RESEARCH ARTICLE

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A new subspecies of *Chrysochroa margotana* Novak, 1992 (Coleoptera, Buprestidae) from Myanmar

A.S. Zubov, A.Yu. Titarenko

Bolotnikovskaya 6B, ap.103, 117556 Moscow, Russia, Email: riprulez@mail.ru
Publicly Traded Company "Morpho Absoloni"
Email: odindva3@gmail.com

The paper provides the description of a new subspecies of *Chrysochroa margotana* Novak, 1992 from Burma and restoration of *C. margotana* Novak, 1992 as a valid specie name as a result of morphological analysis of close species from subgenus *Chrooxantha*, group *mniszechi* (Holynski, 2009).
Key words: *Chrysochroa*; *Chrooxantha*; Buprestidae; new subspecies; Myanmar.

Introduction

Specimens of genus *Chrysochroa* (Figs 1−5) are found on vast territories through India to Japan at East and Indonesia at South. At present 75 species are described within the genus (Holynski, 2009). In accordance with the review of Holynski, subgenus *Chrooxantha* includes 5 species of group *mniszechi*, namely, *C. mniszechi* Deyrolle, 1861, *C. miribella* Obenberger, 1939, *C. klapaleki* Obenberger, 1924, C. *viridisplendens* Thery, 1890, *C. flavolimbata* Holinsky, 2009. We restore *C. margotana* Novak, 1992 within this group and describe a new subspecies *C. margotana bankoi*. In 1992 G. Novak described *C. margotana* Novak. In 2009 Holynski in his review of the genus reduced this species to a synonym of *C. viridisplendens* (Holynski, 2009). During the last few years Alexander Banko (Quebec, Canada) has collected a large series of *Chrysochroa* specimens from Burma which have a range of very stable character features that perfectly fit the description of *C. margotana* (Novak, 1992). These characters show clear distinction from *C. viridisplendens* Thery and confirm that C. *margotana* Novak is a good species. On a basis of our study of the new material from Myanmar and its distinction from the type series of *C. margotana* Novak described from Ubon Ratchatani and Chiang Mai, Thailand, a new subspecies is being described. The new subspecies easily differs from the nominate subspecies by very stable golden-orange coloration of elytra without bluish margins that has never been found in other populations of *C. margotana*, or *C. viridisplendens*.

Material and methods

The authors have used traditional methods of morphological examination. Comparative analysis is made using stereo microscope Zeiss Stemi 2000-C.

Abbreviations

The following abbreviations are used to locate the storage of paratype specimens:
AT – the private collection of Andrey Yu. Titarenko (Moscow, Russia)
NMPC – National Museum of Czech Republic (Prague, Czech republic)
AB – the private collection of Alexander Banko (Quebec, Canada)

Fig.1. *C. margotana bankoi*. Holotype and Paratypes. Myanmar

Fig.2. *C. margotana margotana*. Holotype and Paratypes. Holotype: Thailand, Ubon Ratchatani (NMPC). Allotype, Paratype: Thailand Chiang Mai. Exp. Lehmann 1987 (AT)

Fig.3. *C. viridisplendens*. 1 male, S. Vietnam, Kat Thien Nat. Park, 05.2009 (AT), 1 male, 1 female, S. Vietnam, Phan Thiet, Mui Ne, 10.2017 (AT)

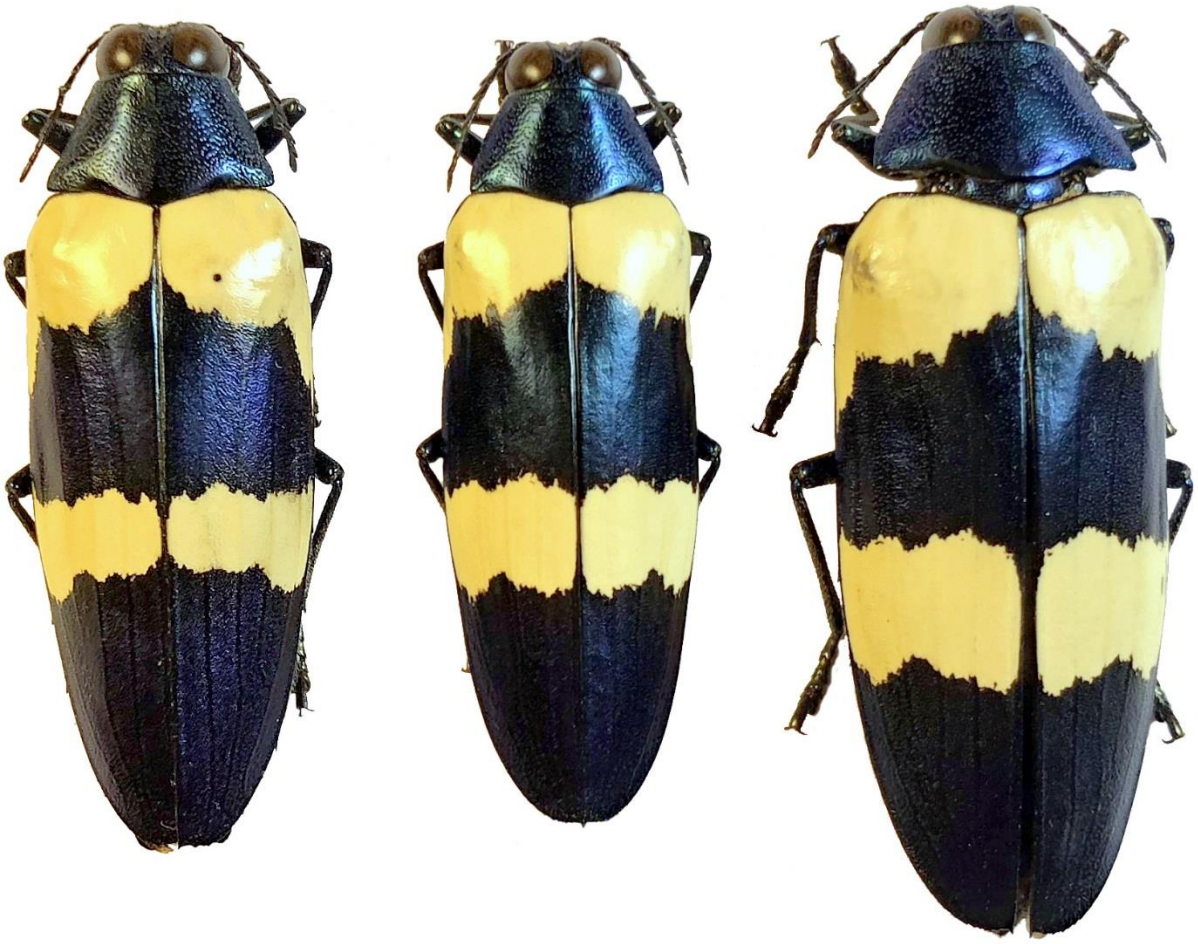


Fig.4. *C. mniszechi*. Thailand, Maetha, 05. 2017 (AT)

Fig.5. *C. klapaleki*. N. Kalimantan, Malinau. 05.2017 (AT)

Results

Chrysochroa (*Chrooxantha*) *margotana* Novak, 1992, stat. ressur.

Comparative analysis

C. margotana was described by G. Novak in 1992 by reference to holotype and two paratype specimens from North Thailand. In 2009 the species name was placed by Holinsky into synonyms of *C. viridisplendens*, noting that "*[e]xamination of the types of C. margotana* Nov. *has not revealed any character clearly exceeding the range of individual variability of C. viridisplendens* Thy." (Holynski, 2009). However, this is not correct. The Myanmar population confirms remarkable stability of characters that are described in G. Novak's paper (Novak, 1992).

The distance between the eyes of *C. margotana* Novak, 1992 (Fig. 2) is wider than in *C. mniszechi* and *C. viridisplendens*, however it is distinctly narrower than the eye distance in *C. klapaleki* (Fig. 6-9).

The impression between eyes of *C. margotana* Novak, 1992 is wide but not as deep as in *C. mniszechi*. It has the distinctive shape, thin at the base and wide at the apex. The impression found in specimens of *C. viridisplendens* is narrower but deeper than in *C. margotana* Novak, 1992. *C. klapaleki* has the widest impression it occupies almost all the distance between the eyes.

The basal ivory band of *C. margotana* is wider than in *C. viridisplendens* and *C. klapaleki*; however, it is the same wide or slightly narrower than in *C. mniszechi* Deyrolle, 1861. The hind margin of the basal ivory band of *C. margotana* is almost straight, while the hind margin of *C. mniszechi* often expands from the suture to the sides. The hind margin of the basal band of *C. margotana, C. mniszechi* and *C. klapaleki* is clear and ragged; such margin of *C. viridisplendens* is diffuse and smooth. The basal band elongates along the margin of elytra. The elongation is the widest in *C. mniszechi*, and it is narrower in *C. margotana* and *C. viridisplendens*. The elongation of *C. viridisplendens* is longer than in *C. margotana* and *C. mniszechi*. Such elongation of *C. klapaleki* is short and weak.

The apical ivory band of *C. margotana* is wide, close to that of C. mniszechi; it is approximately two times wider than in *C. viridisplendens* and three-times wider than in *C. klapaleki*.

The sutural denticle of elytra of *C. margotana* is rather long and wide, in *C. mniszechi* Deyrolle, 1861 it is shorter and narrower and in *C. viridisplendens* Thery, 1890 it is slightly narrower, in *C. klapaleki* it is short and wide (Fig. 10).

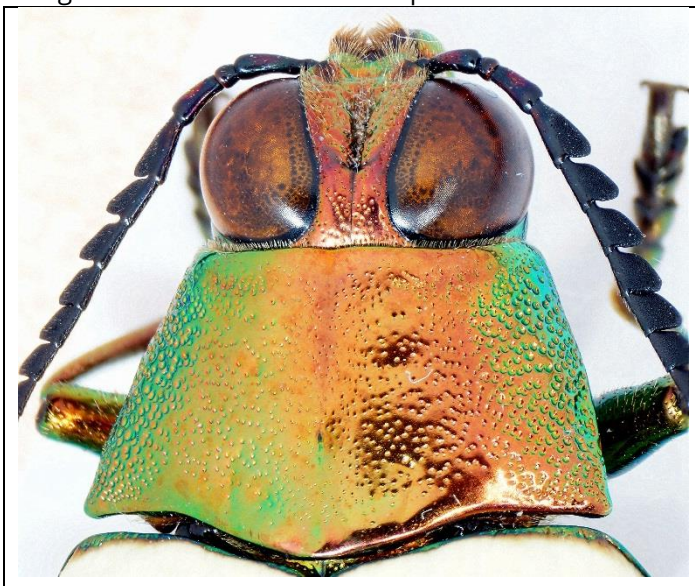
The anal sternite of females of *C. margotana* has a straight cutout; *C. mniszechi* and *C. viridisplendens* have slightly concave anal sternite; and in *C. klapaleki* it has a triangular cutout (Fig.11).

The pronotum punctuation of *C. margotana* is coarser than in *C. mniszechi* and *C. klapaleki*; it's texture in *C. margotana* is close to that of *C. viridisplendens* but slightly denser.

The 6th tergites of males of *C. margotana* has deep round cutout; in *C. mniszechi* it has a deep triangular cutout, in *C. viridisplendens* it is slightly rounded, and *C. klapaleki* has slightly triangular cutout of the tergites.

The aedeagus of *C. margotana* is long, expanded at the base; in *C. mniszechi* it is slightly wider, expanded near the middle; in *C. viridisplendens* it is wider than in *C. margotana*. The aedeagus of *C. mniszechi* expands evenly. Aedeagus of *C. klapaleki* is shorter and much wider than in the other species of the group.

The penis of *C. margotana* is thin, elongated and sharp at the apex. In *C. mniszechi* the penis is slightly wider, short and wide at the apex. *C. viridisplendens* has a wider penis than in *C. margotana* and *C. mniszechi*, elongated and narrowed at the apex.



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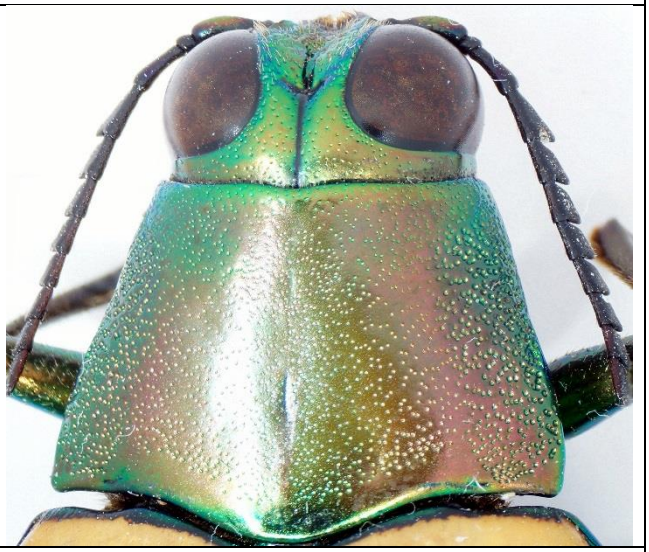

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Figs.6-9. Head: **6.** *C. m. bankoi*; **7.** *C. viridisplendens*; **8.** *C. mniszechi*; **9.** *C. klapaleki*.

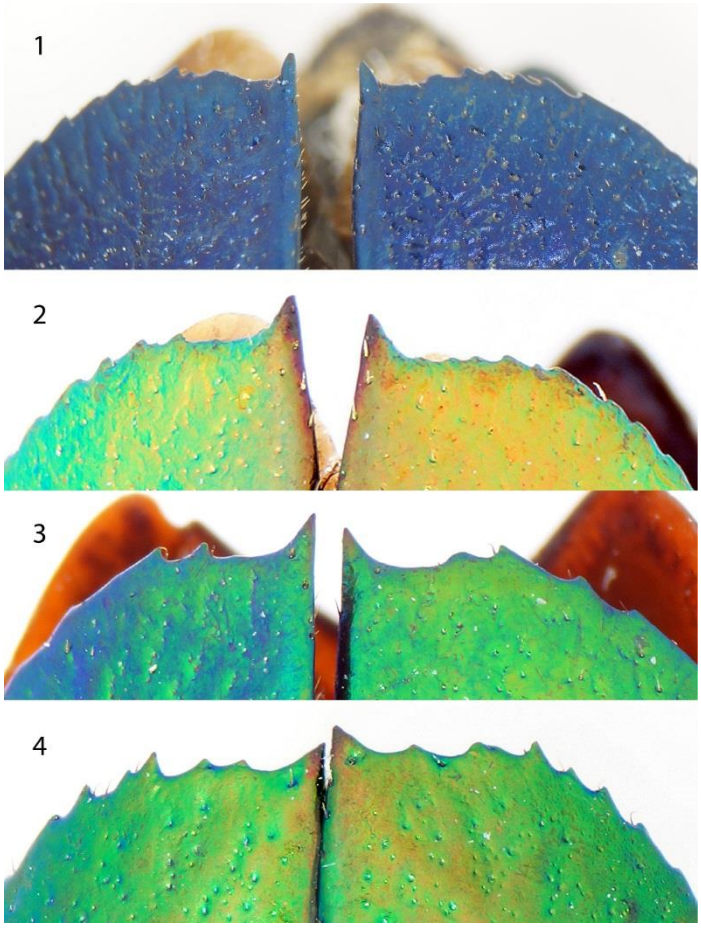


Fig.10. 1-4. Elytra apex. 1. *C. mniszechi;* 2. *C. m. bankoi;* 3. *C. viridisplendens;* 4. C. *klapaleki.*

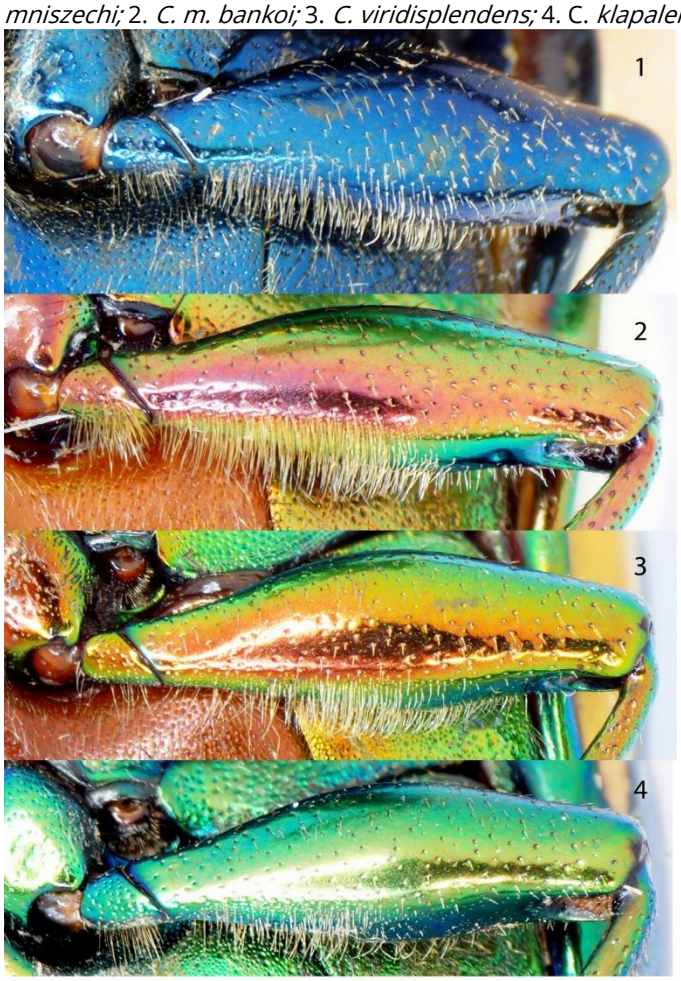


Fig.11. 1-3. Female anal sternite: 1. *C. mniszechi;* 2. *C. m. bankoi;* 3. *C. viridisplendens.*

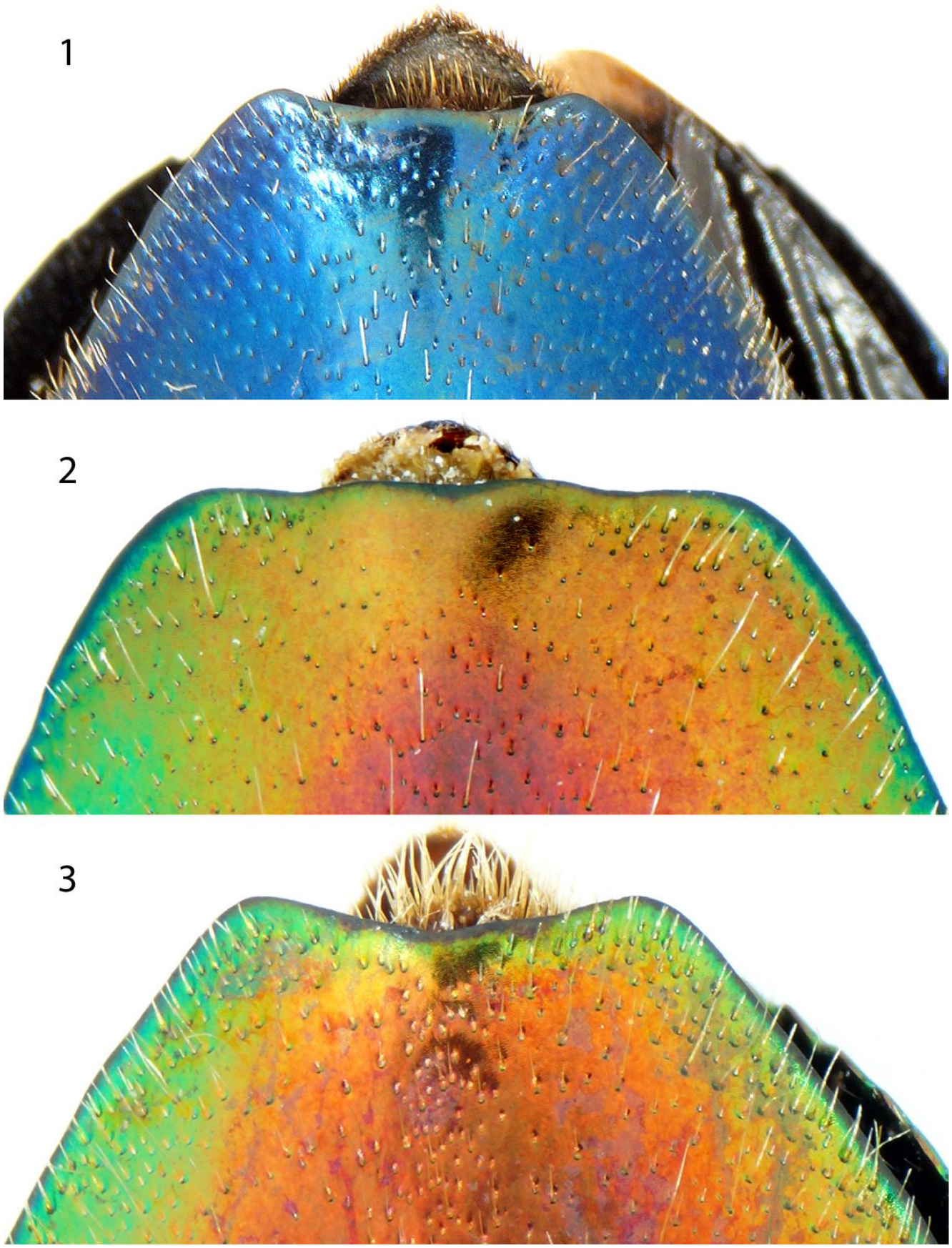


Fig.12. 1-4. Middle femura: 1. *C. mniszechi;* 2. *C. m. bankoi;* 3. *C. viridisplendens;* 4. *C. klapaleki.*

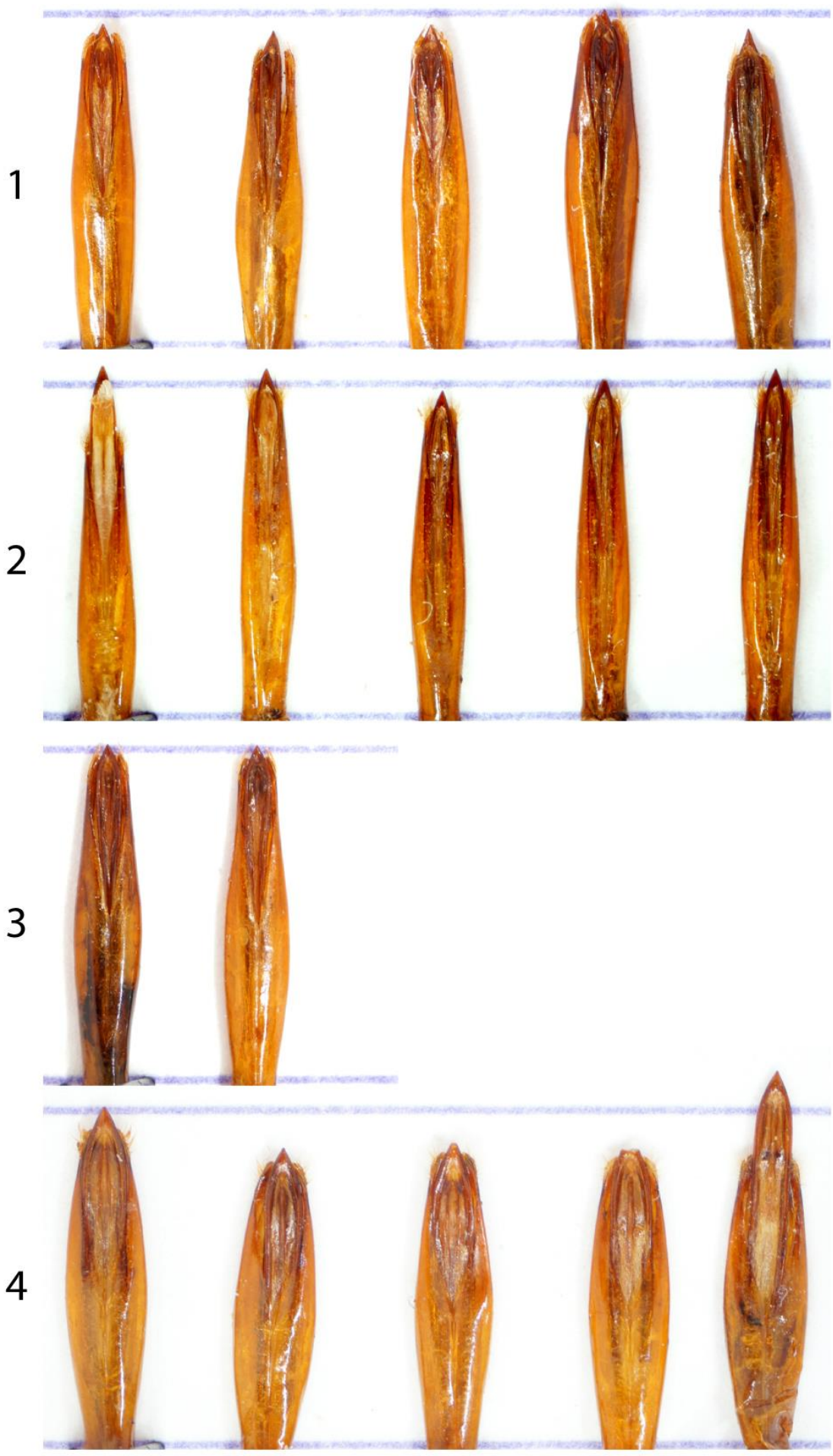
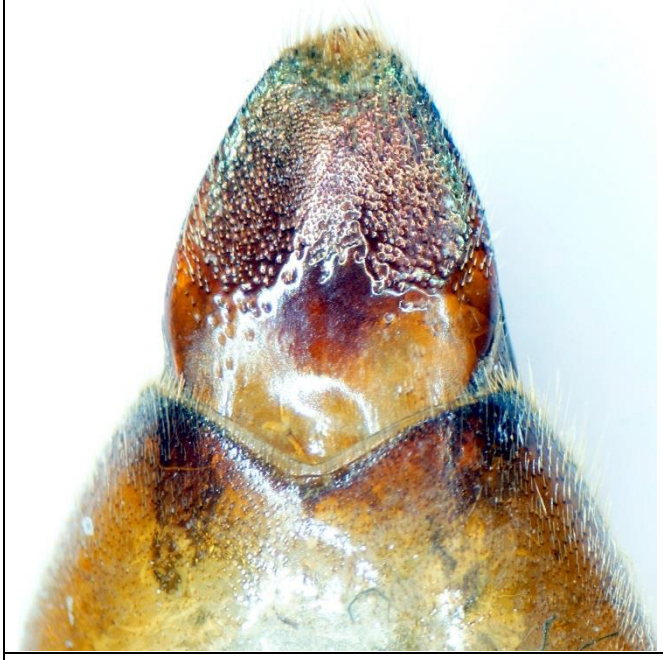


Fig.13. 1-4. Aedeagus: 1. *C. viridisplendens;* 2. *C. m. bankoi;* 3. *C. mniszechi;* 4. *C. klapaleki.*



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Figs.14-17. Pygidium ventral: **14.** *C. m. bankoi;* **15.** *C. viridisplendens;* **16.** *C. mniszechi;* **17.** *C. klapaleki.*

Chrysochroa (*Chrooxantha*) *margotana bankoi* ssp.n.

Type material. Holotype, ♂(NMPC), Myanmar, 4 km e of Karathuri, h= 350−400m, V-VI.2017 A. Banko leg., Paratypes: 10♂, 5♀ (AT), 22 ♂, 13♀ (AB), Myanmar, 4 km e of Karathuri, h= 350−400m, V-VI.2016−2018 A. Banko leg.

Description. Body length is 40−47 mm. Holotype 43.5 mm. The abdomen, head, legs, elytra are shiny metallic; the antennae are black. The body, legs, elytra, pronotum and head have golden-orange coloration with strong iridescence to reddish-green. The elytra have two broad ivory bands. The length of the body exceeds its width by three times. The pronotum is short, trapezius, almost 7 times shorter than the full body length. The length of the pronotum is two times shorter than its base. The elytra have rather dense small punctuation, which is slightly rarefied near suture and the base. Each elytron has 4 impunctate costae. The punctuation of the basal ivory band is rare and less even. The elytral apex is rounded with small denticles along the margin and has slightly bigger sutural denticle. The pronotum and the head have rather dense but small-sized punctuation. The 4th -11th antennae segments are wide, with triangular shape having very small and very dense

punctuation forming matt surface. The eyes are large and covere almost 70% of the head. The forehead has a deep impression between eyes. The abdomen has dense short white pubescence. Save for the middle of the sternites, the abdomen coloration can be easily observed. The middle and hind femura are with a brush of short erect white hairs at the rear end; the fore femura have a brush on the front edge. The cutout of the anal sternites of females is straight. The anal sternite of males has triangular cutout. The 6th sternites, pygidium and postpygidium are covered by anal sternites. The cutout of the 6th sternites is triangular. The 6th tegrites has a very small triangular cutout. The pygidium rounded, covered with long adjoined hairs. The Ventral side of pygidium is shiny, with small and very dense punctuation, which is finer at the center. The pygidium punctuation ends near the base. The aedeagus is long and narrow with the pointed apex; it is slightly widened near the base. The parameres have a small brush of long erect hairs at the apex.

Comparative analysis.

The new subspecies *C. margotana bankoi* ssp.n has stable golden-orange coloration with iridescence to reddish-green, while the coloration of *C. margotana margotana* Novak, 1992 is emerald green with iridescence to greenish-blue. The coloration of *C. m. margotana* is the same as in typical specimens of *C. viridisplendens. Chrysochroa viridisplendens* is emerald green with a hue of blue, sometimes it is completely blue or violet. *C. m. bankoi* ssp.n. has no blue, and no blue forms. It is a red species, with a green hue. Each specimen has a green hue at angle, and some specimens are green forms, but average is red. Some red-wine specimens have no green at all. The ivory patch is constant and large and is ivory not yellow. There are no specimens within the Myanmar population which can be considered as having a coloration form which is in a transition path to the emerald-green coloration of *C. m. margotana*. The absence of such transitional specimens in the Myanmar population proves the validity of the new subspecies name. Pubescence of the hind side of the middle femur of *C. m. margotana* is less dense when in *C. m. bankoi* ssp.n. *C. m. bankoi* ssp.n has slightly smoother ivory bands than in the nominate subspecies. The second ivory band is slightly wider than in *C. m. margotana*. Further, the Myanmar population is located far from other findings of specimens of nominate subspecies of *C. margotana*.

Etymology. The new subspecies is named after enthusiastic entomologist Mr. Alexander Banco (Quebec, Canada) who has collected the Myanmar series of this subspecies and found features that differ it from closely related species.

Acknowledgements

We thank Alexander Banko for his collecting of the type material and preserving it in the excellent quality with the coloration of ivory bands not affected by grease unlike almost all *Chrysochroa* specimens kept in private and museum collections. We thank Roman B. Holynski (Milanówek, Poland) for providing us with comments on his great comprehensive revision of genus *Chrysochroa*. We are very grateful to the wife Margo (Vienna, Austria) of the late Mr. Gottfried Novak who made the type series of *C. margotana margotana*, named after her, available for our study.

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Figs.18-21. Pygidium dorsal. *C. m. bankoi;* 19. *C. viridisplendens;* 20. *C. mniszechi;* 21. *C. klapaleki.*

Fig. 22. *C. m. bankoi* in nature (Photo by A. Banko)

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