

## Seven new species of *Coomaniella* Bourgoïn, 1924 (Coleoptera: Buprestidae) with redefinition of species-groups and remarks on distribution and biology

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**Abstract.** Seven new species of the genus *Coomaniella* Bourgoïn, 1924 are described from Southeastern Asia; six from the subgenus *Coomaniella*: *C. calcarata* sp. n., *C. communis* sp. n., *C. copipes* sp. n., *C. lingafelteri* sp. n., *C. simulatrix* sp. n., *C. tarsalis* sp. n.; and one from the subgenus *Strbaniella* Jendek & Kalashian, 1999: *C. brevicornis* sp. n. Habitus and diagnostic characters of all species are illustrated. New distributional records are given for *C. biformis* Bílý & Kalashian, 1994; *C. biformissima* Jendek & Kalashian, 1999; *C. kubani* Bílý & Kalashian, 1994; *C. lao* Jendek & Kalashian, 1999; *C. macropus* Théry, 1929; *C. marguieri* Baudon, 1967 and *C. violaceipennis* Bourgoïn, 1924. Two species-groups are disallowed: *Marguieri* species-group and *Violaceipennis* species-group and both species *Coomaniella marguieri* Baudon, 1967 and *C. violaceipennis* Bourgoïn, 1924 are transferred to *Chinensis* species-group. Collection circumstances and potential adult and/or larval host plant are briefly discussed. The checklist of *Coomaniella* species is given.

**Key words.** Taxonomy, Coleoptera, Buprestidae, Coomaniellini, *Coomaniella*, new taxa, distribution, host plants.

### INTRODUCTION

*Coomaniella* Bourgoïn, 1924 is the only genus in the tribe Coomaniellini Bílý, 1974. This genus is known only from South and Southeastern Asia and comprises three subgenera: *Coomaniella* Bourgoïn, 1924; *Tuberniella* Jendek & Kalashian, 1999 and *Strbaniella* Jendek & Kalashian, 1999. Species of *Coomaniella* are remarkable by the exceptionally large eyes, which are almost touching on the vertex in some males. Some species exhibit extraordinary sexual dimorphism affecting mostly antennomeres and tarsomeres. The genus was recently revised by Jendek & Kalashian (1999). Since then, two other taxonomic papers were published (Jendek 2002, 2005), the first describing *C. janka* Jendek, 2005, the second synonymizing *C. aureopilosa* Théry, 1931 with *C. violaceipennis* Bourgoïn, 1924. This paper describes seven new species thus rising the number of species in the genus to 31. The differential diagnosis is based exclusively on the male characters while females of most species can not be reliably distinguished.

### MATERIAL AND METHODS

Subgeneric and species-group subdivision follows those proposed by Jendek & Kalashian (1999). Because all new species are thoroughly illustrated, descriptions are kept brief and focused on the selected diagnostic characters or

characters not apparent from the images. Male genitalia are not used for differential diagnostic because of being very uniform and very feebly sclerotized.

Locality label data are cited verbatim and enclosed in “quotation marks”. Examined material is grouped alphabetically by country. New country and provincial records are highlighted in bold. Distribution is given alphabetically from the country to the next subordinate unit (province). The name spelling for the country and its administrative subdivision is adopted from the Norm ISO 3166-2 published by the International Organization For Standardization (1998).

### ABBREVIATIONS FOR COLLECTIONS

BMNH	The Natural History Museum, London, United Kingdom
CNC	Canadian National Collection of Insects, Ottawa, Canada
EJCB	Collection of E. Jendek, Ottawa, Canada
IEBR	Institute of Ecology and Biological Resources, Hanoi, Vietnam
NMPC	National Museum (Natural History), Prague, Czech Republic

USNM	National Museum of Natural History, Washington D.C., USA
ZFMK	Zoologisches Forschungsmuseum Alexander Koenig, Bonn, Germany
ZIN	Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia

### COLLECTION CIRCUMSTANCES AND REMARKS ON “RENDEZVOUS” TREE

At present, very little is known on the biology of *Coomaniella*. Specimens of *C. purpurascens* from West Bengal, India, were reported from *Chukrasia tabularis* (Meliaceae) by Jendek (2002). Jendek & Kalashian (1999) reported an *Ailanthus*-like tree as a plant on which adults of *C. biformis* Bílý & Kalashian, 1994, *C. biformissima* Jendek & Kalashian, 1999, *C. kubani* Bílý & Kalashian, 1994, *C. lao* Jendek & Kalashian, 1999 and *C. sausa* Jendek & Kalashian, 1999 were collected in Laos. *Coomaniella janka* Jendek, 2005 was found on leaves of *Rhus* (Anacardiaceae) in Henan, China (Jendek, 2005). Svatopluk Bílý (NMPC) reared specimens of *C. purpurascens* Baudon, 1966 from the wooden pencil about 3 cm in diameter, sold as a souvenir in Thailand (pers.com). In years 2011–2012, collecting expeditions in Vietnam brought, along with new species, additional information on the biology of *Coomaniella*. Large series of specimens of several species were collected in Vietnam in Cuc Phuong National Park, Ninh Binh Province and at two different altitudes, 1422 m and 987 m, in Phia-Oac Mountains, Cao Bang Province (see examined material).

The collecting site in Cuc Phuong National Park was an abandoned orchard. Specimens were found on the *Albizzia*-like trees 5–15 m tall and on the nearby vegetation, mostly banana leaves. In the Phia-Oac Mountains, specimens were collected from the small, healthy, roadside trees, 3–5 m tall (Figs 23–30). These trees are named “rendezvous” trees because, typically, specimens of several species were found assembled on them. Though flying very fast, adults dwelled motionlessly for a long time exclusively on the underside of leaves, often many specimens or species side by side. The mating in this position was also observed. Adults were present in the highest abundance during the hottest part of the sunny, sweltering weather, usually between 10 am and 4 pm. They were not observed during cold, rainy or windy days. After visual examination, specimens could be easily collected from the “rendezvous” tree by a sweeping net. Collected specimens were often promptly replaced by newly arriving wave of specimens landing on the tree.

No exit holes or galleries were found on “rendezvous” trees. Adult feeding on leaves was not recorded but is not excluded. The reason for specimens assembling remains unclear. The “rendezvous” trees from the site in Phia-Oac

Mountains, altitude 987 m (Figs 28–30) were determined as *Choerospondias axillaris* (Anacardiaceae), which is native to South, Southeast and East Asia, from India to China and Japan. The undetermined tree from the same locality but altitude 1422 m, seems very similar. So far, all published *Commaniella* host records (see above) pertain to plants with compound leaves.

### TAXONOMIC SECTION

#### *Coomaniella* Bourgoïn, 1924

#### Subgenus *Coomaniella* Bourgoïn, 1924

*Biformis* species-group

#### *Coomaniella biformis* Bílý & Kalashian, 1994

Fig. 27 (imago in situ)

**Material examined.** VIETNAM: 3 ♂ (CNC, EJCB): “N Vietnam, Ninh Binh prov., Cuc Phuong N. Park, N20°21’10”, E105°35’00”, 24-28.iv.2012, alt 440 m, leg. Jendek E., Lingafelter S. & Pham H. T.” **New provincial record**; 1 ♂ (CNC): “N Vietnam, Tam-Dao NP, Tam-Dao env., 8-18.v.2012, 900-1200m, N21°27’38”, E105°38’28”, leg. Jendek E.”; 1 ♀ (CNC): “N Vietnam, Tam-Dao NP, Tam-Dao env., 13-26.vi.2011, 900-1200m, N21°27’38”, E105°38’28”, E. Jendek leg.”.

**Distribution.** LAOS: Bolikhamxai; VIETNAM: Ninh Binh, Vinh Phuc.

#### *Coomaniella biformissima* Jendek & Kalashian, 1999

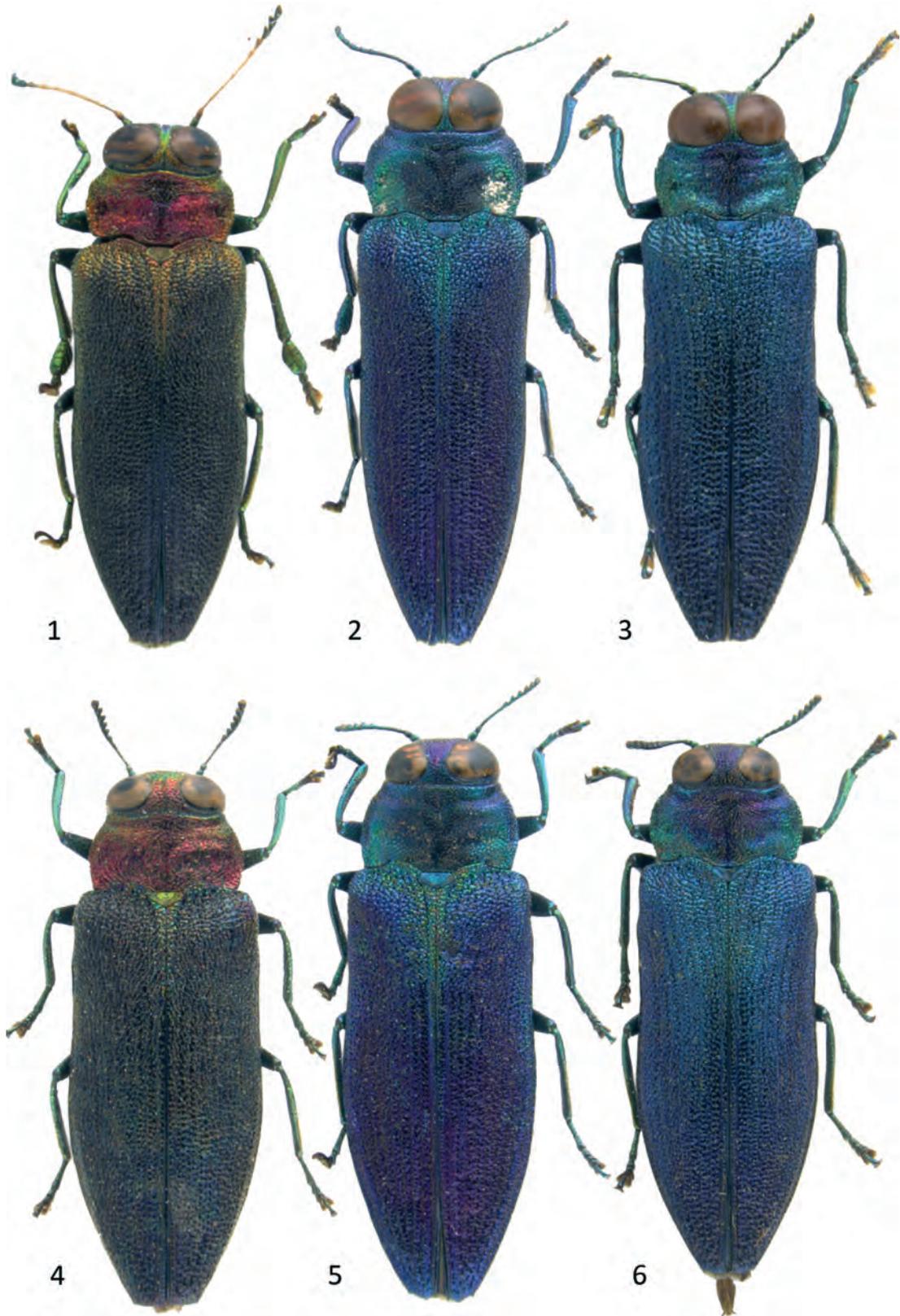
**Material examined.** VIETNAM: 2 ♂, 3 ♀ (CNC, EJCB): “N Vietnam, Ninh Binh prov., Cuc Phuong N. Park, N20°21’10”, E105°35’00”, 24-28.iv.2012, alt 440 m, leg. Jendek E., Lingafelter S. & Pham H. T.” **New country record.**

**Distribution.** LAOS: Bolikhamxai; VIETNAM: Ninh Binh.

*Kubani* species-group

#### *Coomaniella kubani* Bílý & Kalashian, 1994

**Material examined.** VIETNAM: 2 ♂, 3 ♀ (CNC, EJCB): “N Vietnam, Ninh Binh prov., Cuc Phuong N. Park, N20°21’10”, E105°35’00”, 24-28.iv.2012, alt 440 m, leg. Jendek E., Lingafelter S. & Pham H. T.” **New provincial record.**



**Figs 1–6.** Habitus of *Coomaniella*. *C. lingafelteri* sp. n.: 1. Holotype ♂, 6.4 mm 4. Paratype ♀, 6.8 mm; *C. tarsalis* sp. n.: 2. Holotype ♂, 9.6 mm 5. Paratype ♀, 10.8 mm; *C. communis* sp. n.: 3. Holotype ♂, 6.2 mm 6. Paratype ♀, 8.2 mm.

**Distribution.** LAOS: Bolikhamxai; VIETNAM: Lao Cai, Ninh Binh.

***Coomaniella lingafelteri* sp. n.**

Fig. 1 (habitus ♂); Fig. 4 (habitus ♀)

**Description of holotype.** Size: 6.4 mm. **Body.** Frons golden-green; vertex golden-orange; pronotum purple; elytra black-violet with golden-yellow epipleural (anterior  $\frac{3}{4}$  of elytra), humeral and sutural (anterior  $\frac{1}{3}$  of elytra) parts. Dorsal side with short, semierect, pale pubescence. **Head.** Vertex between eyes in narrowest part reduced to 2–3 rows of punctures; antennae very long, reaching to elytral humeri; first antennomere and apical three antennomeres golden-green, remaining ones ochreous. **Pronotum** strongly transverse, widest in middle, sides evenly arcuate, anterior lobe conspicuous, subangulate; disk with obvious, deep, lateral impressions and smaller anteromedial impression. **Scutellum** subpentagonal with obtuse angles. **Elytra** with apices subtruncate and armed with spines on each side, interspace between spines very faintly sinuate. **Tarsi.** Protarsus short, more than twice shorter than protibia; protibia without apical spur; apical, inner margin of protibia with long, erect hairs; tarsomere 1 feebly incrassate, without spine on anterior outer margin, about as long as next three tarsomeres combined; apical inner margin of mesotibia and lateroventral part of mesotarsomere 1 with obvious, long, erect hairs; mesotarsomere 1 strikingly, irregularly incrassate; shorter than following tarsomeres combined. apical half of mesotibia and metatarsomeres 1 with long, sparse, whitish hairs underneath; metatibia with obvious apical spur; metatarsus without distinct modifications; metatarsomere 1 shorter than following tarsomeres combined.

**Variability.** Size: 5.4–7.2 mm. Pronotum varies from golden-orange to purple; lateral spines on elytral apices sometimes obscure or missing; interspace between them sometimes subtruncate. **Sexual modifications.** Females are generally larger and more robust; vertex between eyes in narrowest part reduced to 5–6 rows of punctures; antennae and tarsi without obvious modifications. Ovipositor long and thin.

**Diagnosis.** *Coomaniella lingafelteri* sp. n. belongs to the *Kubani* species-group based on the very long, ochreous antennae and incrassate mesotarsomere 1. It differs from *C. kubani* by having the metallic color of all tarsomeres, which are in *C. kubani* partly ochreous. It can be distinguished from the closest *C. bicolor* Jendek & Kalashian, 1999 by the different dorsal color and by the shape of the incrassate mesotarsomere 1, which is much wider than that in *C. bicolor*.

**Material examined. Holotype,** ♂ (CNC): “Vietnam, Cao Bang Prov., Phia-Oac Mountain Rd, 1422 m, +22° 36' 15.60", +105° 53' 0.60", 30 April - 5 May 2012, leg. Jendek, Lingafelter, Pham”. **Paratypes:** 41 (CNC, EJCB, IEBR, USNM, ZFMK) from the same locality as holotype.

**Host plant.** Unknown.

**Distribution.** VIETNAM: Cao Bang.

**Etymology.** Patronymic; the species was named in honour of Steve Lingafelter (USNM), an eminent expert on Cerambycidae, one of the collectors of this species.

*Marguieri* species-group

**Remarks.** This species-group was proposed by Jendek & Kalashian (1999) based on a single available specimen (holotype) of *C. marguieri* Baudon, 1967. Recently collected additional specimens allowed re-examination of the species concept. *Coomaniella marguieri* is transferred to *Chinensis* species-group and the *Marguieri* species-group is disallowed. See also remarks below *C. marguieri*.

*Violaceipennis* species-group

**Remarks.** This species-group was proposed by Jendek & Kalashian (1999) for two species: *Coomaniella violaceipennis* Bourgoin, 1924 and *C. aureopilosa* Théry, 1931. The later was synonymized with *C. violaceipennis* by Jendek (2002). The examination of recently collected specimens revealed that the sole diagnostic character of this species-group, the tridentate elytral apices, is quite variable in *C. violaceipennis*. For this reason the *Violaceipennis* species-group is disallowed and *C. violaceipennis*, because of lacking spine on outer margin of protarsomere 1, is transferred to the *Chinensis* species-group.

*Chinensis* species-group

***Coomaniella violaceipennis* Bourgoin, 1924**

**Material examined.** Vietnam: 5 ♂, 6 ♀ (CNC, EJCB): “N Vietnam, Ninh Binh prov., Cuc Phuong N. Park, N20°21'10", E105°35'00", 24-28.iv.2012, alt 440 m, leg. Jendek E., Lingafelter S. & Pham H. T.” **New provincial record.**

**Distribution.** VIETNAM: Ha Giang, Ninh Binh, Vinh Phuc.

***Coomaniella marguieri* Baudon, 1967**

Fig. 14 (habitus ♂)

**Diagnosis.** *C. marguieri* belongs to the *Chinensis* species-group by lacking the obvious, male sexual modifications on tarsomeres. This species is unique by the following combination of characters: body is dorsally golden-green, pronotum sometimes golden-orange; elytral apices and epipleura with bluish tinge; vertex between eyes in male reduced to 1–2 rows of punctures in narrowest part; antennae and tarsi in male without obvious sexual modifications; protibia and metatibia in male are armed with a long apical spine on the inner side. It can be distinguished by the golden–green color and by the presence of tibial spines from *C. chinensis* Jendek & Kalashian, 1999. By the golden color of ventral side, *C. marguieri* resembles *C. janka*, but it can be distinguished by having the protibial spine and by lacking protruding spine on the protarsomere 1.

**Variability.** Size: 7.2–9.6 mm. Pronotum widest at middle or in posterior third; pronotal sides in male from arcuate to almost straight (holotype); elytral apices bispinose with straight or sinuate interspace.

**Sexual modifications:** Males are generally smaller, slender and more flat than females.

**Material examined.** VIETNAM: 2 ♂, 2 ♀ (CNC, EJCB): “N Vietnam, Ninh Binh prov., Cuc Phuong N. Park N20°21'10”, E105°35'00”, 24–28.iv.2012, alt 440 m, leg. Jendek E., Lingafelter S. & Pham H. T.” **New country record.**

**Distribution.** VIETNAM: Ninh Binh; THAILAND: Chiang Mai.

**Remarks.** This enigmatic species was described from a single male. Jendek & Kalashian, 1999 redescribed the holotype preserved in BMNH. The holotype is remarkable by having much prolonged elytra and especially the narrow pronotum with the sides almost straight. For this reason, the *Marguieri* species-group was proposed exclusively for this species. Recent finding of additional specimens, including females, revealed that the shape of pronotal sides varies in this species. *Coomaniella marguieri* is transferred to the *Chinensis* species-group (see Diagnosis).

***Coomaniella tarsalis* sp. n.**

Fig. 2 (habitus ♂); Fig. 5 (habitus ♀); Fig 15 (protarsus); Fig. 22 (mesotarsus)

**Description of holotype.** Size 9.6 mm. **Body** deep-blue dorsally with greenish parts on pronotal sides, across

humeri and along suture in basal 1/3 of elytra; pronotum and elytra with inconspicuous, sparse pubescence; ventral side golden-green. **Head.** Vertex in narrowest part reduced to one row of punctures; antennae not modified, reaching to half of pronotal length. **Pronotum** strongly transverse; sides strongly, evenly arcuate, widest in middle; anterior pronotal lobe missing; anterior margin narrower than posterior; disk with obvious, deep, lateral impressions covered with white efflorescence. **Scutellum** cordiform with truncate anterior margin. **Elytra** with distinct lateral spines on apices, interspace between them obviously sinuate or subangulate. **Tarsi.** Protibia without spur; protarsus as long or longer than half of protibia; protarsomere 1 distinctly incrassate and about as long as following three tarsomeres combined; apical inner side of protibia and lateroventral portions of protarsomere 1 with long, erect hairs, apex of protarsomere 1 truncate without spine on outer side; mesotarsomere 1 obviously incrassate, enlarged apically and about as long as following three tarsomeres combined, apical inner side of mesotibia and lateroventral side of mesotarsomere 1 with long, erect hairs; metatibia on apical inner side with long spur; metatarsomere 1 longer than following tarsomeres combined.

**Variability.** Size: 9.0–11.1 mm. The white pronotal efflorescence is often vanished. Shape of elytral apices varies from bispinose with sinuate interspace to bispinose with subangulate interspace. **Sexual modifications.** Females are generally larger and more robust; narrowest part of the vertex between eyes reduced to 5–6 rows of punctures; pronotum widest in posterior third.

**Diagnosis.** *Coomaniella tarsalis* sp. n. belongs to the *Chinensis* species-group based on the lack of spine on the protarsomere 1. It can be distinguished by the color and by the incrassate pro- and mesotarsomere 1. The female of *C. tarsalis* sp. n. can be recognized from other similar species by the longer metatarsomere 1.

**Material examined. Holotype,** ♂ (CNC): “N Vietnam, Ninh Binh prov., Cuc Phuong N. Park, N20°21'10”, E105°35'00”, 24–28.iv.2012, alt 440 m, leg. Jendek E., Lingafelter S. & Pham H. T.”. **Paratypes:** 5 (CNC, EJCB): from the same locality as holotype.

**Distribution.** VIETNAM: Ninh Binh.

**Etymology.** The specific name is derived from the Greek noun *tarsos* (flat of the foot); it refers to the strikingly modified tarsi of the species.

***Coomaniella communis* sp. n.**

Fig. 3 (habitus ♂); Fig. 6 (habitus ♀); Fig. 18 (mesotarsus)

**Description of holotype.** Size 6.2 mm. **Body.** Head golden-green; pronotum and elytra blue; pronotal sides with golden-blue tinge; ventral side with pale, sparse, semierect pubescence. **Head.** Vertex between eyes in narrowest part reduced to two rows of punctures; antennae reaching to about half of pronotal length. **Pronotum** transverse, distinctly narrower than elytra across humeri, widest in middle; sides strongly, evenly arcuate; disk with obvious, deep lateral impressions, very narrowly separate in middle. **Scutellum** subpentagonal with corners obtuse; impressed on disk. **Elytra** with apices subtruncate and armed with small lateral spines; interspace very faintly sinuate. **Legs.** Protarsus not shortened, longer than half of protibia; protibia and protarsomere 1 without long, whitish hairs, protibia without apical spur; protarsomere 1 very faintly, dorsally incrassate, without spine on outer margin; mesotibia with small, obscure, apical spur; mesotarsomere 1 slightly, ventrally incrassate, distinctly prolonged and slightly subtriangular, with apical inner margin not acuminate, shorter than following tarsomeres combined; apical half of mesotibia and lateroventral portions of mesotarsomere 1 with long, sparse, whitish hairs underneath; metatibia with obvious apical spur; metatarsus without obvious modifications; metatarsomere 1 long but shorter than following tarsomeres combined. **Ventral side.** Basal part of abdomen just behind metaxocae distinctly attenuate.

**Variability.** Size: 5.8–8.2 mm. Elytral pubescence is partly obscure in some specimens; shape of elytral apices varies considerably, lateral spines are obliterate or almost absent, interspace between spine is straight, sinuate or sometimes subangulate.

**Sexual modifications.** Female is generally larger and more robust; vertex between eyes in narrowest part reduced to 5–6 rows of punctures; antennae shorter, legs without modifications.

**Diagnosis.** *Coomaniella communis* sp. n. belongs to the *Chinensis* species-group by the general habitus and by the protarsomere 1 without spine on the outer margin in male. It is very close to *C. chinensis* Jendek & Kalashian, from which it can be distinguished by the less conspicuous pubescence on ventral side; longer and slender legs; apex of mesotibia and mesotarsus 1 with conspicuous, long, whitish hairs on the underside, length of hairs is distinctly longer than diameter of mesotarsomere 1; mesotarsomere 1 distinctly longer and only slightly subtriangular; metatibia in male not bent; metatarsomere 1 distinctly subparallel, longer and more slender; basal part of abdomen just behind metaxocae distinctly attenuate but without medial sulcus.

**Material examined. Holotype,** ♂ (CNC): “Vietnam, Cao Bang Prov., Phja-Den environs, 987 m, +22° 34' 35.50”, +105° 52' 34.26”, 30 April - 5 May 2012, leg. Jendek, Lingafelter, Pham”. **Paratypes:** 314 (CNC, EJC, IE, USNM, ZIN, ZFMK) from the same locality as holotype.

**Distribution.** VIETNAM: Cao Bang.

**Etymology.** The specific name is derived from Latin adjective *communis* (common, general); it refers to the amount of collected specimens of this new species.

*Macropus* species-group

***Coomaniella lao* Jendek & Kalashian, 1999**

**Material examined.** LAOS: 5 ♂ (EJC): “Laos NE, Hua Phan prov., 20°19'N, 104°25'E, 25 km SE Vieng Xai (by road), Ban Kangpabong env., 14-18.v.2001, D. Hauck leg.” **New provincial record.** VIETNAM: 4 ♂, 2 ♀ (CNC, EJC): “N Vietnam, Vinh Phuc prov., Melinh biodiversity station, N105°42'44”, E21°23'04”, 9-12.vi.2011, 80-200m, E. Jendek leg.” **New country and provincial record;** 2 ♂ (CNC, EJC): “N Vietnam, Ninh Binh prov., Cuc Phuong N. Park, N20°21'10”, E105°35'00”, 24-28.iv.2012, alt 440 m, leg. Jendek E., Lingafelter S. & Pham H. T.” **New country and provincial record.**

**Distribution.** LAOS: Bolikhamxai, Houaphan, Louang Namtha. VIETNAM: Ninh Binh, Vinh Phuc.

***Coomaniella macropus* Théry, 1929**

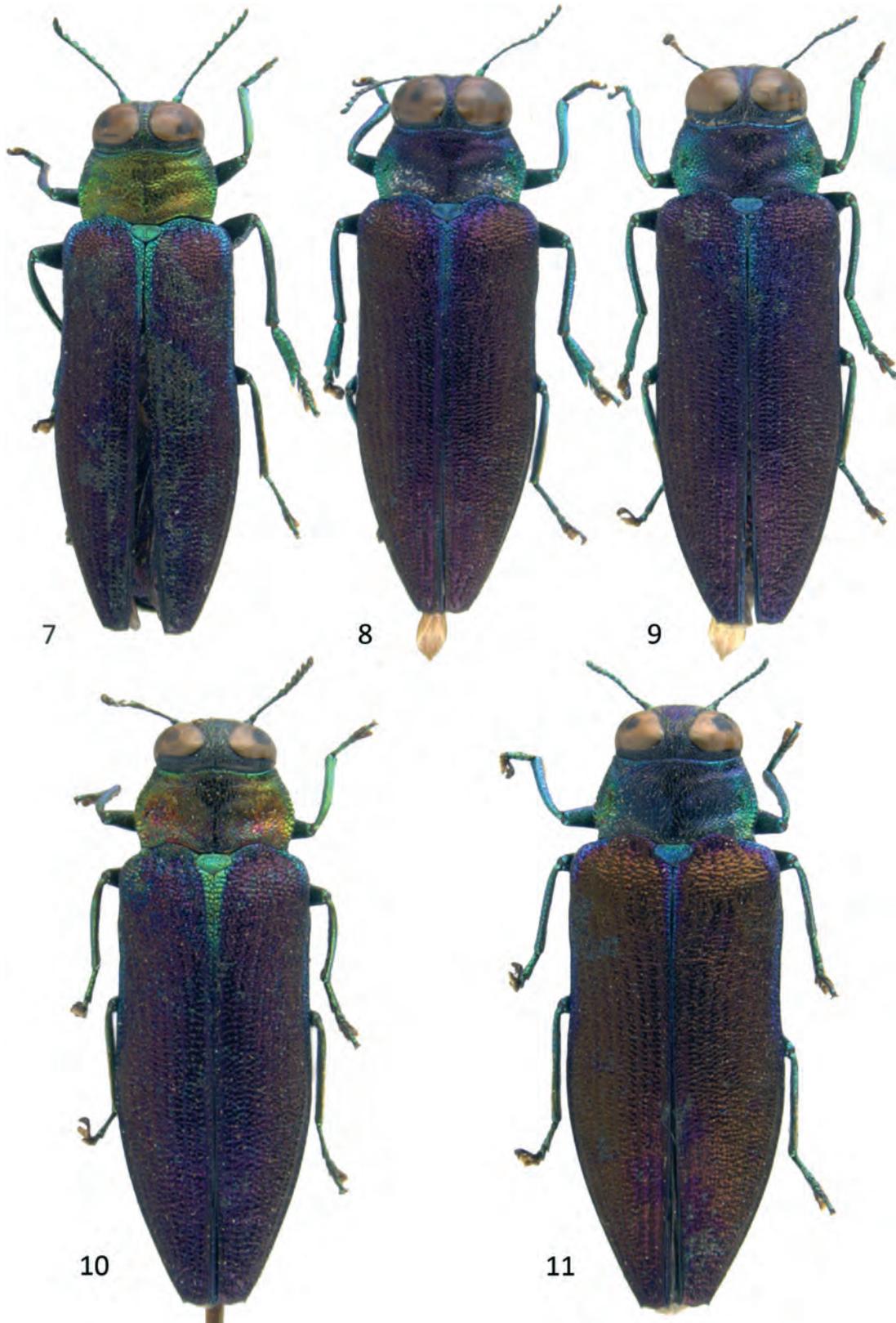
**Material examined.** VIETNAM: 20 (CNC, EJC, IE, USNM): “Vietnam, Cao Bang Prov., Phia-Oac Mountain Rd, 1422 m, +22° 36' 15.60”, +105° 53' 0.60”, 30 April - 5 May 2012, leg. Jendek, Lingafelter, Pham” **New provincial record.**

**Distribution.** VIETNAM: Cao Bang, Vinh Phuc.

***Coomaniella copipes* sp. n.**

Fig. 7 (habitus ♂); Fig. 10 (habitus ♀); Fig. 20 (mesotarsus)

**Description of holotype.** Size 7.5 mm. **Body.** Head golden-green, pronotum golden with greenish tinge laterally, elytra deeply violet with turquoise epipleural, humeral and sutural margins, sutural coloration in form of sharply delimited narrow wedge reaching to one fourth of anterior elytral length. **Head.** Vertex between eyes in narrowest



**Figs 7–11.** Habitus of *Coomaniella*. *C. copipes* sp. n.: **7.** Holotype ♂, 7.5 mm **10.** Paratype ♀, 7.6 mm; *C. calcarata* sp. n. **8.** Holotype ♂, 9.0 mm; *C. simulatrix* sp. n.: **9.** Holotype ♂, 7.8 mm **11.** Paratype ♀, 8.7 mm.

**Table 1.** Differential diagnosis of *Coomaniella copipes* sp. n., *C. calcarata* sp. n. and *C. simulatrix* sp. n.

	<i>C. copipes</i> sp. n.	<i>C. calcarata</i> sp. n.	<i>C. simulatrix</i> sp. n.
Antennae (length)	reaching to posterior pronotal angles	reaching to half of pronotal length	reaching to half of pronotal length
Pronotum (color)	golden	Dark-violet with golden-green lateral parts	Dark-violet with golden-green lateral parts
Protibia in male (pubescence on apical margin)	absent	present	present
Mesotarsomere 1 in male (shape)	strikingly incrassate, subparallel, apical end obviously wider than basal	strikingly incrassate, distinctly subtriangular, apical end obviously wider than basal	faintly incrassate, slightly subtriangular rarely subparallel, apical end subequal or slightly wider than basal
Mesotarsomere 1 in male (pubescence on ventral side)	absent	present	present

part reduced to two rows of punctures; antennae long, reaching to posterior pronotal angles. **Pronotum** transverse, distinctly narrower than elytra across humeri, widest in middle; sides strongly, evenly arcuate; disk with obvious, deep lateral impressions very narrowly separate in the middle. **Scutellum** subpentagonal with corners obtuse. **Elytra** without obvious pubescence; apices subtruncate, with small lateral spines; interspace very faintly sinuate. **Legs.** Protarsus obviously short, more than twice shorter than protibia; protibia without apical spur and long hairs on apical end; protarsomere 1 incrassate, with the apical spine on outer margin reaching beyond anterior margin of protarsomere 2; mesotibia with long, reddish apical spur; mesotarsomere 1 strikingly incrassate, subparallel, dorsoventrally flattened, longer and wider than following tarsomeres combined, with inner apical angle obviously sharply acuminate, dorsally without obvious pubescence; apex of mesotibia and first three metatarsomeres with long, sparse, whitish hairs underneath; metatibia with apical spur; metatarsus without obvious modifications; metatarsomere 1 about as long as following tarsomeres combined.

**Variability.** Size: 7.5–7.6 mm.

**Sexual modifications.** Female with golden-orange pronotum; vertex between eyes in narrowest part reduced to four rows of punctures; antennae distinctly shorter.

**Diagnosis.** *Coomaniella copipes* sp. n. belongs to the *Macropus* species-group by having the protarsomere 1 with the spine on the outer margin in male. It is very similar to *C. calcarata* sp. n. and *C. simulatrix* sp. n. by the

general habitus and by the form of the male mesotarsomere 1. It can be distinguished by the characters given in the Table 1.

**Material examined.** **Holotype**, ♂ (CNC): “Vietnam, Cao Bang Prov., Phia-Oac Mountain Rd, 1422 m, +22° 36’ 15.60”, +105° 53’ 0.60”, 30 April - 5 May 2012, leg. Jendek, Lingafelter, Pham”. **Paratypes:** 3 (EJCB, USNM) from the same locality as holotype.

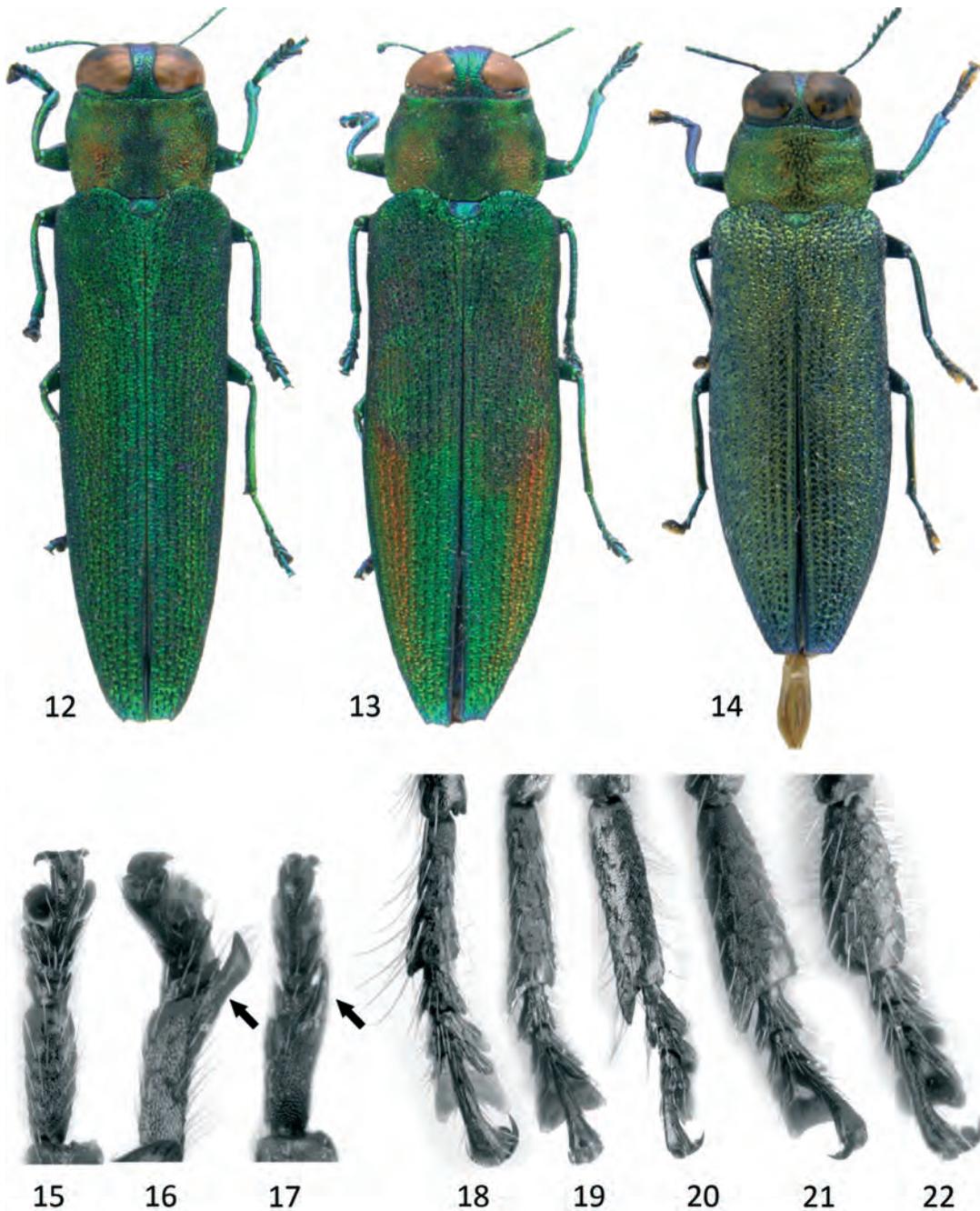
**Distribution.** VIETNAM: Cao Bang.

**Etymology.** The specific name is derived from Latin nouns *copis* (cleaver, knife) and *pes* (foot); it refers to the curiously modified mesotarsus 1 of the species.

***Coomaniella calcarata* sp. n.**

Fig. 8 (habitus ♂); Fig 16 (protarsus); Fig. 21 (mesotarsus)

**Description of holotype.** Size 9.0 mm. **Body.** Head gold-n-blue with golden-green tinge in lower part; pronotum dark-violet with golden-green posterolateral parts; elytra deeply violet with blue epipleural, humeral and sutural margins; sutural coloration in form of vaguely delimited narrow wedge reaching to one fourth of anterior elytral length. **Head.** Vertex between eyes in narrowest part reduced to two rows of punctures; antennae long, reaching beyond half of pronotal length. **Pronotum** transverse, distinctly narrower than elytra across humeri, widest in middle; sides strongly, evenly arcuate; disk with obvious, deep lateral impressions very narrowly separate in the middle.



**Figs 12–22.** Habitus of *Coomaniella*. *C. brevitarsis* sp. n.: **12.** Holotype ♂, 11.0 mm **13.** Paratype ♀, 14 mm; **14.** *C. marguieri* Baudon, 1967, ♂, 7.6 mm; Protarsi of *Coomaniella*: **15.** *C. tarsalis* sp. n.; **16.** *C. calcarata* sp. n.; **17.** *C. simulatrix* sp. n.; Meso-  
tarsi of *Coomaniella*: **18.** *C. communis* sp. n.; **19.** *C. simulatrix* sp. n.; **20.** *C. copipes* sp. n.; **21.** *C. calcarata* sp. n.; **22.** *C. tarsalis* sp. n.

**Scutellum** subpentagonal with corners obtuse. **Elytra** without obvious pubescence; apices subtruncate, with small lateral spines; interspace very faintly sinuate. **Legs.** Protarsus obviously short, more than twice shorter than protibia; protibia with long hairs on apical inner margin, without apical spur; protarsomere 1 incrassate, with obvious apical hook-like spine on outer margin reaching an-

terior margin of protarsomere 3, tip of spine bent inwards; mesotibia with long, reddish apical spur; mesotarsomere 1 strikingly incrassate, strongly subtriangular, dorsally convex, ventrally flattened, longer than following tarsomeres combined, with inner apical angle obviously obtusely acuminate, dorsally with obvious pubescence; apical half of mesotibia and first three metatarsomeres with

long, sparse, whitish hairs underneath; metatibia with apical spur; metatarsus without obvious modifications; metatarsomere 1 about as long as following tarsomeres combined.

**Variability.** Size: 8.7–9.0 mm. The single male paratype differs by blue color of elytral disk and golden-green color of epipleural, humeral and sutural margins.

**Sexual modifications.** Female unknown.

**Diagnosis.** *Coomaniella calcarata* sp. n. is very closely related to *C. copipes* sp. n. and *C. simulatrix* sp. n. by the general habitus and by the form of the male mesotarsomere 1. It can be distinguished from them by the characters given in the Table 1.

**Material examined. Holotype**, ♂ (CNC): “Vietnam, Cao Bang Prov., Phia-Oac Mountain Rd, 1422 m, +22° 36' 15.60", +105° 53' 0.60", 30 April - 5 May 2012, leg. Jendek, Lingafelter, Pham”. **Paratypes** (CNC, EJC, IEBR, USNM): 3 from the same locality as holotype; 1 ♂: “N Vietnam, Cao Bang prov., Phia-Oac Mts, Phia-Den env., N22°34'01", E105°52'14", 30.v.-7.vi.2011, 800-1200m, E. Jendek leg.”.

**Distribution.** VIETNAM: Cao Bang.

**Etymology.** The specific name is derived from Latin adjective *calcaratus*, -a, -um (having a calcar or calcaria; spurred); it refers to the obviously spurred meso- and metatibia of the species.

***Coomaniella simulatrix* sp. n.**

Fig. 9 (habitus ♂); Fig. 11 (habitus ♀); Fig. 17 (protarsus); Fig. 19 (mesotarsus); Fig. 26 (imago in situ)

**Description of holotype.** Size 7.8 mm. **Body.** Head golden-blue in upper half, golden-green in lower part; pronotum dark-violet with golden-green lateral parts; elytra deeply violet with blue epipleural and sutural margins; sutural coloration in form of very vaguely delimited narrow wedge reaching to one fifth of anterior elytral length.

**Head.** Vertex between eyes in narrowest part reduced to two rows of punctures; antennae reaching to about half of pronotal length. **Pronotum** transverse, distinctly narrower than elytra across humeri, widest in middle; sides strongly, evenly arcuate; disk with obvious, deep lateral impressions very narrowly separate in the middle. **Scutellum** subpentagonal with corners obtuse; impressed on disk. **Elytra** without obvious pubescence; apices subtruncate, with small lateral spines; interspace distinctly sinuate. **Legs.** Protarsus obviously short, more than twice shorter than protibia; protibia with few sparse long hairs

on apical inner margin, without apical spur; protarsomere 1 incrassate, with obvious apical hook-like spine on outer margin reaching anterior margin of protarsomere 3, tip of spine bent inwards; mesotibia with long, reddish apical spur; mesotarsomere 1 strikingly incrassate, finely subtriangular, dorsally feebly convex, ventrally flattened, longer than following tarsomeres combined, with inner apical angle obviously sharply acuminate, dorsally with obvious pubescence; apical half of mesotibia and first three metatarsomeres with long, sparse, whitish hairs underneath; metatibia with apical spur; metatarsus without obvious modifications; metatarsomere 1 about as long as following tarsomeres combined.

**Variability.** Size: 7.2–10.2 mm. Color of elytra varies from blue-violet to reddish-violet, differently colored anterolateral marginal portions of elytra vary in extend from clearly delimited to obscure; incrassation of mesotarsomere 1 faint in some males.

**Sexual modifications.** Female with vertex between eyes in narrowest part reduced to 4–6 rows of punctures; antennae distinctly shorter.

**Diagnosis.** *Coomaniella simulatrix* sp. n. is very closely related to *C. calcarata* sp. n. and *C. copipes* sp. n. by the general habitus and by the form of the male mesotarsomere 1. It can be distinguished by the characters given in the Table 1.

**Material examined. Holotype**, ♂ (CNC): “Vietnam, Cao Bang Prov., Phia-Oac Mountain Rd, 1422 m, +22° 36' 15.60", +105° 53' 0.60", 30 April - 5 May 2012, leg. Jendek, Lingafelter, Pham”. **Paratypes:** 102 (CNC, EJC, IEBR, USNM) from the same locality as holotype.

**Distribution.** VIETNAM: Cao Bang.

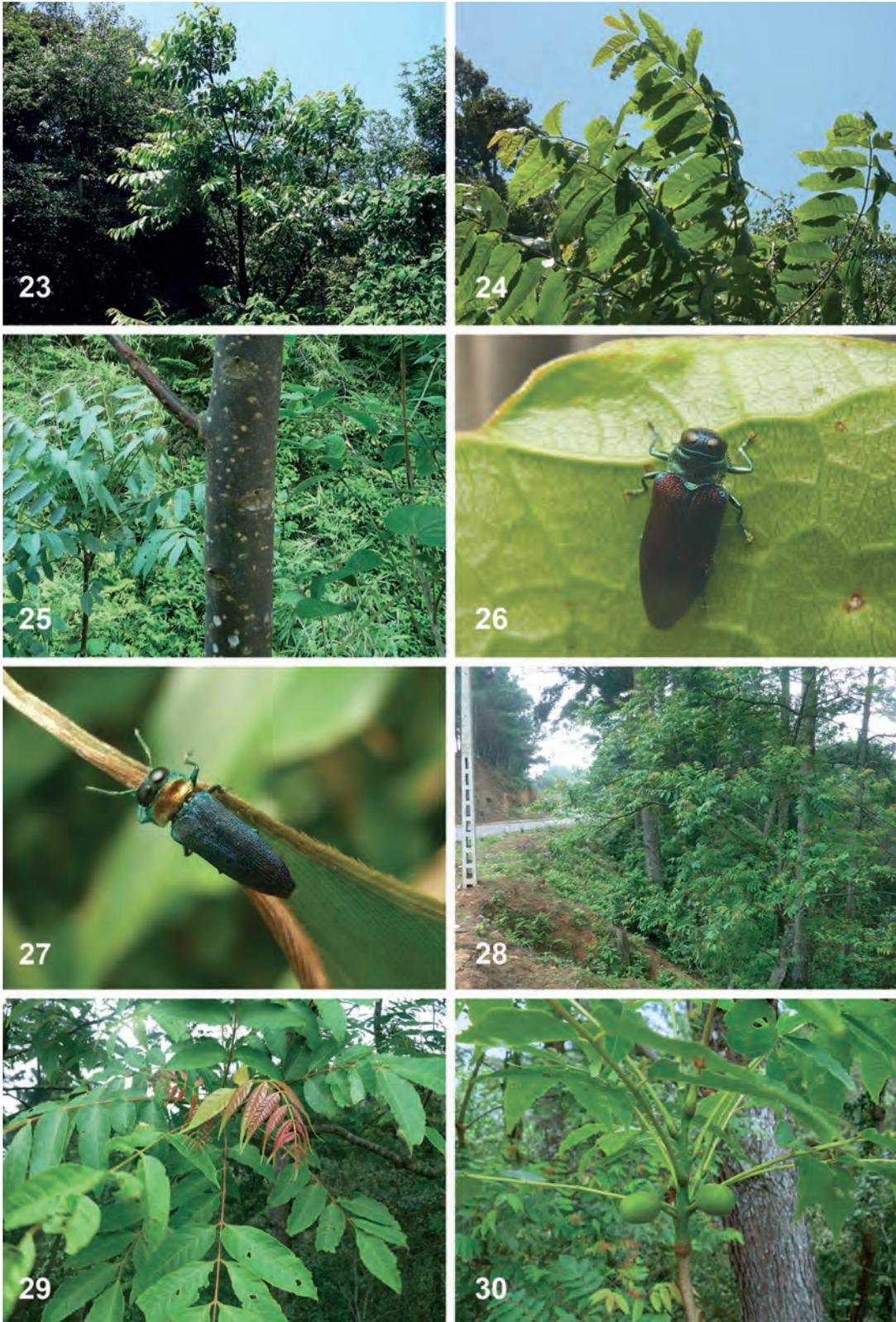
**Etymology.** The specific name is Latin noun *simulatrix*, -icis which is feminine form of *simulator* meaning pretender. It refers to the similarity of this species with *C. copipes* sp. n. and *C. calcarata* sp. n.

**Subgenus *Strbaniella* Jendek & Kalashian, 1999**

***Coomaniella brevicornis* sp. n.**

Fig. 12 (habitus ♂); Fig. 13 (habitus ♀)

**Description of holotype.** Size: 11.0 mm. **Body** cuneiform, slender; head, elytra, ventral side and appendices golden-green, pronotal sides golden-orange. **Head.** Vertex roughly punctate, in narrowest part between the eyes reduced to 5–6 rows of punctures; antennae very short, reaching scarcely to anterior pronotal corners. **Pronotum**



**Figs 23–30.** Trees and *Coomaniella* specimens in situ. **23–25.** “Rendezvous” tree, Phia-Oac Mts, altitude 1422 m; **26.** *C. simulatrix* sp. n.; **27.** *C. biformis* Bílý & Kalashian, 1994; **28–30.** “Rendezvous” tree identified as *Choerospondias axillaris* (Anacardiaceae), Phia-Oac Mts, altitude 987 m.

distinctly narrower than elytra in humeral section, widest at anterior third; anterior pronotal margin subequal to posterior; disk feebly convex, without lateral impressions, anterior angles with small, smooth, shiny portions. **Scutellum** oval with truncate anterior margin and finely impressed disk. **Elytra** roughly, densely tuberculate with striae obsolete; elytral apices subtruncate with lateral spines, outer spine longer than inner one. **Tarsi**. Protibia with short, inconspicuous spur; protarsus distinctly longer than half of protibia; protarsomere 1 not incrassate and shorter than following three tarsomeres combined; apex of protibia and protarsomere 1 without long hairs, apex of protarsomere 1 without spine on outer anterior margin; mesotarsomere 1 faintly incrassate, shorter than following three tarsomeres combined; lateroventral side of mesotarsomere 1 with long, erect hairs; metatibia on apical inner margin with obvious spur; metatarsomere 1 not incrassate, shorter than the following tarsomeres combined. **Ventral side**. Last ventrite subtruncate on apex and markedly overlapped by elytral apices, the length of protruded portion is subequal to length of last ventrite.

**Variability**. Size: 11.0–14.0 mm. Two male paratypes have pronotum widest at middle and elytral sides golden–orange.

**Sexual modifications**. Females are generally larger and more robust; head strongly convex; eyes less convex; vertex in narrowest part reduced to 6–7 rows of punctures; anterior pronotal margin distinctly narrower than posterior; tarsi without obvious modifications. Ovipositor long and thin.

**Diagnosis**. This species, together with *C. prolonga* Jendek & Kalashian, 1999, belongs to the subgenus *Strbaniella*. The male of *C. brevicornis* sp. n. can be distinguished by the following combination of characters: pronotum and lateral sides of the elytra golden–orange; pronotum in widest part distinctly narrower than the elytra across humeri; pronotal sides less arcuate; disk feebly convex without large lateral impressions; mesotarsomere 1 faintly incrassate, shorter than three following tarsomeres combined and covered with sparse, long, erect hairs; metatibial spur obvious; elytral apices faintly arcuately emarginate or subtruncate with interspace between lateral spines almost straight. The female of *C. brevicornis* sp. n. resembles females of *C. biformis* and *C. biformissima*, but the body is distinctly more slender and less convex, and the pronotum is strikingly less transverse. The female of *C. prolonga* is unknown.

**Material examined**. **Holotype**, ♂ (EJCB): “N Vietnam, Ninh Binh prov. Cuc Phuong N. Park N20°21'10”, E105°35'00” 24–28.iv.2012, alt 440m leg. Jendek E., Lingafelter S. & Pham H. T.”. **Paratypes**: 3 ♀ (CNC, EJCB,

NMPC): “LAOS C., Bolikhamsai pr., Ban Nape env. 7–16.V.2004, alt. 400±100 m, 18°20'N, 105°08'E, E. Jendek & O. Šauša leg.”; 2 ♂ (EJCB, NMPC): “Laos-NE, Houa Phan prov., 20°12–13.5'N, 103°59'.5–104°01'E, Ban Saleuy → Phou Pane Mt., 1340–1870m, 2.–22.vi.2011, Vít Kubán & Lao coll. legit.\ primary mountain forest, individual collecting. Lao 2011 Expedition National Museum Prague, Czech Republic”.

**Host plant**. Unknown. The holotype was collected by sweeping the crowns of *Albizia* like trees. Paratypes from Ban Nape were found laying the eggs into the bark of large trunk of unknown tree.

**Distribution**. LAOS: Bolikhamsai, Houaphan. VIETNAM: Ninh Binh.

**Etymology**. The specific name is derived from Latin adjective *brevis* (short) and the noun *cornu* (horn); it refers to the strikingly short antennae of the species.

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## CHECKLIST OF THE GENUS *COOMANIELLA* BOURGOIN, 1924

### Subgenus *Coomaniella* Bourgoin, 1924

#### *Biformis* species-group

- C. biformis* Bílý & Kalashian, 1994
- C. biformissima* Jendek & Kalashian, 1999

#### *Modesta* species-group

- C. modesta* Bourgoin, 1924
- C. purpurascens* Baudon, 1966

#### *Kubani* species-group

- C. bicolor* Jendek & Kalashian, 1999
- C. kubani* Bílý & Kalashian, 1994
- C. lingafelteri* sp. n.

*Siniaevi* species-group

*C. siniaevi* Jendek & Kalashian, 1999

*Chinensis* species-group

*C. chinensis* Jendek & Kalashian, 1999

*C. communis* sp. n.

*C. marguieri* Baudon, 1967

*C. tarsalis* sp. n.

*C. violaceipennis* Bourgoïn, 1924

*Macropus* species-group

*C. calcarata* sp. n.

*C. copipes* sp. n.

*C. daoensis* Jendek & Kalashian, 1999

*C. isolata* Jendek & Kalashian, 1999

*C. janka* Jendek, 2005

*C. lao* Jendek & Kalashian, 1999

*C. macropus* Théry, 1929

*C. nativa* Jendek & Kalashian, 1999

*C. orlovi* Jendek & Kalashian, 1999

*C. pacholatkoï* Jendek & Kalashian, 1999

*C. simulatrix* sp. n.

*C. sausa* Jendek & Kalashian, 1999

## Species incertae sedis

*C. jeanvoinei* Théry, 1929

*C. marseuli* Obenberger, 1940

**Subgenus *Tuberniella* Jendek & Kalashian, 1999**

*C. abeillei* Obenberger, 1940

*C. taiwanensis* Baudon, 1966

**Subgenus *Strbaniella* Jendek & Kalashian, 1999**

*C. brevicornis* sp. n.

*C. prolonga* Jendek & Kalashian, 1999

**REFERENCES**

- Baudon A (1966a) Une *Coomaniella* nouvelle de Formose (Coleoptera Buprestidae). Bolletino dell'Associazione Romana di Entomologia 21: 10–11
- Baudon A (1966b) Catalogue commenté des Buprestidae récoltés au Laos (Première partie). Mémoires de la Société Royale d'Entomologie de Belgique 30: 1–80
- Baudon A (1967) Une *Coomaniella* nouvelle de Thaïlande (Coleoptera Buprestidae). Bolletino dell'Associazione Romana di Entomologia 22: 33–35
- Bílý S (1974) A revision of the genus *Coomaniella* Bourgoïn of the Coomaniellini tribe nov. (Coleoptera, Buprestidae). Acta entomologica bohemoslovaca 71: 30–41
- Bílý S & Kalashian MJ (1994) New species and synonymy of the genus *Coomaniella* Bourgoïn (Coleoptera, Buprestidae). Folia Heyrovskyana 2: 57–62
- Bourgoïn A (1924) Diagnoses préliminaires de Buprestides nouveaux de l'Indochine française. Bulletin de la Société Entomologique de France 1924: 178–179
- International organization for standardization (1998): ISO 3166–2. Codes for the representation of names of countries and their subdivisions – Part 2: Country subdivision code
- Jendek E (2002) New synonymy in the genus *Coomaniella* (Coleoptera: Buprestidae), with remarks on another species. Acta Societatis Zoologicae Bohemicae 66: 241–242
- Jendek E (2005) *Coomaniella* (*Coomaniella*) *janka* sp. n. from China (Coleoptera: Buprestidae). Zootaxa 850: 1–4
- Jendek E & Kalashian MJ (1999) Revision of the genus *Coomaniella* (Coleoptera: Buprestidae). Entomological Problems, Bratislava 30: 9–36
- Obenberger J (1940) Ad regionis palaearticae Buprestidarum cognitionem additamenta. Studie o palaeartických krasech (Col. Bupr.). Acta Musei nationalis Pragae (Zool. No. 3) 2 B, No. 6: 111–189.
- Théry A (1929) Note sur le genre *Coomaniella* (Col. Buprestidae). Bulletin du Muséum National d'Histoire Naturelle, Paris (2) 1 (6): 387–391
- Théry A (1931) Espèce nouvelle du genre *Coomaniella* Bourg. (Col. Buprestidae). Bulletin de la Société Entomologique de France 3: 43–44