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Contribution to the knowledge of the stag-beetles
of the genus *Lucanus* from Laos,
with description of *Lucanus marazziorum* n.sp.
(Coleoptera Lucanidae)

Abstract – *Lucanus marazziorum* n.sp. from Laos is described. It belongs to the large group of *L. fortunei* and is closely related to *L. formosus*, from which it differs mainly through dorsal teguments glabrous and shape of the mandibles, with their inner tooth placed slightly before the mid-length; moreover through the less transverse head, the stouter aedeagus, with short and slightly apically widened flagellum.

Key words: Lucanidae, *Lucanus*, new species, Laos.

Riassunto – Contributo alla conoscenza dei Lucanidi del genere *Lucanus* del Laos, con descrizione di *Lucanus marazziorum* n.sp. (Coleoptera Lucanidae).

Viene descritto *Lucanus marazziorum* n.sp. del Laos. La nuova specie appartiene al grande gruppo di *L. fortunei* ed è strettamente affine a *L. formosus*, dal quale differisce soprattutto per i tegumenti, con pubescenza dorsalmente a malapena visibile e ventralmente distintamente più corta e rada, e la forma delle mandibole, con il dente interno situato leggermente prima di metà lunghezza, anziché a metà o poco oltre, e la forca apicale meno sviluppata, con il dente inferiore solo debolmente sporgente; inoltre per il capo meno trasverso, solo moderatamente più largo del pronoto, e l'edeago più robusto, con flagello più corto e debolmente dilatato all'apice. Attraverso l'esame di abbondante materiale anche topotipico, nonché di fotografie dei tipi delle due specie, viene confermata la sinonimia di *L. cyclommatoides* Didier, 1928 con *L. formosus* Didier, 1925.

Parole chiave: Lucanidae, *Lucanus*, nuova specie, Laos.

Introduction

Only few species belonging to the genus *Lucanus* Scopoli are known from Laos, namely *Lucanus angusticornis angusticornis* Didier, 1925, *Lucanus formosus* Didier, 1925, *Lucanus satoi* Nagai & Tsukamoto, 2003, *Lucanus sericeus ohbayashii* Nagai & Tsukamoto, 2003, *Lucanus tsukamotoi* Nagai, 2002 and *Lucanus vitalisi* Pouillaude, 1913.

Recently, my colleagues Tetsuo Miyashita and Steeve Collard entrusted me with several *Lucanus* specimens from Laos for study. Among them I recognized an interesting new species, belonging to the *Lucanus fortunei* species-group and closely related to *Lucanus formosus* Didier, herewith described as *Lucanus marazziorum* n.sp.

The following acronyms have been used:

MNHN Muséum National d'Histoire Naturelle, Paris

MSNM Museo di Storia Naturale, Milano

***Lucanus marazziorum* n. sp. (Fig. 1)**

Holotype male: NE Laos - Houa Phan Prov., Xam Neua, Ban Saleui, Mt. Phu Pan, V. 2007, in the author's collection, to be deposited in MSNM collection.

Paratypes: 1 male, 1 female: same locality of holotype, V. 2012, T. Miyashita legit, deposited in the author's collection.

Description of the holotype (Fig. 1). Length, including mandibles: 49.7. Length without mandibles: 32.8. Maximum head width, excluding mandibles: 13.8. Body slender, reddish brown; mandibles and pronotum darker; elytra with a narrow black border along lateral edges and suture; antennae and palpi piceous; hind and fore femora ferruginous with black edges, mid femora with black edge only on the inner (flexor) side, fore tibiae ferruginous with blackish edges, mid and hind tibiae with a black edge only on the inner side.

Pubescence exceedingly short and sparse throughout the dorsal surface, more dense along elytral sides; much longer and thicker ventrally.

Mandibles long and slender, strongly curved basally, then almost straight up to their slightly curved apex; surface matt due to distinct microsculpture, especially at base, proximally with short, scattered yellowish appressed hairs; upper surface of the distal third of the mandibles with a sharp, well-marked marginal carina. Median tooth strong, triangular, sharp, slightly tilted forwards and upwards, placed a little before the mid-length. Inner mandibular margin with 4-5 proximal and 4-5 distal small denticles. Upper apical tooth bent upwards, longer than the lower one, the latter strong, conical, slightly directed forwards.

Head transverse (W/L: 1.83), matt, finely and irregularly granulose, rasp-like. Frons trapezoidal, slightly concave, fused with the epistoma. Clypeal ridge obsolete in the middle, laterally projecting in two small and blunt teeth; epistoma triangular, apically broadly blunt yet with a small protruding tip, fringed by yellowish hairs. Frontal ridge bisinuate, strongly raised and protruding medially. Lateral cephalic ridges only fairly sinuate, with rounded, apically raised posterior angles. Anterior angles strongly projecting laterally, even more prominent than the eyes. Ocular canthus shorter than half eye's diameter. Mentum large, trapezoidal, matt, finely and irregularly granulose, covered with sparse yellowish pubescence, longer along the sides; anterior angles broadly rounded, anterior margin medially feebly convex. Antennal club 4-jointed; joints 8-10 with a strong, long, pubescent lamella; joint 7 with a shorter and thinner one, pubescent only on its anterior surface and with scattered setae elsewhere.

Pronotum transverse (W/L: 1.66), matt, finely and unevenly granulose, laterally granuli becoming more or less confluent into transverse wrinkles; median longitudinal depression shallow yet distinct in the anterior half, almost wanting in the posterior one, forming two clear-cut pits close to anterior and posterior



Fig. 1 - *Lucanus marazziorum* n.sp. Male / Maschio, holotype / olotipo (left / a sinistra). Female / Femmina, paratype / paratipo (right / a destra).

edges of pronotum; anterior angles apically rounded, posterior ones obtuse and rounded. Prosternal apophysis prominent, apically rounded, laterally covered with yellowish hairs. Scutellum transverse, widely rounded posteriorly, finely punctate and microreticulate, clothed with appressed yellowish hairs, except for a narrow smooth lateral margin. Elytra finely and densely punctured throughout, superficially microreticulate, covered by a sparse and very short yellowish pubescence, longer at sides. Shoulders broadly rounded.

Legs slender, fairly shining, microreticulate with large, shallow, unevenly set punctures, with sparse, short yellowish hairs, even shorter on fore tibiae. Fore tibiae with two (left) or three (right) spines on outer edge, mid tibiae with two ones, all increasing in size from base to apex; hind tibiae with one very small and weakly protruding preapical spine.

Aedeagus robust (total length 5.38 mm) (Fig. 2-4), with short and slightly apically widened flagellum; median lobe stout, shorter than paramera, the latter feebly curved, apically protruding.

Paratype male. Consistent with the holotype's description, except for mandibles slightly longer, because of upper tooth of apical fork distinctly longer and slenderer, despite of being the body a little smaller; both fore tibiae with four spines on outer edge (the basal one on right tibia vestigial). Both antennae are theratological, the left one with joints of club deeply fused together and almost unrecognizable, the right one with second-last joint split into three subsequent similar joints, hardly thicker than normal ones, each with well-formed lamella.

Female (Fig. 1). **Length, including mandibles: 29.6 mm. Length, without mandibles: 26.5 mm. Maximum head width: 7.4 mm.**

General form slender; shining, reddish brown, antennae and palpi black, mandibles black with brown base, elytra reddish brown with suture and lateral edges darker; femora ferruginous with base, apex and longitudinal stripe along both edges black, fore tibiae ferruginous with blackish edges, mid and hind tibiae with a black edge only on the inner (flexor) side. Head transverse (w/l ratio 1.58), densely and coarsely punctate, covered with sparse and yellow short pubescence; frontal ridge concave, frons sloping, projecting into a short, apically hollowed epistoma, with anterior angles blunt, produced into stout, strongly punctate canthi, the latter penetrating less than half a diameter into the eye. Eyes globular; temple short, not prominent. Mandibles short, asymmetrical, evenly curved from base to pointed apex, with coarse yet rather shallow punctuation, covered with yellowish pubescence. A sharp lateral and a strong dorsal keel merge to form a strong blunt tooth, at mid-length on right mandible and just over the middle in the left one; inner left tooth large and laminar, right tooth obtusely triangular. Mentum trapezoidal with strongly rounded anterior angles, with large, strong punctuation, covered with sparse, long yellowish hairs. Submentum with irregular microsculpture, much thinner towards anterior edge, mixed with large, shallow, partly ill-defined punctures, covered with sparse long hairs. Antennal scape weakly curved, club formed by joints 7-10. Pronotum transverse (w/l ratio 1.57), medially glabrous, laterally with scattered, short yellowish hairs, evenly and finely punctate; punctuation gradually stronger towards sides; anterior edge of pronotum distinctly bisinuate, anterior angles rather sharp; lateral edges slightly bisinuate until the hardly produced median angles, then almost straight and markedly convergent rearwards, distinctly

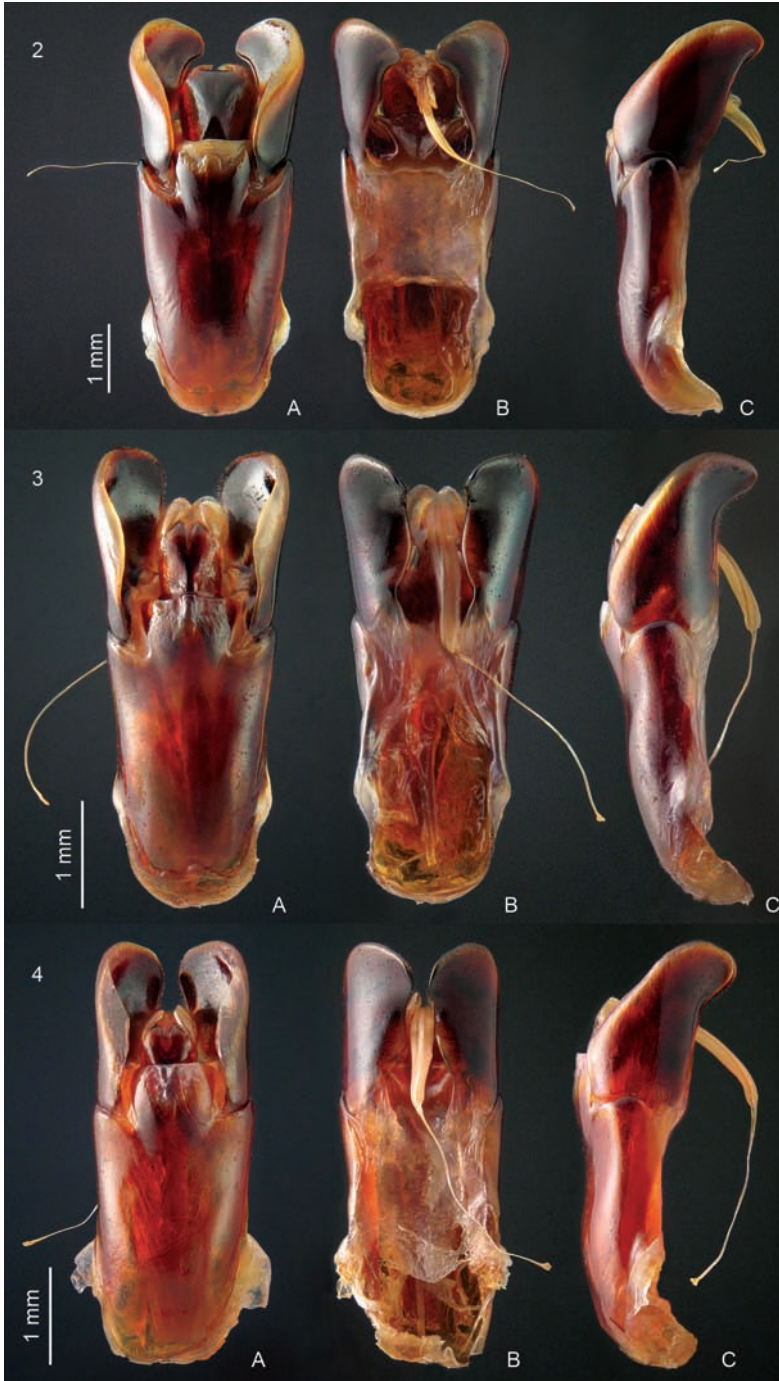


Fig. 2-4 - 2) *Lucanus marazziorum* n.sp. 3-4) *Lucanus formosus* Didier. 3) Ban Saleui, Laos. Aedeagus / Edeago. 4) Sapa, Vietnam (type locality of / località tipica di *L. cyclommatoides*). Aedeagus / Edeago. A) ventral view / visione ventrale, B) dorsal view / visione dorsale, C) lateral view / visione laterale.

sinuate just before the sharp posterior angles; posterior edge slightly bisinuate. Prosternal process distinctly protruding. Scutellum rounded, deeply punctate, throughout covered with yellowish hairs, except on a narrow lateral margin. Elytra shining, densely and finely punctured, covered with very short, sparse appressed pubescence, with a well-marked lateral groove; elytral base feebly oblique; shoulders rounded; lateral edge evenly curved from base to apex, sutural angles fairly pointed. Fore tibiae strongly flattened and widened towards apex, with two robust, sharp apical teeth and two triangular lateral ones, the first large, the second much smaller (right) or hardly distinct (left); mid tibiae with two sharp preapical teeth, hind tibiae with a preapical tooth.

Derivatio nominis. This species is dedicated to my dear friends Valentino and Giuseppe Marazzi, owners of a very big and excellently held Cerambycidae Priorninae collection, who first led me to the study of the genus *Lucanus*.

Comparative notes

Lucanus marazziorum n. sp. is closely related to *L. formosus* Didier and both belong to the very large *Lucanus fortunei* species group. However, *L. marazziorum* can be easily distinguished at glance from the above mentioned *L. formosus* through: 1) the stouter body, differently coloured and with much shorter and more scattered, dorsally hardly visible pubescence; 2) the less transverse head, not so much wider than pronotum; 3) the mandible median tooth placed a little before the mid-length, instead of at or slightly beyond mid-length; 4) the less developed apical fork of the mandibles, with lower tooth only feebly produced; 5) the stouter aedeagus, with a wider penis and shorter flagellum.

Note on *Lucanus formosus*

Didier (1925) briefly described *Lucanus formosus* (Fig. 5A) on a pair of specimens from Nord-East Laos, Xieng Khouang, collected by Vitalis de Salvaza and previously housed in Boileau's collection. Later (1926), the same author in a large paper on *Lucanus* from Indo-China, provided a thorough description of *L. formosus*, yet without new materials.

Subsequently, Didier (1928) described *Lucanus cyclommatoides* (Fig. 5B), from Chapa (at present Sapa, Tonkin, currently northernmost part of Vietnam), again on a pair of specimens, collected by Jeanvoine and communicated by Clermont. The new species is described as closely related to *L. formosus*, and even more to *L. pulchellus*, of which in author's opinion it may be no more than a variety.

Until recently, no author questioned the specific validity of *L. cyclommatoides*. However Araya (2001) published a paper on some type specimens of *Lucanus* species, with also colour pictures of *L. formosus* and *L. cyclommatoides* type specimens, indeed strikingly similar. Huang & Chen first, in their revision of Chinese *Lucanus* (2011), suggested that “[*cyclommatoides*] may be only a junior synonym of *Lucanus formosus* Didier from Laos”, to which it is close in external characters. Finally Fujita (2011) in his monumental monography of World Lucanidae, listed *cyclommatoides* as synonym of *formosus*, without any argument.

From the pictures of type specimens kindly sent to me by Antoine Mantilleri (MNHN), it appears that some differences described by Didier (1928), e.g. “tête

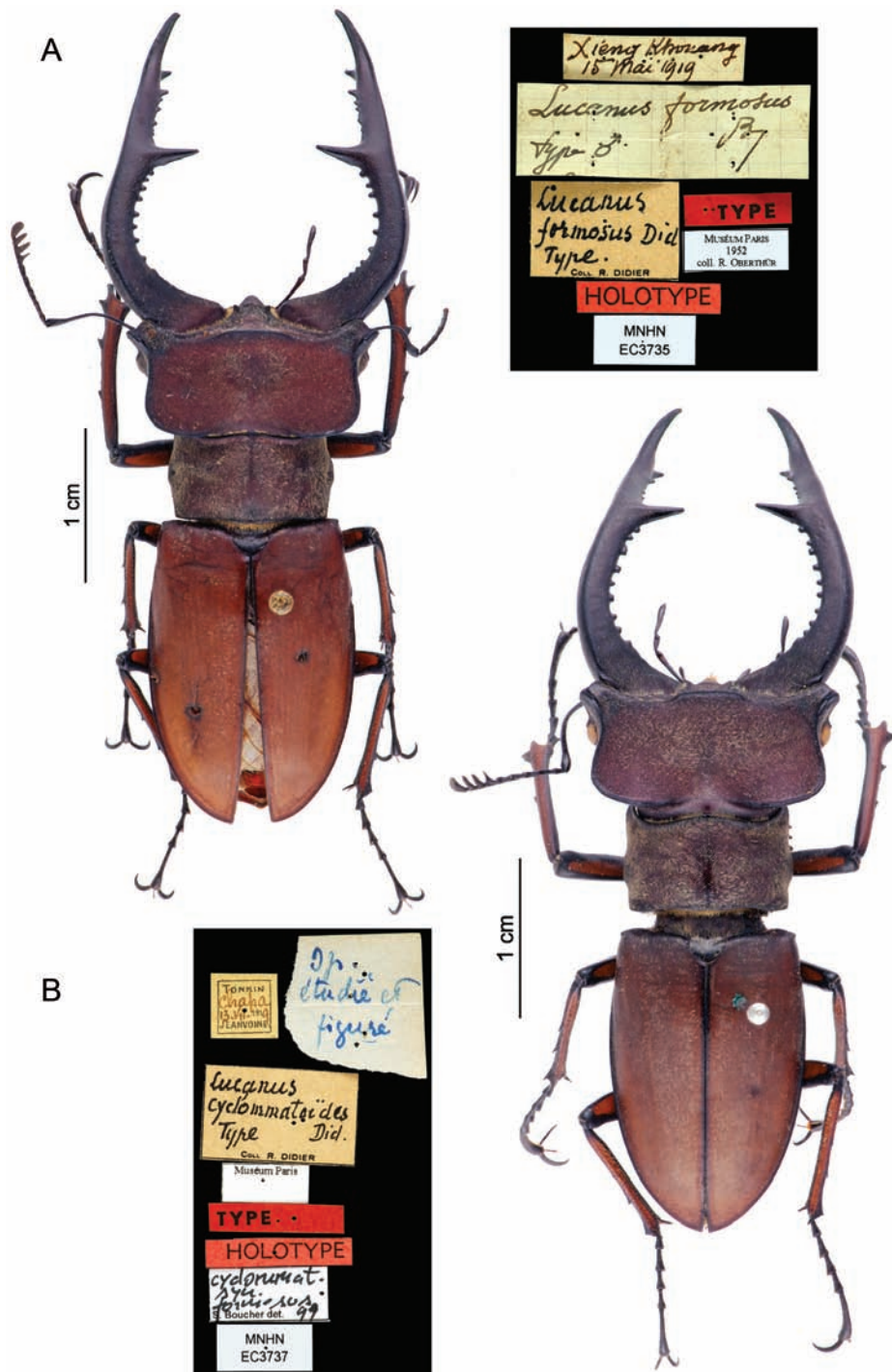


Fig. 5 - A) *Lucanus formosus* Didier, type / tipo. B) *Lucanus cyclommatoides* Didier, type / tipo. (Photo / Foto A. Mantilleri, MNHN).

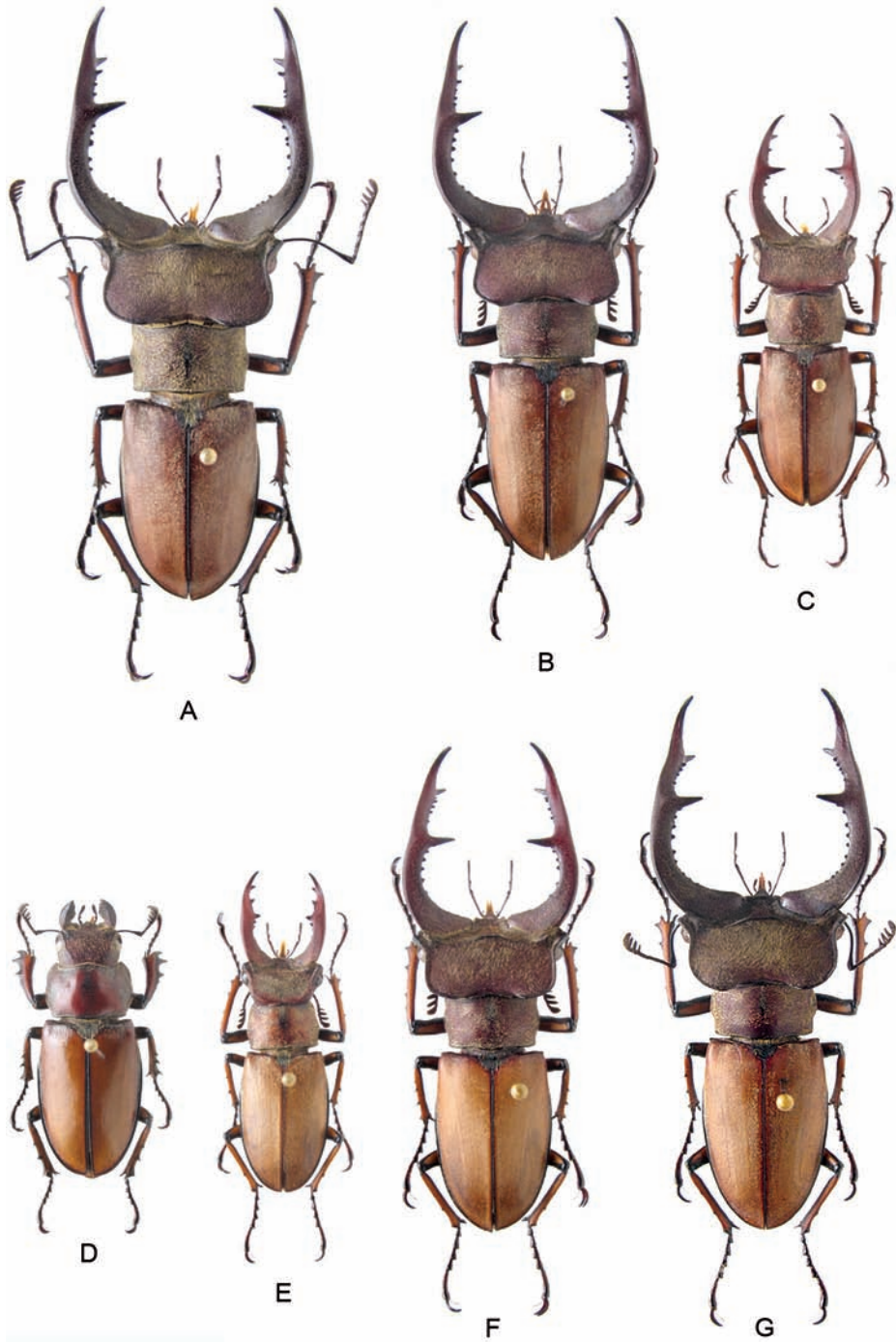


Fig. 6 - *Lucanus formosus* Didier. Specimens from / Esemplari di A-C) Sapa, Vietnam. D-G) Ban Saleui, Laos. (Coll. Zilioli).

beaucoup plus large que chez *formosus*”, are somewhat exaggerated. The two specimens appear to be quite similar, all differences being referable to the normal intraspecific variability or to allometric variations between specimens of different size, as usual in *Lucanus* males. Examination of both external and genitalia (Figs. 3-4) features in specimens (Fig. 6) from Vietnam (Sapa) and Laos (Ban Saleui, Mt. Phu-Pan) (Fig. 7), respectively referable to *cyclommatoides* and to *formosus*, confirmed their identity. Therefore I can confirm the synonymy, as above:

Lucanus cyclommatoides Didier, 1928 = *Lucanus formosus* Didier, 1925

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Fig. 7 - Slopes of Mount Phu-Pan (Laos), habitat of *Lucanus marazziorum* n. sp. / Pendici del Monte Phu-Pan (Laos), habitat di *Lucanus marazziorum* n. sp.

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