ENTOMOLOGIE, 80: 59-64, 2010
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# Description of two new species of *Anomala* SAMOUELLE (Coleoptera, Scarabaeoidea, Scarabaeidae, Rutelinae) from Thailand, Laos and Cambodia

By Pol LIMBOURG & Carsten ZORN

## Abstract

*Anomala constanti* sp. n. is described from Thailand and *Anomala smetsi* sp. n. is described from Cambodia and Laos. Both species are closely related to each other and similar to *A. bella* ARROW, 1917 and *Anomala diversipennis* ARROW, 1917. The male genitalia are figured and a drawing of the habitus of *Anomala constanti* sp. n. is given. A distribution map of the two new species is provided.

**Keywords:** Coleoptera, Rutelinae, *Anomala*, Asia, Thailand, Cambodia.

## Résumé

*Anomala constanti* sp. n. est décrite de Thailande et *Anomala smetsi* sp. n. du Cambodge et du Laos et sont similaires à *Anomala bella* ARROW, 1917 et *Anomala diversipennis* ARROW, 1917. Des figures des genitalia mâles, un dessin d'habitus ainsi qu'une carte de répartition sont donnés pour *Anomala constanti* sp. n. et *Anomala smetsi* sp. n..

## Introduction

During field trips in Thailand and Cambodia from 2001 to 2005 carried out by the Institut royal des Sciences naturelles de Belgique many unidentified Rutelinae have been collected by Jérôme Constant, Dr. Patrick Grootaert, and Koen Smets. Two very similar *Anomala* species have proved to be new to science after examination and will be described in this paper. Additional material of the two new species was present in the collections of P. Pacholátko, Brno and C. Zorn, Gnoien.

## Material and methods

The distribution map has been produced by the software *CFF* (BARBIER & RASMONT, 2000). The scale for every figure represents 1 mm.

The examined material is housed in the following collections:

IRSNB = Institut royal des Sciences naturelles de Belgique, Bruxelles, Belgium (P. Grootaert).
CCZ = Private collection Carsten Zorn, Gnoien
PCPP = Private collecton Petr Pacholátko, Brno

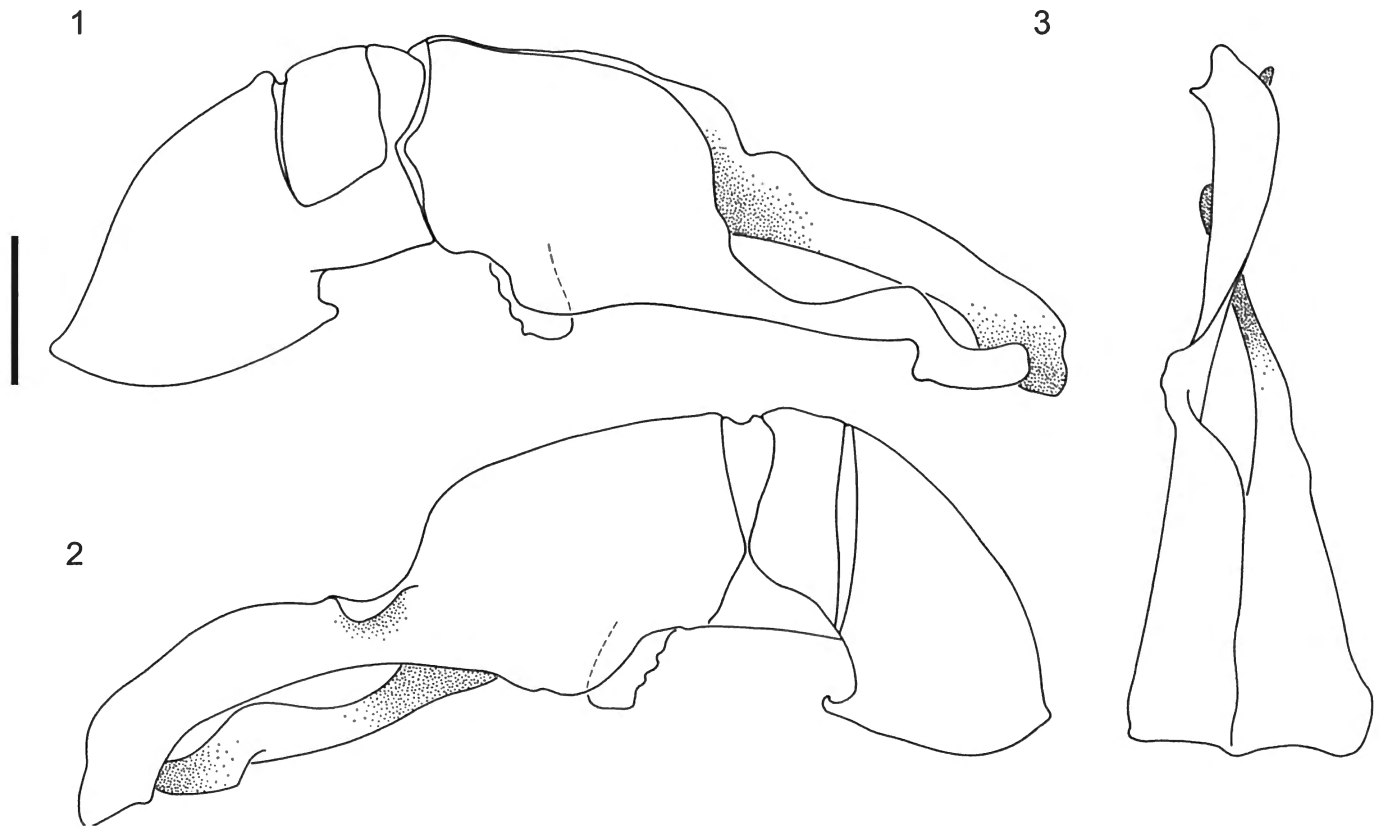
Type specimens of the newly described species are provided with one printed red label: "Holotype [Paratype] Anomala [species's name] sp. n. [sex symbol] Dét. Pol Limbourg & Carsten Zorn, 200[9]".

## Systematics

### *Anomala constanti* LIMBOURG & ZORN
(Figs 1-3, 7, 8)

MATERIAL EXAMINED : Holotype male: Thailand (Loei), Na-Haeo (field res stat), 15-19.V.2003, light trap, leg. J. Constant, K. Smets & P. Grootaert (IRSNB).
PARATYPES: 24 males, 13 females: (IRSNB); 1 male: Thailand, Prov. Loei, Na Haeo, field Res. St., day catch, 15-19.V.2003, Leg. J. Constant & K. Smets (IRSNB); 8 males & 8 females : Thailand (Loei), Na-Haeo (bio. Station), 05-12.V.2001, light trap, leg. J. Constant & P. Grootaert (IRSNB); 10 males, 6 females: Thailand (Loei), Na Haeo, Light Trap clearing, 16.V.2003, Leg. J. Constant & K. Smets (IRSNB); 2 females: Thailand (Loei), Na Haeo, 17.V.2003, Light Trap, edge Pond, Leg. J. Constant & K. Smets (IRSNB); 6 males, 2 females: Thailand, Namuang [Ban Na Muang (17°22N/103°43E)], 21-26.V.1993, Leg. P. Pacholátko & Dembický (PCPP); 2 males, 1 female: (CCZ).

DESCRIPTION OF THE HOLOTYPE: Length: 16,5 mm, width: 8 mm.




Figs 1-3. – *Anomala constanti* sp. nov. (holotype): 1. aedeagus, left lateral view. 2. aedeagus, right lateral view. 3. parameres, dorsal view.

*Body shape* elongate ovoid, weakly convex; surface weakly shining; body color yellowish brown with the elytra somewhat darker; suffused with weak golden green iridescent luster; abdominal sternites 3-6 and pygidium dark copper red; two small patches on the posterior head, a narrow median line and irregular patches on each side of pronotum, basal and median part of propygidium, latero-distal part of each sternite, and posterior part and suture of elytra dark metallic green to black; hind tibia and pygidium coppery; tarsi black.

*Clypeus* broadly trapezoidal, front angles rounded, anterior margin weakly reflexed; clypeus and frons densely, vertex sparsely punctate.

*Pronotum* broadest at its base, strongly convergent in the anterior half; anterior angles acute and produced; posterior angles obtuse, somewhat rounded; basal marginal line broadly interrupted in the middle; punctation dense, distinct and even.

*Elytra* deeply sulcate, intervals convex and irregularly punctate; lateral margin strongly carinate; humeral and apical umbone prominent; apex of each elytron separately rounded.

*Propygidium* only covered by elytra in the anterior third.

*Pygidium* elongate, tumid, projecting posteriorly; densely transversely reticulo-striate.

*Sternites* transversely reticulo-striate, almost hairless.

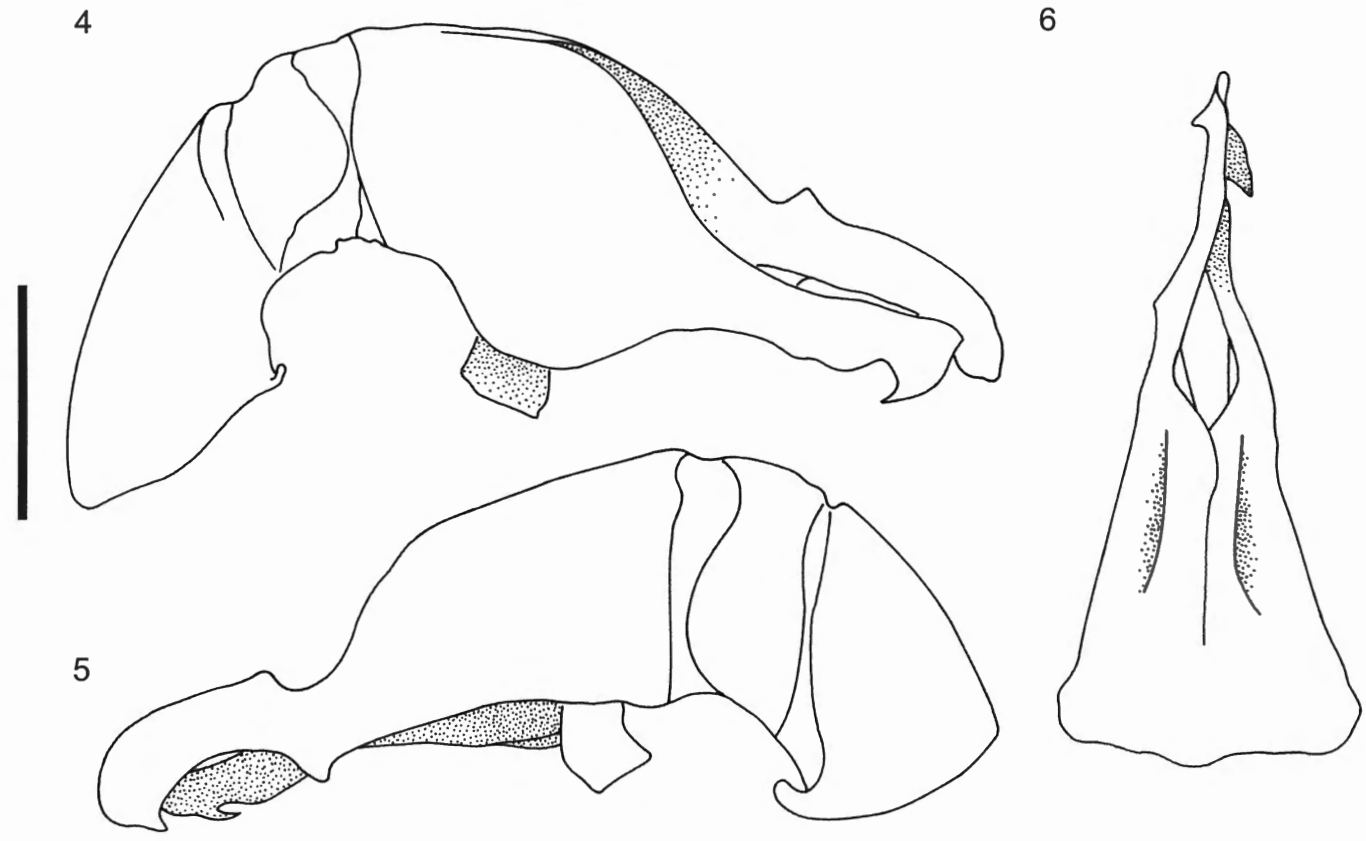
*Metasternum* deeply and evenly punctate, setation rather short and sparse.

*Legs* very slender; protibia bidentate; protarsomere 5 somewhat thickened; larger pro- and mesotarsal claw cleft.

*Parameres* elongate and asymmetric; left paramere with a blunt angle at the dorsal margin and a backwards pointing hook before the apex; right paramere with an obtuse, reflexed angle slightly apical of the constriction; ventral plate strongly curved, with a simple backwards pointing apical hook (figs. 1-3).

*Females*: Length: 15.0 - 16.5 mm, width: 7.0 - 8.5 mm. Abdominal sternites without distinct coppery coloration. Protarsomere 5 not thickened. Shape of apical tooth of anterior tibia spatula-shaped.

VARIABILITY: Length: 14.0 - 16.5 mm, width: 7.0 - 9.0 mm. The examined specimens show a low degree of variability. The extensions of the dark marks on




Figs 4-6. – *Anomala smetsi* sp. nov. (holotype): 4. aedeagus, left lateral view. 5. aedeagus, right lateral view. 6. parameres, dorsal view.

head and pronotum can slightly vary from individual to individual. The processes and extensions of the parameres show weak differences in length and shape.

ETYMOLOGY: The new species is dedicated to Jérôme Constant (IRSNB) who has collected a major part of the type material.

DIFFERENTIAL DIAGNOSIS: *Anomala constanti* is distinguished from *A. smetsi, n. sp.* by the shape of the aedeagus. The subapical hook of the right paramere is situated much closer to the apex in *A. smetsi*. The left paramere is distinctly broader and lacking the ventral tooth in *A. constanti*. *Anomala constanti* and *A. smetsi* are similar to *A. bella* ARROW, 1917 and *A. diversipennis* ARROW, 1917 with which they have in common the somewhat depressed body shape in combination with the posteriorly projecting, tumid pygidium, the slender legs, and the regularly sulcate elytra. However, the color of the elytra in *A. bella* and *A. diversipennis* is darker brown or black (*A. diversipennis*), sometimes with a basal bright patch in *A. bella*. In contrast, in *A. constanti* and *A. smetsi* the elytra are colored yellowish brown with a distinct greenish metallic luster. Only abdominal sternites 4-6 are colored coppery red in males of *A. diversipennis*, whereas abdominal sternites 3-6 are coppery in *A. constanti*, *A. smetsi*, and *A. bella*. Moreover, the shape of the aedeagus is very different. In *A. bella* the right paramere is tongue-shaped with a sharp tooth at the ventral margin, the left paramere is strongly curved upwards. The aedeagus of *A. diversipennis* is figured in ARROW (1917).

### ***Anomala smetsi*** LIMBOURG & ZORN
(Figs 4-6, 8)

MATERIAL EXAMINED: Holotype male: Cambodia, Kirirom N. P., Pine Forest, light trap, 21.IV.2005 (IRSNB). PARATYPES: 1 male, 1 female: (IRSNB); 1 male: Laos centr., Khammon prov., Nakai env., route N° 8, alt. 560 + or – 20m, N17°42.8/E105°08.9 (GPS), 04-08.V.1998, leg. M. Strba & R. Hergovits (CCZ).

DESCRIPTION OF THE HOLOTYPE: Length: 14 mm, width: 7 mm.

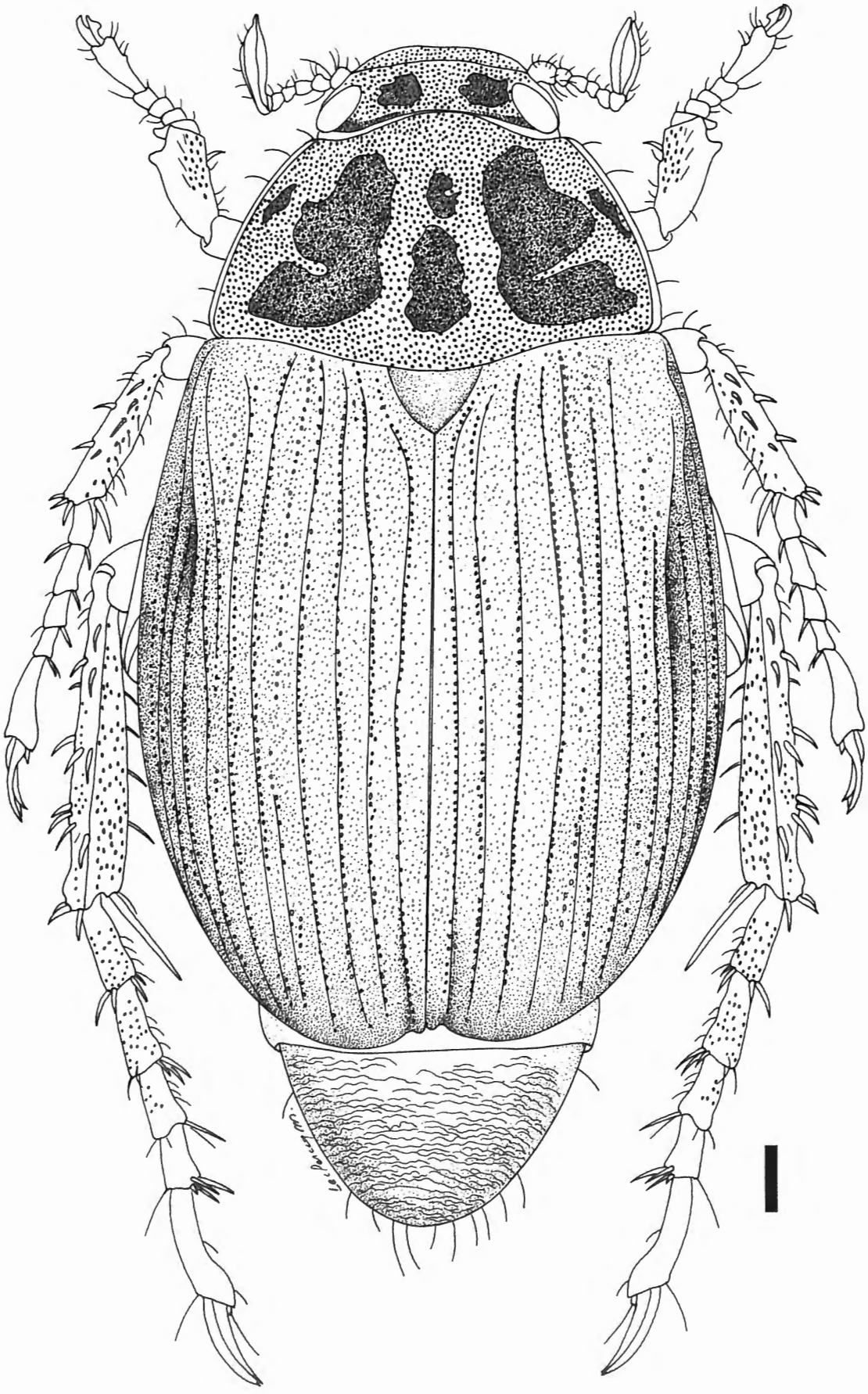


Fig. 7. – Habitus of *Anomala constanti* sp. nov., dorsal view.

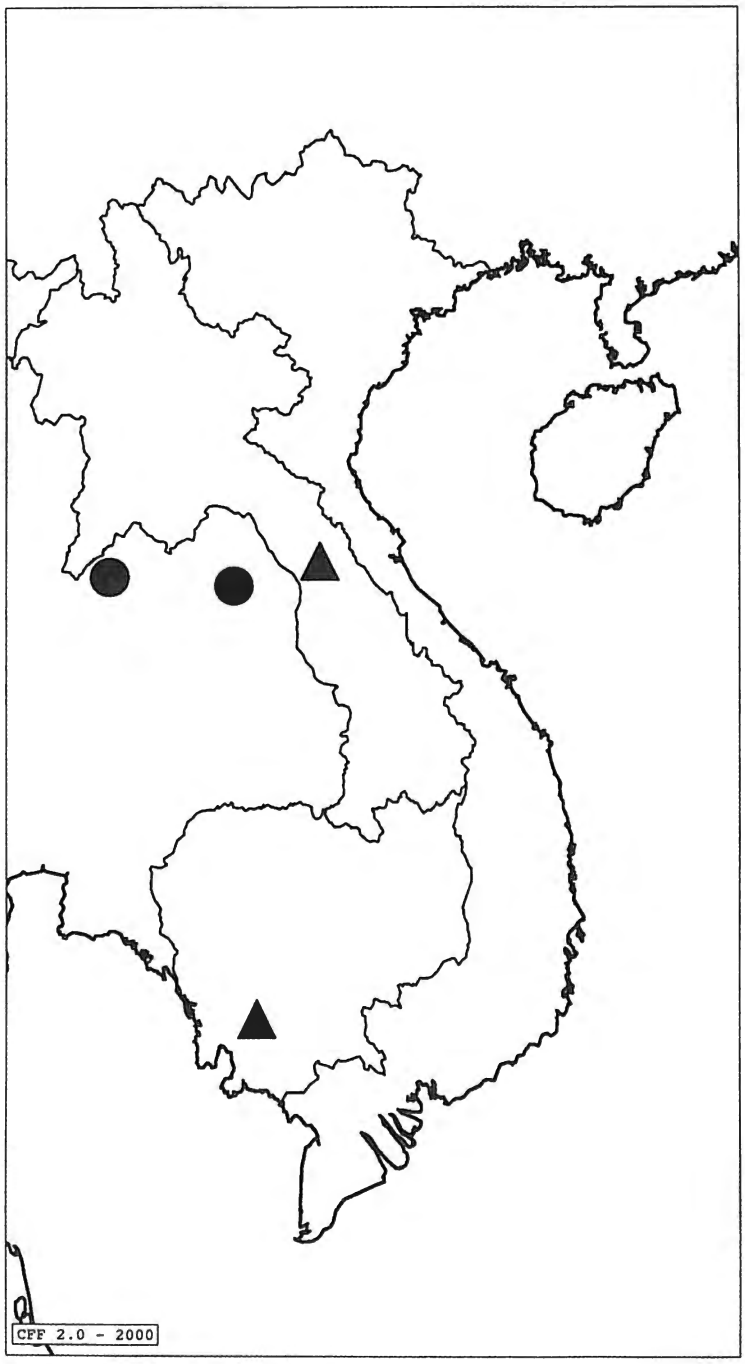



Fig. 8. – Distribution map of *Anomala constanti* sp. nov. and *Anomala smetsi* sp. nov.

*Body shape* elongate ovoid, weakly convex; surface weakly shining; body color yellowish brown with the elytra somewhat darker; suffused with weak golden green iridescent luster; abdominal sternites 3-6 and pygidium dark copper red; two small patches on the posterior head, a narrow median line and irregular patches on each side of pronotum, basal and median part of propygidium, latero-distal part of each sternite, and posterior part and suture of elytra dark metallic green to black; hind tibia and pygidium coppery; tarsi black.

*Clypeus* broadly trapezoidal, front angles rounded, anterior margin weakly reflexed; clypeus and frons densely, vertex sparsely punctate.

*Pronotum* broadest at its base, strongly convergent in the anterior half; anterior angles acute and produced; posterior angles obtuse, somewhat rounded; basal marginal line broadly interrupted in the middle; punctation dense, distinct and even.

*Elytra* deeply sulcate, intervals convex and irregularly punctate; lateral margin strongly carinate; humeral and apical umbone prominent; apex of each elytron separately rounded.

*Propygidium* only covered by elytra in the anterior half.

*Pygidium* elongate, tumid, projecting posteriorly; densely transversely reticulo-striate.

*Abdominal sternites* transversely reticulo-striate, nearly lacking setae.

*Metasternum* deeply and evenly punctate, setation rather short and sparse.

Legs very slender; protibia bidentate; protarsomere 5 somewhat thickened; larger pro- and mesotarsal claw cleft.

*Parameres* elongate and asymmetric; left paramere ventrally with a little backwards pointing hook close to the apex; right paramere with a small tooth at the dorsal and ventral margin situated slightly apical of the constriction; ventral plate strongly curved, with an apical backwards pointing double-hook (figs. 4-6).

*Female:* Length: 14.5 mm, width: 7.0 mm. Abdominal sternites without distinct coppery coloration. Protarsomere 5 not thickened. Shape of apical tooth of anterior tibia spatula-shaped.

VARIABILITY: Length. 13.5 - 14.0 mm, width: 6.5 - 7.0 mm. The examined specimens show a low degree of variability. The extensions of the dark marks on head and pronotum can slightly vary from individual to individual. The processes and extensions of the parameres show weak differences in length and shape.

ETYMOLOGY: The new species is dedicated to Koen Smets (IRSNB) who has collected a major part of the type material.

DIAGNOSIS: *Anomala smetsi* is extremely similar to *A. constanti* and is separated from the latter species only by the shape of the aedeagus. The key differences are given in the diagnosis of *A. constanti* above.

## Acknowledgments

We would like to thank Marylise Leclercq for the drawings and Petr Pacholátko for providing specimens from his private collection. Moreover, we are grateful to Jérôme Constant and Mary Liz Jameson for revising the manuscript.

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