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# Two new species of the genus *Orthogonius* MACLEAY from Laos and Vietnam (Coleoptera: Carabidae: Orthogoniini)

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## Abstract

*Orthogonius nongfaensis* sp.n. and *O. deuvei* sp.n. (Coleoptera: Carabidae) are described from Laos and Vietnam. *Orthogonius nongfaensis* is allied to *O. crassicus* CHAUDOIR, 1871, but easily recognized by its emarginate labrum, bordered prosternal process and carinate elytral interval 7. *Orthogonius deuvei* is similar to *O. angkor* TIAN & DEUVE, 2006 from Cambodia, but its aedeagus with the apical lamella is narrower and much longer.

**Key words:** Coleoptera, Carabidae, Orthogoniini, *Orthogonius*, new species, Laos, Vietnam.

## Introduction

Although the knowledge on the Oriental carabid beetle tribe Orthogoniini has increased in recent years (ABHITHA et al. 2009, TIAN & DEUVE 2008, 2009, 2010, TIAN et al. 2012), the fauna is still not well known. Therefore, it is not surprising that new species are still discovered in this region.

A single male specimen of the genus *Orthogonius* MACLEAY collected from Laos was dissected and examined by the second author. Then it was confirmed by the first author as a new species. It is the first record of a member of the *O. crassicus* species group from Indo-China. Among some interesting *Orthogonius* specimens collected in the Dong Nei Biosphere Reserve, southern Vietnam, the first author found a single male representing another new species.

## Material and Methods

Dissections were made by using standard techniques. Specimens were mounted on large paper cards; pieces of genital organs were placed on a small paper card and then pinned underneath the beetle. Observations and dissections were made under Nikon SMZ1000 stereo-binocular microscope. Digital photographs of habitus and aedeagi were taken by using a Canon 40D camera and then processed with a Adobe Photoshop CS4 software.

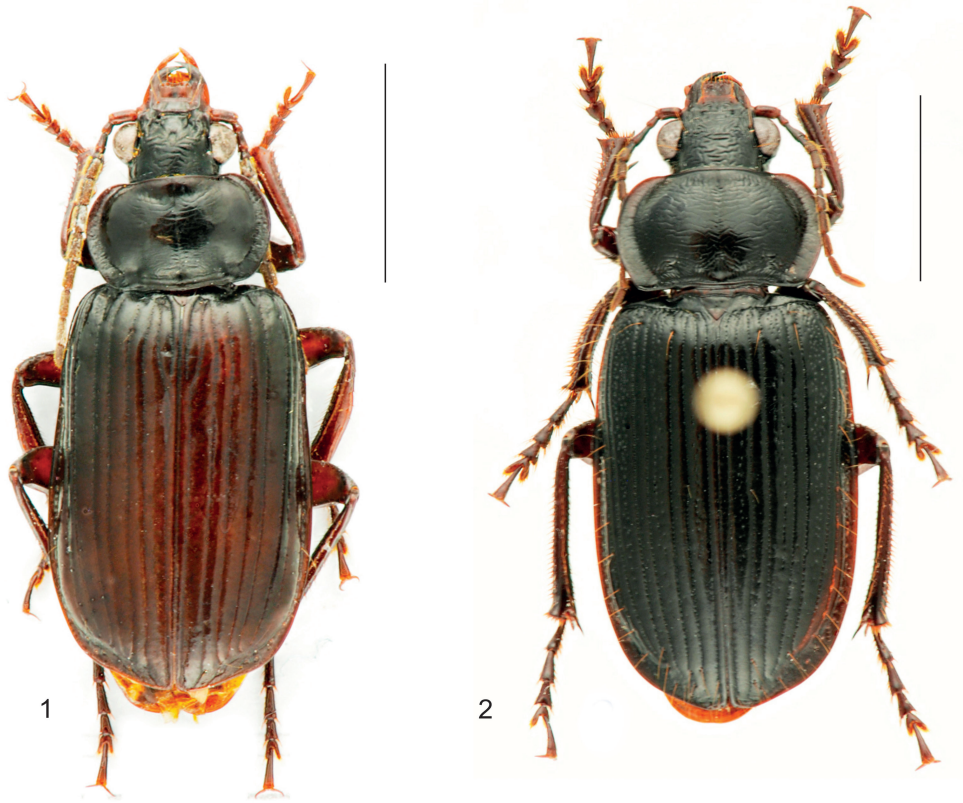
Body length was measured from apex of right mandibles to apex of elytra; body width (= width of elytra).

Abbreviations of measurements used in the text:

EL	length of elytra (measured from base to apex of elytra, through suture)
EW	width of elytra (greatest transverse distance across both elytra)
PL	length of pronotum (measured from front to basal margins, through midline)
PW	width of pronotum (greatest width of pronotum)

## *Orthogonius nongfaensis* sp.n.

**Holotype** ♂: "Laos: Attapeu Prov., Annam highlands Mts., Dong Amphan NBCA, ca. 1160 m., Nong Fa (crater lake) env., 15.059 N / 102.256 E, Jiri Hájek leg., 30.IV-6.V., 2010", deposited in the Národní Museum v Praze, Prague, Czech Republic (NMPC).



Figs. 1–2: Habitus of 1) *Orthogonius nongfaensis*, 2) *O. deuvei*. Scale: 5.0 mm.

**Diagnosis:** Median sized, black, moderately shiny; surface glabrous, polished and impunctate, head moderately and irregularly wrinkled; antennae stout, extending to about basal 1/4 of elytra; labrum emarginate at front, frontal impressions wide and very deep, eyes large and prominent; pronotum wide and convex, lateral expanded margins well defined, hardly reflexed; elytra well bordered at base, lateral margins slightly expanded at median portion, striae moderately deep, punctures traceable and isolated; interval 7 strongly carinate from base to apical 1/4, interval 3 with basal and apical setiferous pores; mid tibia strongly expanded.

**Description:** Length: 15.0 mm; width: 7.0 mm. Habitus is as in Fig. 1.

**Coloration:** Body black, antennae, palps, tibiae and tarsi dark brown.

**Macrosculpture:** Whole surface smooth and impunctate except for intervals 3 and 5 with a few tiny punctures sparsely and irregularly arranged in a row.

**Microsculpture:** Microsculptural meshes densely isodiametric on head and fore part of pronotum, but moderately transverse on posterior part of pronotum and elytra.

**Head** stout, as long as wide, eyes very large, strongly prominent, frons and vertex convex, frontal impressions wide and very deep, extending beyond the level of anterior supraorbital pores; clypeus quite smooth, bisetose; labrum sexsetose, front moderately emarginate; mandibles rather

stout, with a distinct median tooth; ligula bisetose at apex; palps subcylindrical; maxillary palpomere 3 as long as 4; labial palpomere 2 bisetose on inner margin, as long as palpomere 3; palpiger asetose, mentum and submentum each with one pair of long setae; mentum without median tooth. Antennae stout, extending to about one fourth of elytra from base; pubescent from basal one third of antennomere 4, antennomere 3 slightly shorter than 4, antennomeres 1 and 4 subequal in length.

Pronotum strongly transverse, PW/PL=1.76, disc convex; sides evenly rounded, widest at about middle, both basal and fore margins finely beaded, lateral expanded margins well defined and smooth, rather wide, moderately reflexed throughout; fore and hind angles rounded; anterior transversal impression faint, hind one well marked, basal foveae small but clear.

Elytra broadly ovate, EL/EW=1.48, moderately convex, basal border complete; lateral sides slightly expanded at middle, hardly parallel-sided; widest slightly behind middle; broadly and roundly truncate at apex, outer angle rounded, inner angle broad; striae moderately deep, with punctures clear and isolated; intervals slightly convex, intervals 1, 3 and 5 narrower than 2, 4, and 6 respectively; interval 3 with two setiferous pores, the basal one close to stria 3 and the apical one to stria 2, median one absent; interval 7 markedly carinate from base to apical 1/4 apex. Scutellar striae long. Hind wing developed.

Prosternal process bordered at apex. Abdominal ventrite VII in male deeply emarginate in middle of apical margin.

Legs moderately long; middle and hind coxae glabrous in median portion; femora comparatively slender, hind femur with a seta posteriorly; fore tibia slightly dilated at apex, outer angle obtuse, apex nearly truncate, outer margin almost straight, subserrate; middle tibia strongly dilated medially in male, without apical dorso-lateral emargination, but with a dorsal, non-oblique and shallow emargination, making a sharp lateral ridge at apical half; hind tibiae slender, hardly dilated at apex; hind apical spurs long and sharp; fore and middle tarsi stouter than hind ones; length ratio of hind tarsomeres 1–4: 2.3/1.4/1.1/1.0; tarsomere 4 deeply and symmetrically bilobed at apex, lobe about 2/3 as long as entire length; in male, fore tarsomeres 1–3 with two rows of spongy setae; all claws simple.

Male genitalia (Figs. 3–4): Stout, widely expanded in median portion, then strongly contracted towards apex; dorsal opening wide, apical part more or less tube-like, ventral margin slightly sinuate in apical part before apex; in dorsal view, apical lamella short, as long as wide, broadly rounded at apex.

Female: Unknown.

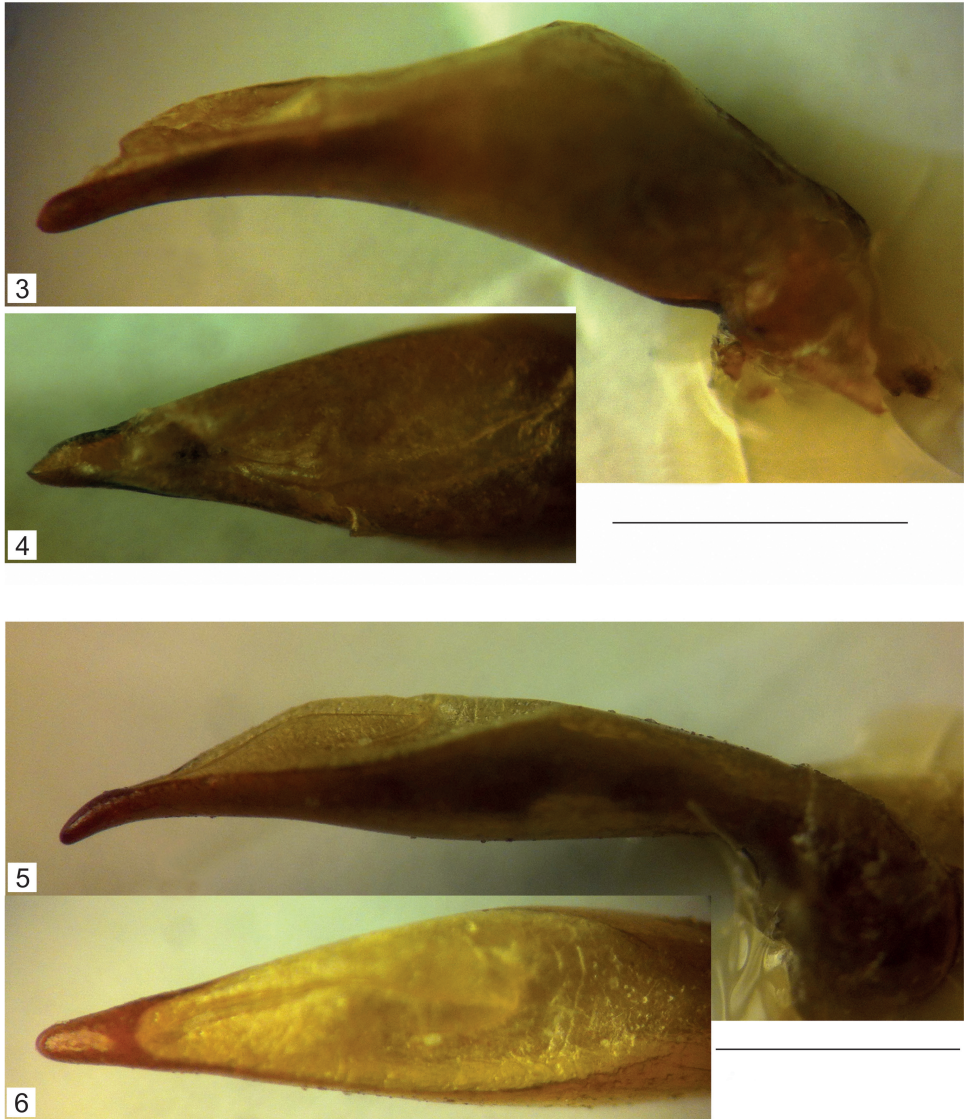
Remarks: Close to *O. crassicus* CHAUDOIR, 1871 from Sumatra (Indonesia), but it is easily separated from the latter by the following characters: (1) labrum emarginate at front (straight in *O. crassicus*); (2) elytral striae deeper and intervals more convex (shallow and almost flat in *O. crassicus*); (3) interval 7 strongly carinate (not carinate in *O. crassicus*); (4) apex of elytra broad, not denticulate (narrow and distinctly denticulate in *O. crassicus*); and (5) prosternal process bordered at apex (unbordered in *O. crassicus*).

Etymology: The name of this new species refers to its type locality.

Distribution: Laos. Known only from the type locality.

### *Orthogonius devei* sp.n.

**Holotype** ♂: "Coll. I. R. Sc. N. B./ Vietnam: Nong Nai Biosphere Res.; 11°18' N, 107°06' E/ 25.VI.-6.VII. 2012, night collecting/ Leg. J. Constant & J. Bresseel/ I.G. 32.161", deposited in Institut royal des Sciences naturelle de Belgique, Brussels, Belgium (IRSNB).



Figs. 3–4: Male genitalia of *Orthogonius nongfaensis*, 3) lateral view, 4) dorsal view of apical part.  
Scale: 1.0 mm.

Figs. 5–6: Male genitalia of *Orthogonius deveui*, 5) lateral view, 6) dorsal view of apical part.  
Scale: 1.0 mm.

Diagnosis: Large and stout, black and shiny, head and pronotum wrinkled, elytra coarsely punctate, palpiger setose, even intervals much wider than odd ones, interval 7 normal, elytra with long setae along margins, prosternal process well bordered at apex, mid- and hind coxae covered with several setae in median portion, apical lamella of aedeagus long and narrow.

Description: Length: 17.0 mm; width: 6.2 mm. Habitus as in Fig. 2.

Coloration: Body black, clypeus, labrum, palps, antennae, tarsi and underside dark brown.

Macrosculpture: Head and pronotum densely and intricately wrinkled (rather faint and shallow on pronotum), impunctate; elytra coarsely punctate on even intervals.

Microsculptural meshes densely isodiametric on head, pronotum and elytra.

Head stout, as long as wide, eyes rather large and moderately prominent, labrum distinctly and shallowly emarginate at frontal margin, sexsetose, clypeus bisetose, more or less “r”-shaped sculptured at base; frons and vertex convex; maxillary palpomere 3 as long as 4, both sparsely covered by several thin setae; labial palpomere 2 longer than 3, bisetose on inner margin though with a few additional short setae, palpomere 3 with finer and shorter setae on basal half; ligula short, slightly enlarged at apex, bisetose; mentum and submentum each with a pair of long setae; palpiger unisetose; antennae short, extended only to the shoulders of elytra, densely pubescent from basal 1/3 of antennomere 4, distinctly dilated laterally.

Pronotum strongly transverse, PW/PL=1.70, widest at about middle; fore and hind angles broadly rounded; lateral expanded margins wide and well defined, almost of equal width throughout, distinctly reflexed; basal transverse impressions well marked, anterior one faint; median line clear, basal foveae small and well marked; disc convex.

Elytra broad, moderately convex; EL/EW=1.55; sides slightly expanded in middle portion, not parallel-sided, widest at about middle; apex roundly truncate, with reverse sinuation near apex, making inner angle broad, and with a deep, narrow sutural angle; base well bordered, though partly connected to interval 1; striae deep, punctate; intervals slightly convex, even intervals much wider (almost twice) than odd ones; even intervals with coarser punctures: interval 2 with a row irregularly starting from basal 1/4 and ending at apical 1/3, both basal and apical portions impunctate; interval 4 punctate starting from base and ending at about apical 1/3, two rows though irregularly; interval 6 densely punctate in basal half, then sparse and ending at about apical 1/4; scutellar pores present; interval 3 with three setiferous pores; interval 5 with one at base and two at apex; interval 7 rather wide, not carinate, with 13 setiferous pores throughout. Apical pores: one on interval 1, two on interval 3; the marginal series of umbilicate pores composed of 45 pores.

Legs rather stout, with developed spines, in particular on tibiae, long and arranged in a more or less regular row, fore tibia with outer angle very sharp and strongly protruding, apical margin concave; outer margin distinctly serrate; middle tibia stout, not curved in middle, strongly dilated at apex; hind tibia longer than the middle one, suddenly dilated at apex (almost as dilated as in the middle), tibial spurs rather long, sword-like; hind femur moderately dilated, with four posterior setae; hind tarsomere 1 distinctly longer than 2; tarsomere 3 almost as long as 4, which is deeply bilobed; all tarsal claws pectinate, teeth moderate.

Prosternal process well bordered at apex, middle and hind coxae with several setae in median portion; ventrite VII of male complete at apex, bisetose.

Male genitalia (Figs. 5–6): long and stretched, rather slender, ventral margin widely bisinuate, median portion moderately expanded, dorsal opening wide, apex gently curved ventrad, blunt in profile; dorsally, gradually narrowed towards apex, apical lamella almost twice as long as wide, broad and obtuse at tip.

Female: Unknown.

Remarks: This species belongs to the *O. grootaerti* species group, and is closely allied to *O. angkor* TIAN & DEUVE, 2006, but its aedeagus with the apical lamella is much longer and thinner than that of *O. angkor*.

Etymology: The name is proposed in honor of our good friend Dr. Thierry Deuve, a well-known carabidologist in the Muséum National d'Histoire Naturelle, Paris, France.

Distribution: Southern Vietnam.

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