genus *Falcicornis* Planet, 1894, transferring several species from the genera *Hemisodorcus*, *Macrodorcas* and *Dorcus* into the newly defined genus *Falcicornis* sensu Huang & Chen. This taxonomic change was mainly evidenced by similarities in the genitalia. They also stated "*It is a problem that we did not examine Falcicornis groulti*".

To avoid adding more problems to the already existing numerous confusions in the classification of Lucanidae we provisionally follow this new definition for the time being, although we still have some doubts about the validity of this change in taxonomy.

### Falcicornis zhongi Xin et Qi, 2024

F. zhongi was described based on three large males that do not differ in habitus (Xin et al., 2024). Fig. 1 shows a large male and a smaller male identified by us as F. zhongi. The smaller 3 differ significantly in mandibular shape. However, we believe that both males are F. zhongi, as the two specimens differ only in the mandible form which is usual among different sized lucanids of the same species. Furthermore, both males come from the type locality of F. zhongi.

Both males differ from the holotype of *F. zhongi* (also figured in Fig. 1) in the black color of the body and legs, the slightly narrower clypeus and the less strongly developed terminal fork of the mandible tip of the large male. In order to decide whether the shown specimens may be another new species, the examination of further specimens of *F. zhongi* is necessary.

The female of *F. zhongi* is still unknown.



Fig 1.: *Falcicornis zhongi* ♂ 29,3 mm and 25,0 mm, Vietnam, Hà Giang Province, Vi Xuyen and ♂ holotype 29,2 mm from Vietnam, Hà Giang Province, Vị Xuyên County, Tay Con Linh Mountain (adapted from the original publication, 3 x)

Falcicornis innae spec. nov.

**Holotype.** ♂, North Vietnam, Lan Song Province, Huu Lung District, Huu Lien Nature Reserve, 195 m, 21°39`33``N, 106°21`54``, E. Orbach leg, 1.VI.2022, in coll. Natural History Museum, University of Florence, Italy.

**Paratype.** 1 ♂, 1 ♀, same location, 31.V.2022, E. Orbach leg, in coll. K.-D. Schenk, Wehretal, Germany.

**Etymology.** The species name is dedicated to Ms. Inna Pukhkalo, wife of the second author, for her passion and tireless enthusiasm in collecting beetles in the forests of Vietnam.

### **Description and diagnosis**

**Holotype** (Fig. 2), ♂, total length 35,2 mm, mandibles length 11,6 mm, prothorax width 10,9 mm, elytra length 13,5 mm, elytra width 9,6 mm.

Body black, shining. mandibles and elytra very dark reddish brown. Head about two times as broad as long, surface very finely granulated. Anterior margin bisinuate, clypeus transverse with acute lateral angles. Canthi small, dividing half of the eyes. Mandibles long, longer than head and prothorax together, gently incurved at base, than straight and strongly incurved at apex. In lateral view first slightly upturned; downturned in apical part. Close to base a very small and slightly bifurcate tooth followed at anterior 1/3 by a strong acute inner tooth and another shorter inner tooth. Apex strongly bend inside and bifurcate. The anterior tooth of the apex acute, the posterior tooth directed slightly backward and the tip rounded. Antennal club with three lamellate antennomeres; antennomere 7 triangular. Pronotum about two times as wide as long, margins convex, contracting to the round median angles, then nearly straight to the posterior angles. Surface smooth, like on head. Elytra elongate, less wide than the pronotum. Surface smooth, covered with tiny punctures, very shining in the middle, less shining towards the margins. Protibia serrated along outer margins, with five larger acute teeth; apex bifurcate. Meso- and metatibia without any denticle at outer margin.

Male paratype small, total length 24,5 mm. Mandibles shorter with a simple acute apex. Female paratype, total length 20,9 mm. Black and shining, elytra in centre smooth and very shining, rugose near margins and apex.

Falcicornis innae spec. nov. is close to Falcicornis neolucanoides Huang et Chen, 2013 but can be distinguished easily by the quite different form of the mandibles and the clypeus, the structure of the body surface and the color of mandibles and elytra.

Records of *F. neolucanoides* from Vietnam (see Yi, 2013 plate 26, fig. 402-1) are doubtful and probably a misidentification of *F. zhongi* (Xin, Zang et Qi, 2024). *F. innae* spec. nov. cannot be confused with *F. zhongi* and with the recently described species *F. wangjini* Wang et He, 2024.



Fig. 2: *Falcicornis innae* spec. nov. ♂ holotype (35,2 mm), ♂ paratype (24,5 mm) and ♀ paratype (20,9 mm) from Vietnam, Lan Song Province, Huu Lien Nature reserve (3 x).

### Falcicornis sophiae spec. nov.

**Holotype.** ♂, North Vietnam, Ha Giang Province, Vi Xuyen, VI.2023, in coll. K.-D. Schenk, Wehretal, Germany.

**Etymology.** The name is dedicated to Sophia Helena Niedorf, a granddaughter of the first author.

### **Description and diagnosis**

**Holotype** (Fig. 3), ♂, total length 25,4 mm, mandibles length 5,5 mm, prothorax width 8,1 mm, elytra length 10,9 mm, elytra width 7,7 mm.

Body blackish brown, moderately shining. Head transverse, surface very finely punctured. Clypeus well developed, front margin nearly straight. Canthi very small, dividing only 1/4 of the eyes. Mandibles moderately long, outside almost straight then abruptly bent inwards. The tip is truncated and not forked. The insides of the mandibles have a tiny hump right at the base, then a small tooth that continues in a cutting-edge shape until just before the tip; then follows a rounded, clearly defined step. The antennal club is formed by three lamellate antennomeres. Pronotum with convex margins, surface finely punctured like on head.

Elytra elongate, less wide than the prothorax. Surface of the elytra at suture and base finely punctured, otherwise granulated, opaque and moderately shining near suture. The front tibiae inside with a tuft of hair at the tip, outside saw-shaped with 5-7 stronger teeth. Middle and hind tibiae with a tiny spur on the outside, lined with yellow-brown hair on the inside.

*F. sophiae* spec. nov. cannot be confused with any other species of the genus. It differs from a small *F. zhongi* which is from the same area of Vietnam mainly by color and the totally different form of mandibles.

The  $\mathcal{L}$  of *F. sophiae* spec. nov. is unknown.



Fig. 3: *Falcicornis sophiae* spec. nov. ♂ holotype (25,4 mm) from North Vietnam, Hagiang Province, Vi Xuyen, dorsal and ventral (3 x).

### Falcicornis giselae laoticus. sspec. nov.

**Holotype.** ♂, Laos, Houa Phan Province, near Phon Xai, Mt. Pan (Phu Phan), 2060m, VI.2013, in coll. K.-D. Schenk, Wehretal, Germany.

**Paratypes.** 5 ♂, 1 ♀, same location, VI. 2011, in coll. K.-D. Schenk, Wehretal, Germany.

**Etymology.** The name refers to the country of origin, Laos.

### **Description and diagnosis**

Falcicornis giselae (Bomans, 1991) was described as a distinct species but later downgraded to a subspecies of *F. bisignatus* (Baba, 2005). Huang et Chen (2013) classified *F. giselae* as a subspecies of *F. rufonotatus*. *F. giselae* is known so far from northern Thailand (type locality) and China (Yunnan), but not from Laos. *F. rufonotatus giselae* is reported from N Vietnam. We follow Bomans (1991), who described *F. giselae* as a distinct species.

*F. giselae* is characterized by the black elytra with a curvilinear yellowish-brown streak at apex and black femora. The elytra are very shining in the middle and opaquer at lateral sites.

In this study we carefully compared the specimens from Laos with 9  $\circlearrowleft$  and 6  $\circlearrowleft$  from northern Thailand and 16  $\circlearrowleft$  and 6  $\hookrightarrow$  from northern Vietnam (Yen Bai Province and Vinh Phuc Province) and have decided to name the specimens from Laos as *F. giselae laoticus* sspec. nov..

**Holotype** (Fig. 4), ♂, total length 35,8 mm, mandibles length 9,9 mm, prothorax width 11,2 mm, elytra length 15,7 mm, elytra width 10,8 mm.

*F. giselae laoticus* sspec. nov. is very similar to the nominal form but with the following external differences:

- Body size of *F. giselae laoticus* slightly smaller than that *of F. giselae giselae* from Thailand.
- The inner serrate lamina at apical ¼ of mandibles slightly shorter.
- The curvilinear yellowish-brown streak on elytra stronger and longer, reaching approximately half of the elytra length.

In his book *Lucanidae of the World*, Yi shows a small pair of *F. giselae laoticus* sspec. nov from Mt. Phou Pane, northeastern Laos, with the stronger and longer yellow-brown stripes on the elytra (Yi, 2023, plate 26, figs. 400b-3 and 400b-4).

It should also be noted that in recent publications (Huang et Chen, 2013, Yi, 2023) the name *F. rufonotatus giselae* is used for *F. giselae*. *Hemisodorcus rufonotatus* Pouillaude, 1913 was described on a single male from Tonkin (= North Vietnam) and compared with *Cladognathus fulvonotatus* Parry, 1862 (now *F. fulvonotatus*). The description is as follows (translated from Latin) "*Black*, elytra shiny, apex tawny-spotted; mandibles forked at apex, toothed: anteriorly apical lacinia denticulate emarginate; pronotum narrowed anteriorly. Underside black, femora tawny in the middle".

However, Bomans (1991) already considered *H. rufonotatus* as synonym of *F. bisignatus*.

We examined 58  $\circlearrowleft$  and 18  $\circlearrowleft$  specimens with an orange-brown apical spot at the tips of the black shiny elytra collected at different location in North Vietnam. All these specimens were completely black on the underside and had no femora with an orange-brown middle part.

Therefore, we agree with Bomans (1991) and confirm that *Hemisodorcus. rufonotatus* is a synonym of *F. bisignatus*.



Fig. 4: *Falcicornis giselae laoticus* sspec. nov. ♂ holotype (35,8 mm), ♂ paratype (29,1 mm) and ♀ paratype (21,5 mm) from Laos, Houa Phan Province, near Phon Xai, Mt. Phu Phan, 2060m and for comparison: *Falcicornis giselae giselae*. ♂ (33,1 mm) from Thailand, Chiang Mai Province, Fang (2 x)

### Falcicornis elsiledis ngoclinensis sspec. nov.

Fig. 5: *Falcicornis elsiledis ngoclinensis* sspec. nov. ♂ holotype (38,7 mm) from South Vietnam, Kon Tum Prov., Mt. Ngoc Linh, dorsal and ventral (2 x)

**Holotype.**  $\circlearrowleft$ , South Vietnam, Khon Tum Prov., Mt. Ngoc Linh, 1900 m, V. 2015, Dong leg., in coll. K.-D. Schenk, Wehretal, Germany.

**Paratypes.** 2 ♂, South Vietnam, Khon Tum Prov., Mt. Ngoc Linh, III. 2022, local collector, in coll. K.-D. Schenk, Wehretal, Germany.

**Etymology.** The name refers to the highest mountain in South Vietnam, Mt. Ngoc Linh.

### **Description and diagnosis**

**Holotype** (Fig. 5), ♂, total length 38,7 mm, mandibles length 10,9 mm, prothorax width 12,8 mm, elytra length 16,2 mm, elytra width 11,2 mm. The size of the paratypes is 31,2 and 33,1 mm.

We compared F. elsiledis ngoclinensis sspec. nov. with 23  $\circlearrowleft$  and 6  $\circlearrowleft$  specimens of F. elsiledis elsiledis from North Vietnam with completely black elytra and reddish orange femora.

*F. ngoclinensis* spec. nov. differs from the population from North Vietnam by the following external morphological characters:

- · Larger body size.
- Front corners of the head less pronounced.
- Femora ventrally orange-brown in the middle area and dorsally orange-brown near base. Elytra duller, less shiny.
- Elytra black with a faintly recognizable narrow curvilinear dark reddish-brown stripe that continues to the base of the elytra (elytra of *F. elsiledis elsiledis* all over dark reddish brown).

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# Contribution to the *Lucanidae* fauna of Laos and Vietnam with description of *Neolucanus fusilungensis* (*Coleoptera, Lucanidae*)

### Klaus-Dirk Schenk

### **Abstract**

The new species *Neolucanus fusilungensis* is described and figured. *Lucanus puchneri* is recorded first time for Vietnam. *Odontolabis paulei* is raised to the species level.

### **Key words**

Coleoptera, Lucanidae, Neolucanus fusilungensis, Lucanus puchneri, Odontolabis paulei, Odontolabis mouhoti, Laos, Vietnam

### Introduction

Vietnam and Laos are hotspots for diversity of flora and fauna. The family *Lucanidae* is well represented in both countries. Despite decades of research and investigation still new taxa can be discovered. Now some interesting new *Lucanidae* specimens could be collected and are described here

### Neolucanus fusilungensis spec. nov.

**Holotype.** ♂, North Vietnam, Lai Chau Province, Muang Te, Mt. Phu Si Lung, ca. 2000m, V.2025, in coll. K.-D. Schenk, Wehretal, Germany.

**Paratype.** 3 ♂, 1 ♀ same collecting data, in coll. K.-D. Schenk, Wehretal, Germany, 2 ♂, Vietnam, Lai Chau province, VIII.2022, local collectors, in coll. L. Bartolozzi, Firenze, Italy.

**Etymology.** The name refers to the type locality Mt. Phu Si Lung in the northwest of Lai Chau Province, Vietnam.

### **Description and diagnosis**

**Holotype** (Figs. 1 and 2), ♂, total length 33,8 mm, mandibles length 6,8 mm, prothorax width 12,3 mm, elytra length 15,8 mm, elytra width 12,1 mm.

Head, mandibles, prothorax, anterior legs and downside shining black. Middle and hind legs dark reddish brown. Elytra yellowish orange, epipleura dark reddish brown. Scutellum, anterior edge of elytra and suture black. Head transverse, narrower than the prothorax, with concave frontal edge, epistome absent. Anterior lateral angles rounded, the narrow, nearly parallel canthi divide the eyes completely. Cephalic disc flat, with a slight trapezoidal-shaped depression. Surface finely granular, less shining than prothorax. Mandibles elongated, about twice as long as the head, slightly bend upwards.

Outer edges of mandibles first straight than curved towards their tips. Internal contour forming a carina running from the base to a small inwards directed tooth and to a strong upward raised anteapical tooth. The latter forms, with the lower terminal tip a vertical mandibular fork (Fig. 3). The internal contour is armed on the anterior half by three horizontal subconical teeth followed by the tip. The surface of the mandibles is slightly granular, the inner side is very finely punctured, smoother and shinier.

The antennal clubs are formed by the last three articles. Pronotum transverse, clearly extending beyond the head and regularly domed on the disc; anterior edge convex up to the rounded median angle, then concave up to the not spinous posterior angles. The surface of the prothorax is shiny and smooth.

The elytra are elongated; the humeral angles are rounded; the surface is shining. Mesosternum and metasternum are smooth and finely punctuated on the lateral edges. Forelegs strong, tibiae relatively wide, armed with four teeth in addition to the two forked teeth; middle and hind tibiae unarmed.

Total length of the  $\Im$  paratypes: 31,0 - 38 mm.



Fig. 1: **Neolucanus fusilungensis** spec. nov. ♂ holotype, 33,8 mm and ♀ paratype (allotype) 25,9 mm, North Vietnam, Lai Chau Province, Mt. Phu Si Lung (dorsal and ventral view, 2 x)

*Neolucanus fusilungensis* spec. nov. belongs to the *Neolucanus fuscus* species group. It can be separated from the other taxa of this group by the following external morphological characters:

- Body smaller.
- Mandibles much shorter by comparing specimens with similar mandible forms and body size.
- The strong upper anteapical tooth is not acute, more like a lamina.
- The different coloration of the body.

The mandible shape is somewhat similar to *Neolucanus baongocae* Nguyen, 2013 from central Vietnam but the body coloration is completely different.

Fig. 4 shows a smaller paratype of *N. fusilungensis* with little shorter mandibles. This specimen from North Vietnam, Lai Chau Province is stored in the collection of L. Bartolozzi, Italy.

Female (Fig. 1): The  $\ \$ resembles in shape a  $\ \$ 0 of *N. lehmanni* Baba, 1995 from South Myanmar (Tenasserim). Total length 25,9 mm, completely black, moderately shining. Head and mandibles strongly and densely punctured, prothorax less strongly and less densely punctured, elytra rather smooth, slightly wrinkled. Mandibles short, evenly curved on the outside, more blade-shaped on the inside. Canthi rounded in front, abruptly narrowed in the back. Prothorax with two elongated depressions in the posterior lateral region.

Sides of the prothorax convex, elytra oval. Anterior tibia broad with five blunt teeth on the outer side. Middle and posterior tibiae without spines. Mentum semicircular, with grooves and without a tegument.



Fig. 2: *Neolucanus fusilungensis* spec. nov.  $\circlearrowleft$  Holotype, 33,8 mm, North Vietnam, Lai Chau Province, Mt. Phu Si Lung, Prothorax and head



Fig. 3: *Neolucanus fusilungensis* spec. nov. *3* Holotype, 33,8 mm, North Vietnam, Lai Chau Province, Mt. Phu Si Lung, dorsolateral view of head and mandibles

It is likely that *Neolucanus fusilungesis* is also represented in southern Yunnan because Phu Si Lung is a tall mountain on the China-Vietnam border in the northwest of Lai Châu Province.



Fig. 4: *Neolucanus fusilungensis* spec. nov.  $\circlearrowleft$  **Paratype**, 31,1 mm, North Vietnam, Lai Chau Province, VIII.2022, local collectors, in coll. L. Bartolozzi, Firenze, Italy.

### Lucanus puchneri Schenk, 2024



Fig. 5: *Lucanus puchneri* ♂ holotype, 65,6 mm from Laos, Xiang Khouang Province, ♂ 59,8 mm and ♂ 52,8 mm from Vietnam, Dien Bien Province, Muong Cha, 1900m (1,5 x).

**Lucanus puchneri** (Fig. 5) was described on 4 ♂ and 8 ♀ collected in Laos, Xiangkhouang Province, Kong Keo and 3 ♂ Laos, Xiangkhouang Province, Phou Samsoum. Both locations are close to the Ngeh An Province of Vietnam. Therefore, it was assumed that the species also occurs in Vietnam (Schenk, 2024).

Now, the author obtained 3 smaller males from Vietnam, Dien Bien Province, Muong Cha that look exactly like *L. puchneri* and were identified as this species.

The total body size of those smaller specimens are 46,2 and 52,8 and 59,8 mm, the size range of the type series is 55,9 - 66,1 mm This new collected specimens prove that *L. puchneri* occurs in both countrys, Laos and Vietnam.

# Odontolabis paulei Leve, 2019 stat. nov.

Fig. 6: *Odontolabis paulei* ♂ 88, mm from South Vietnam, Lam Dong Province, Di Linh District, VIII. 2014 (left) and *Odontolabis mouhoti paulei* ♂ paratype 74 mm, Vietnam, Lâm Dong, Bao Lôc, Dambri, adapted from Leve (2020) (right) (1,5 x)

Odontolabis paulei was originally described by Leve with a subspecies rank of Odontolabis mouhoti (Parry, 1864) based on a mesodont male specimen, captured in South Vietnam, Bao Lâm locality, Lôc Tân.

Odontolabis mouhoti was described after a single amphiodont male from Cambodia (Fig.7). O. paulei distinguishes from O. mouhoti clearly by the well-defined, V-shaped black pallial spot on the elytra, which does not reach the tip of the elytra, by the strong, truncated inner basal tooth, which is very pronounced in large males and by the bigger size. At O. mouhoti the pallial mark of the elytra is narrower at the base and often narrows to form a continuous thin band on both sides of the sutural line (see Lacroix, 1984, p. 141).

We compared two teleodont specimens of *O. paulei* from South Vietnam, Lam Dong Province, Di Linh District (close to the type locality) with *O. mouhoti* and concluded to consider *O. paulei* as a distinct species, clearly different from *O. mouhoti* (stat. nov.).

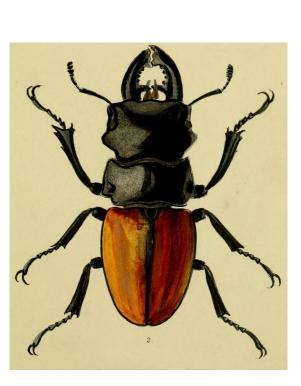




Fig. 7: **Odontolabis mouhoti** coloured drawing from the original publication (left) and Odontolabis mouhoti teleodont ♂, Laos (right) (in collection of A. Kirchner, Neuburg, Germany)

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### Dorcus rubinus sp. nov. (Coleoptera: Lucanidae) from Chayu, SE Tibet

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### **Abstract**

*Dorcus rubinus* sp. nov. is described from Chayu, SE Tibet, with the habitus and genitalia of both sexes illustrated. The status of this new species is supported by a primary molecular analysis of the mtDNA COI gene.

### Keywords

Dorcus, new species, China

### Introduction

Within the *Dorcus nepalensis* group (sensu Huang & Chen, 2013), *D. sinensis* (Boileau, 1899) and its closest allies constitute a small complex, characterized by the truncated or bifurcated major tooth of the mandible in the male, which may at best be called the *D. sinensis* complex hereafter. Huang & Chen (2013) based their classification mainly on genitalia, not adopting Fujita's (2010) opinion that placed *D. kentai* Tsukawaki, 1999 as a separate species from *D. sinensis*. A further species was added by the authors (Huang et al., 2020) from Motuo, SE Tibet after Huang & Chen's (2013) revision, which is well supported by a peculiar combination of male and female genitalic characters. A small series of specimens was collected mainly by the third author from Chayu, SE Tibet and was sent to the first author for study. A primary examination of morphological characteristics revealed that this population exhibits a mixture of characters from the previously known *D. sinensis* and *D. wui* Huang & Chen, 2013, with the male pronotum similar to that of *D. wui* and with both male and female genitalia exactly as in *D. sinensis*.

Because of the lack of significant genitalic differences, a further study using molecular data became necessary, and this work was carried out by a friend of the authors, Dr. Shu-Ping Wu (Taiwan). The mtDNA gene tree (Fig. 9) reconstructed by the ML method using IQ-TREE based on a COI fragment reveals that *D. kentai* Tsukawaki, 1999 **stat. rev.** is widely separated from the clades of *D. sinensis* and *D. semenowi* (Jakowlew, 1900), indicating that Fujita (2010) was correct in treating the former species as independent. The population from Chayu constitutes a more basal lineage than these species, deserving recognition as a new species as described herein. This analysis will be completed by adding the DNA samples of *D. linzhiensis* Huang et al., 2020 and *D. kikunoae* Hosoguchi, 2004 in the near future. It is worthy to note that the new species described here is easily separable from the foregoing two species (not sequenced yet) by different male and female genitalic characteristics. A revised distributional map (Fig. 8), based mainly on molecular analysis, is included in this work. A few *Dorcus* species (Liu et al., 2025; Qi et al., 2025; Qi et al., in press) have been described since the last issue of Beetles World, but none of them are close to the complex dealt with in this paper.

### **Taxonomic accounts**

**Dorcus rubinus** Huang, Chen & Xiao sp. nov. (Figs. 1-3, 6)

Dorcus sinensis: Huang & Chen, 2013: 365, partim on 2 33 carcasses from Chayu, SE Tibet

**Type material. CHINA: Tibet: Holotype**  $\circlearrowleft$  (CCCC, will be deposited in SHNU; figs. 1 & 6), Linzhi Pref., Chayu County, Zhuwagen, 2600 m, 22.IV.2024, C.-M. Xiao leg.; **Paratypes**: 2  $\circlearrowleft$  & 4  $\circlearrowleft$  (CCCC), same data as holotype; 1  $\circlearrowleft$  (CCCC), Chayu County, 3900 m, 20.VII.2021, Z.-Y. Tang leg.; 2  $\circlearrowleft$  (CCCC), carcasses of heads and elytra, on road from Demula to Chayu, 12.VII.2011, X.-D. Yang leg.

**Etymology**. The species name is due to the reddish elytra of the male.

**Diagnosis**. A detailed comparison of diagnostic characters is made between the new species and its closest species as follows.

- 1) Lateral sides of pronotum in major form of male: rounded in *D. rubinus*, *D. kikunoae* and *D. wui*; moderately truncated at anterior 1/4 in *D. sinensis*, *D. semenowi* and *D. linzhiensis*; strongly truncated at anterior 1/2 or 1/3 in *D. kentai*.
- 2) Distal tip of major tooth of the mandible in major form of male: usually widely bifurcate in *D. sinensis*; moderately wide in *D. semenowi*, *D. kentai*, *D. rubinus* and *D. linzhiensis*; very thin in *D. wui* and *D. kikunoae*.
- 3) Flagellum of male genitalia (permanently everted internal sac): stout, with trifurcate part shorter than basal part in *D. linzhiensis* and *D. wui*; slender, with trifurcate part longer than basal part in all other species.
- 4) Hemisternite of female genitalia: very small and slender in *D. wui*; large and stout in all other species.
- 5) Spermathecal duct of female genitalia: very long in *D. semenowi*; short in all other species.
- 6) Terminal sac of spermatheca of female genitalia: large in *D. linzhiensis*, *D. kikunoae* and *D. wui*; small in *D. sinensis*, *D. semenowi*, *D. kentai* and *D. rubinus*.

**Remarks**. The independence of this new species from *D. sinensis*, of which the genitalia are similar, is supported by the constant difference in male pronotum and by the molecular analysis of mtDNA gene COI fragments (Fig. 9).

**LB.**  $\lozenge \lozenge : 35.5\text{-}41.4 \text{ mm}$  (holotype: 41.4 mm).  $\lozenge \lozenge : 25.5\text{-}29.3 \text{ mm}$ . **Distribution.** Chayu area in SE Tibet.

### Dorcus sinensis (Boileau, 1899) (Fig. 5)

Hemisodorcus sinensis Boileau, 1899: 176 (type locality: Nord du Yunnan et de Siao-Lou); Huang & Chen 2013: 364-368, lectotype designation (type locality: Tsekou)

Dorcus sinensis: Huang & Chen, 2013, partim on specimens from Tsekou, Weixi, Tuguancun & Jizushan

*Macrodorcus castaneus* Bomans, 1971: 69 (type locality: Nord Yunnan, Tsekou); Huang & Chen, 2013, 364, synonymy for *Hemisodorcus sinensis* 

Macrodorcus concolor Bomans, 1971: 66 (type locality: Ouy Sy = Weixi) syn. nov.

**Remarks**. The DNA sample from Ludian of Lijiang (very close to Wexi township) shows no divergence from the sample of Tsekou area; thus, *Macrodorcus concolor* Bomans, 1971 is at best treated as a synonym of *Hemisodorcus sinensis* Boileau, 1899.

The distributional range of this species shown on the map (Fig. 8) is based only upon the DNA samples examined in this work. The populations from Batang, Kongyu (Daduhe valley) and Jiulong need further investigation of their DNA sequences.

**Distribution.** Yunnan (Lancang valley below Deqin; Lijiang; Zhongdian), Sichuan (Yajiang, probably also Jiulong and Batang).

### Dorcus semenowi (Jakowlew, 1900) (Fig. 7)

Hemisodorcus semenowi Jakowlew, 1900: 36 (type locality: Fubianhe valley Xiaojin, Sichuan) Hemisodorcus barbatus Nagel, 1939 (type locality: Siaolou); Huang & Chen, 2013: 371, synonymy for Hemisodorcus semenowi

**Remarks**. The distributional range of this species shown on the map (Fig. 8) is based only upon the DNA samples examined in this work. The populations from Gansu and Chongqing need further investigation of their DNA sequences.

**Distribution.** Sichuan (Xiaojin, Baoxing, Tianquan), NE Yunnan (Zhaotong), Guizhou & Guangxi, probably also Gansu and Chongqing.

### Dorcus kentai Tsukawaki, 1999 (Fig. 4) stat. rev.

Dorcus semenowi kentai Tsukawaki, 1999: 7 (type locality: Sapa, N Vietnam)

Dorcus kentai: Fujita, 2010, 250

Dorcus sinensis kentai: Huang & Chen, 2013: 365, record from Jinping, SE Yunnan

Dorcus sinensis ssp. incert.: Huang & Chen, 2013: 365, partim on specimens from Gongshan and Pianma

**Remarks**. The distributional range of this species shown on the map (Fig. 8) is based only upon the DNA samples examined in this work. The populations from Vietnam need further investigation of their DNA sequences.

It is worth noting that both *D. sinensis* and *D. kentai* are found in Lancang valley and the former is restricted to south of Deqin whilst the latter is on north of Deqin.

**Distribution.** N Vietnam; Yunnan (Lancang valley above Deqin; Nujiang valley; Dulongjiang valley; mountain ranges from Ailao Mts. to Gaoligong Mts.)

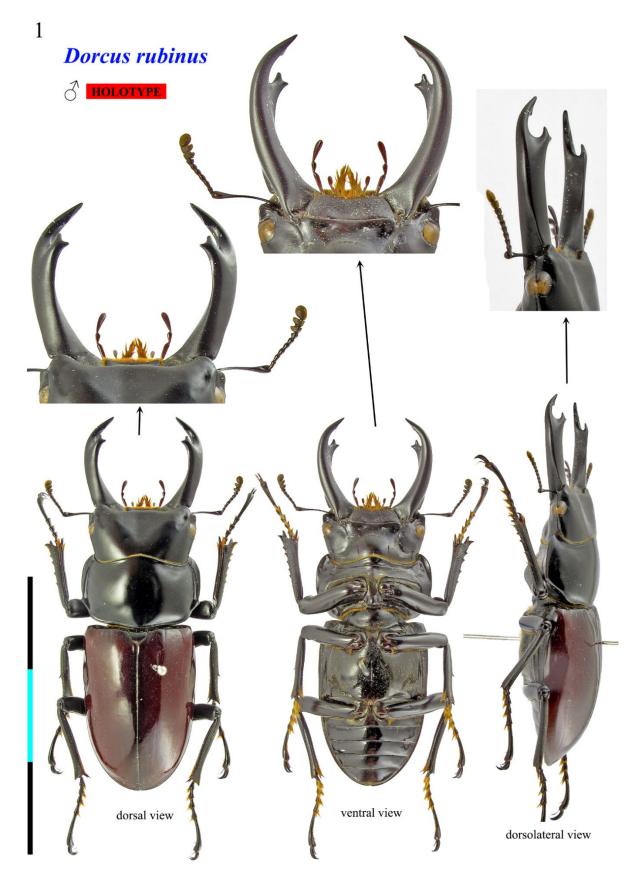
### Acknowledgements

We thank Mr. Xiao-Dong Yang and Mr. Zhao-Yang Tang for their help in collecting parts of the type series of the new species described here.

We are grateful to Dr. Shu-Ping Wu, who conducted the molecular analysis, the results of which are presented in this work.

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**FIGURE 1.** Male holotype of *Dorcus rubinus* sp. nov. with enlarged morphological characters.

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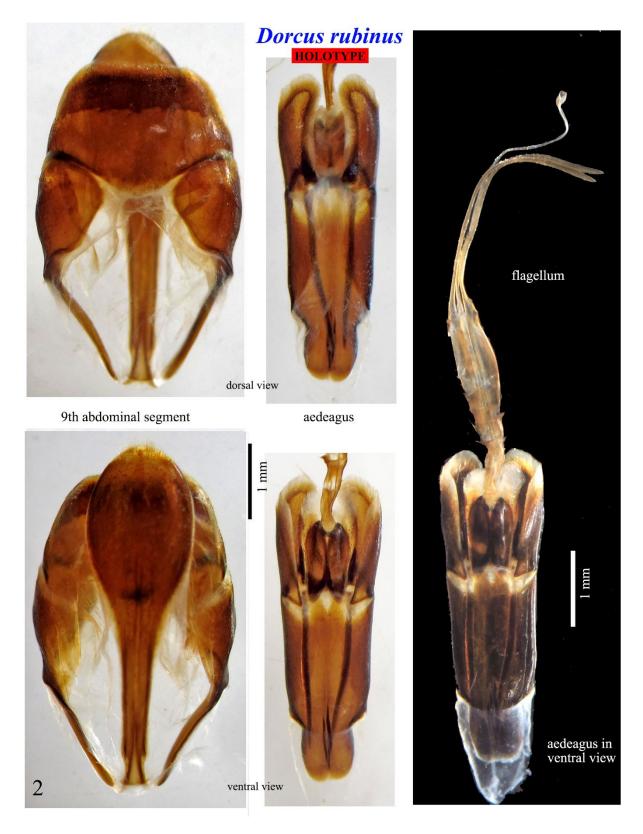


FIGURE 2. Male genitalia of *Dorcus rubinus* sp. nov. holotype.

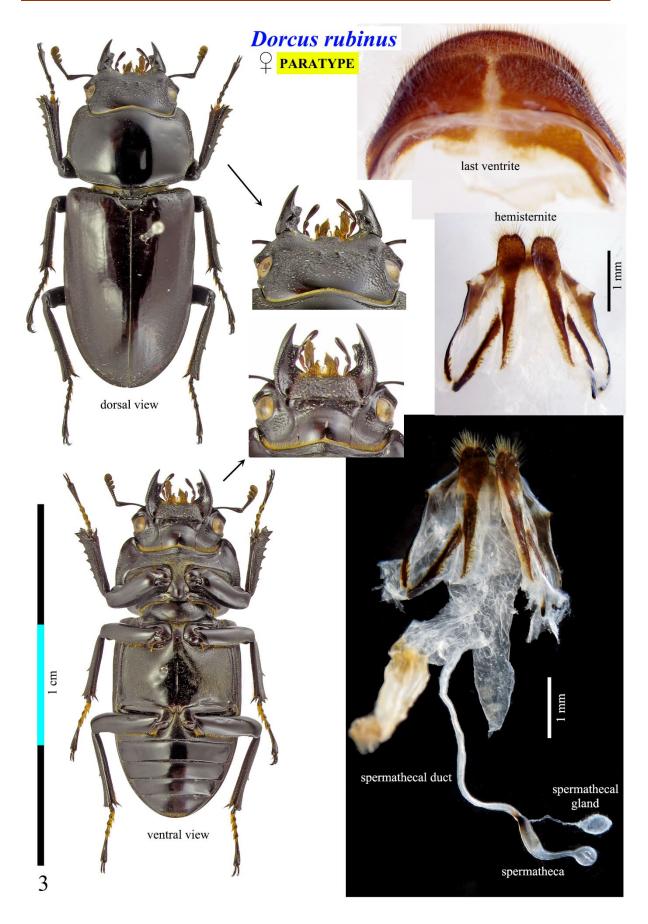
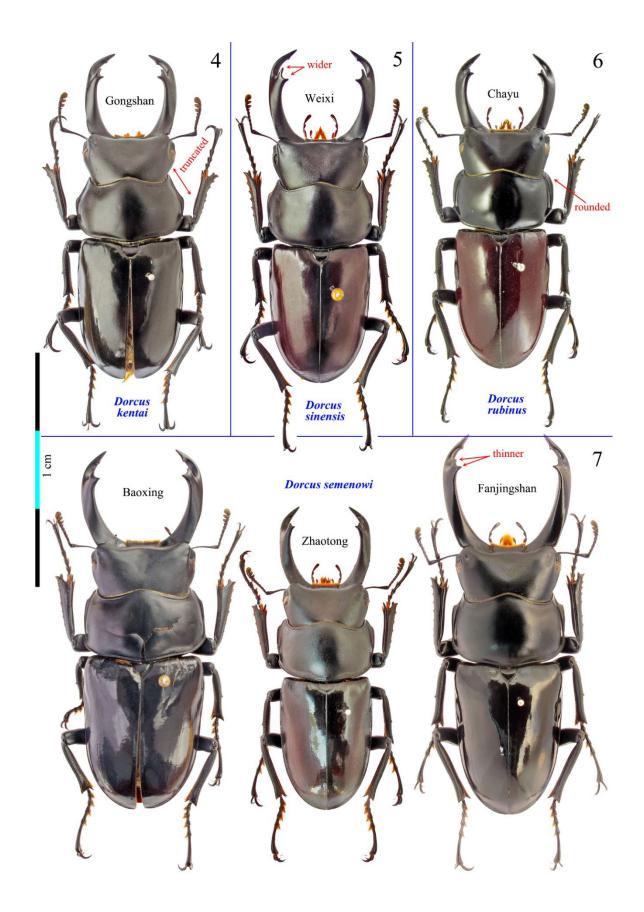
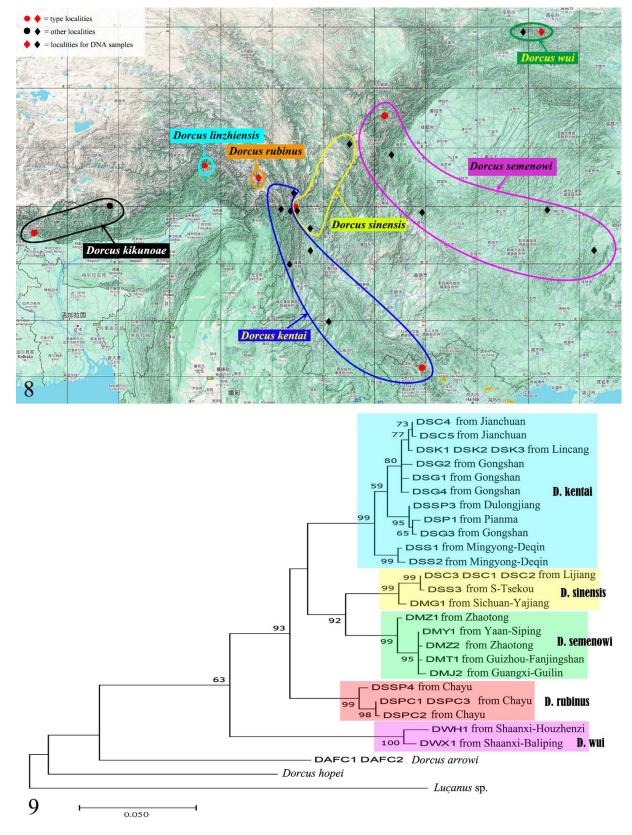


FIGURE 3. Habitus and female genitalia of *Dorcus rubinus* sp. nov. paratype.



**FIGURES 4-7.** Comparison between *Dorcus rubinus* sp. nov. and its allies in major forms of males.



**FIGURE 8.** Distribution of the *Dorcus sinensis* complex mainly based on a molecular analysis.

**FIGURE 9.** MtDNA gene tree of the *Dorcus sinensis* complex reconstructed by ML method using IQ-TREE based on COI fragment.

### A new Hexarthrius from Sumatra (Coleoptera, Lucanidae)

### Klaus-Dirk Schenk & Frank Fiedler

### **Abstract**

A new *Hexarthrius* from Sumatra is described and figured. The new species is compared to other *Hexarthrius* from Sumatra and the status is discussed.

### **Key words**

Coleoptera, Lucanidae, Hexarthrius fiedleri, Hexarthrius kirchneri, Hexarthrius parryi paradoxus, Hexarthrius mandibularis sumatranus, Sumatra

### Introduction

The second author of this article recently acquired two strange-looking male specimens of the genus *Hexarthrius*. These specimens from Sumatra are described and figured here. We compare *Hexarthrius fiedleri* spec. nov. with the other *Hexartrius* distributed on Sumatra Island and discuss the status of the new taxon.

Hexarthrius fiedleri spec. nov.

**Holotype.**  $\circlearrowleft$ , Indonesia, Sumatra, Bengkulu Province, Tanding Hill, VIII.2025, in coll. F. Fiedler, Großbreitenbach, Germany.

**Paratype.** 1 ♂, same collecting data, in coll. K.-D. Schenk, Wehretal, Germany.

**Etymology.** The name is dedicated to the second author of this article, Frank Fiedler.

### **Description and diagnosis**

**Holotype** (Fig. 1), ♂, total length 88,5 mm, mandibles length 34,0 mm, prothorax width 22,0 mm, elytra length 32,0 mm, elytra width 23,0 mm. Total length of the paratype 85,0 mm.

Hexarthrius fiedleri spec. nov. closely resembles Hexarthrius mandibularis sumatranus Mizunuma et Nagai, 1994.

However, the new species can be clearly distinguished from *H. mandibularis sumatranus* by the following external morphological characteristics:

- Mandibles longer compared to total body length.
- Mandibles with more teeth in front of the strong inner mandible tooth (11-12 vs 8).
- Surface of the head more heavily punctured (*H. mandibularis sumatranus* more confluently granulated).
- Elytra very smooth, shinier.

• Apical part of the elytra with an orange crescent-shaped spot with diffuse edges.

- Anterior corners of the prothorax acute, slightly pointing forward.
- Lateral edge of the prothorax behind the anterior angle more concave, middle angle acute and posterior angle more pronounced.

The paratype is identical with the holotype and differs only by size.

The female of *H. fiedleri* is unknown.



Fig. 1: *Hexarthrius fiedleri* spec. nov.  $\circlearrowleft$ , **Holotype**, 88,5 mm; dorsal and ventral view (in coll. F. Fiedler, Großbreitenbach, Germany) from south-west Sumatra, Bengkulu Province, Tanding Hill



Fig. 2: *Hexarthrius fiedleri* spec. nov.  $\circlearrowleft$ , **Paratype**, 85,0 mm; dorsal and ventral view (in coll. Dr. K.-D. Schenk, Wehretal, Germany) from south-west Sumatra, Bengkulu Province, Tanding Hill

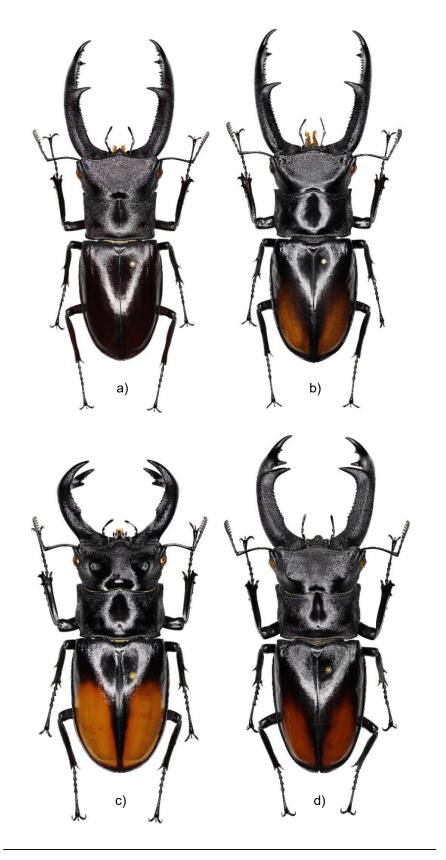


Fig. 3: Comparison full body shape; dorsal view:

- a) **Hexarthrius mandibularis sumatranus** ♂ 86,0 mm, Sumatra, Jambi Province, Merangin Regency, Mt. Masurai;
  - b) **Hexarthrius fiedleri** spec. nov. ♂ **Holotype** 88,5 mm;
  - c) Hexarthrius parryi paradoxus 3 82,6 mm, Sumatra, Bengkulu; d) Hexarthrius kirchneri kirchneri 3 89,5 mm, Sumatra, Jambi Province

The rare *Hexarthrius kirchneri* Schenk, 2003 (Fig. 5) also occurs in the vicinity of Bengkulu and on the nearby volcano Mount Dempo (type locality). *H. fiedleri* has a similar orange crescent-shaped spot on the elytra but the mandibles and the lateral margins of the prothorax of *H. kirchneri* are quite different (Fig. 4).

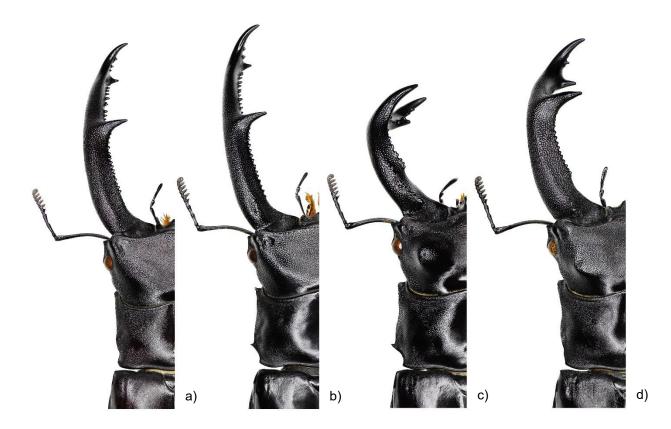


Fig. 4: Comparison pronotum, head and left mandible; dorsal view:

- a) **Hexarthrius mandibularis sumatranus** ♂ 86,0 mm, Sumatra, Jambi Province, Merangin Regency, Mt. Masurai;
  - b) Hexarthrius fiedleri spec. nov. ♂ Holotype 88,5 mm; c) Hexarthrius parryi paradoxus ♂ 82,6 mm, Sumatra, Bengkulu; d) Hexarthrius kirchneri kirchneri ♂ 89,5 mm, Sumatra, Jambi Province

We cannot definitively rule out the possibility that *H. fiedleri* spec. nov. might be a hybrid between *H. mandibularis sumatranus* and *H. kirchneri* or *H. mandibularis sumatranus* and *H. parryi paradoxus*. However, this assumption is contradicted by the fact that type and paratype are completely identical, except for their size.

For the sake of completeness, we should note that *H. mandibularis sumatranus* is classified online (Catalogue of life) as a synonym of *H. mandibularis mandibularis* (the nominal form from Borneo). We do not agree with this new classification.

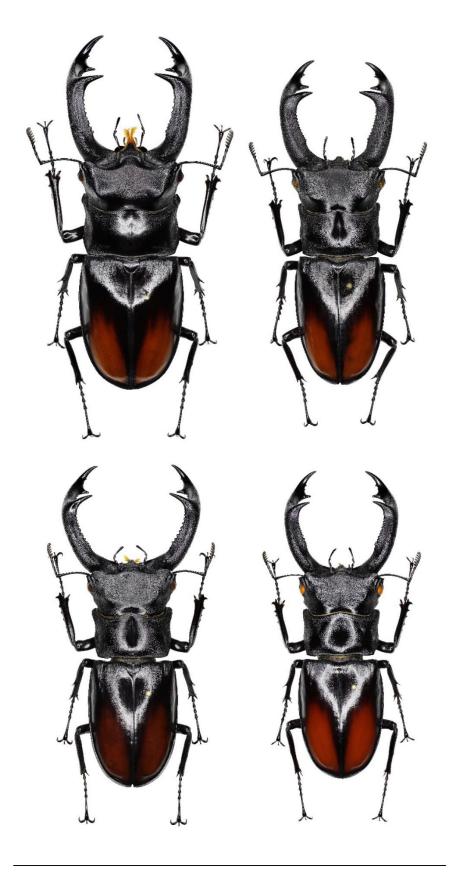


Fig. 5: **Hexarthrius kichneri kirchneri**; dorsal view (in coll. F. Fiedler, Großbreitenbach, Germany)

a) ♂ 93,5 mm, Sumatra, Ulu Jangkat; b) ♂ 89,5 mm, Sumatra, Jambi Province; c) ♂ 89,0 mm, Sumatra, Jambi Province; d) ♂ 85,0 mm, Sumatra, Jambi Province;

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