A journal of world insect systematics

INSECTA MUNDI

0879

Taxonomic revision of *Cosmodela duponti* (Dejean), *Cosmodela barmanica* (Gestro), new status, and *Cosmodela indica* (Fleutiaux), new status (Coleoptera: Cicindelidae)

Miroslav Klícha

Nad kapličkou 16
100 00, Praha 10, Strašnice, Czech Republic
miroslav.klicha@seznam.cz

Jürgen Wiesner

Dresdener Ring 11
D-38444, Wolfsburg, Germany

Date of issue: July 30, 2021

Center for Systematic Entomology, Inc., Gainesville, FL

Klícha M, Wiesner J. 2021. Taxonomic revision of *Cosmodela duponti* (Dejean), *Cosmodela barmanica* (Gestro), new status, and *Cosmodela indica* (Fleutiaux), new status (Coleoptera: Cicindelidae). Insecta Mundi 0879: 1–9.

Published on July 30, 2021 by
Center for Systematic Entomology, Inc.
P.O. Box 141874
Gainesville, FL 32614-1874 USA
http://centerforsystematicentomology.org/

Printed copies (ISSN 0749-6737) annually deposited in libraries

Florida Department of Agriculture and Consumer Services, Gainesville, FL, USA
The Natural History Museum, London, UK
National Museum of Natural History, Smithsonian Institution, Washington, DC, USA
Zoological Institute of Russian Academy of Sciences, Saint-Petersburg, Russia

Electronic copies (Online ISSN 1942-1354) in PDF format

Archived digitally by Portico
Florida Virtual Campus: http://purl.fcla.edu/fcla/insectamundi
University of Nebraska-Lincoln, Digital Commons: http://digitalcommons.unl.edu/insectamundi/
Goethe-Universität, Frankfurt am Main: http://nbn-resolving.de/urn/resolver.pl?urn:nbn:de:hebis:30:3-135240

0879: 1–9 **INSECTA MUNDI** 2021

Taxonomic revision of *Cosmodela duponti* (Dejean), *Cosmodela barmanica* (Gestro), new status, and *Cosmodela indica* (Fleutiaux), new status (Coleoptera: Cicindelidae)

Miroslav Klícha

Nad kapličkou 16
100 00, Praha 10, Strašnice, Czech Republic
miroslav.klicha@seznam.cz

Jürgen Wiesner

Dresdener Ring 11
D-38444, Wolfsburg, Germany
juergen.wiesner@wolfsburg.de

Abstract. Two subspecies of *Cosmodela duponti* (Dejean) (Coleoptera: Cicindelidae) are elevated to species rank: *Cosmodela barmanica* (Gestro) and *C. indica* (Fleutiaux). The lectotypes of all the above-mentioned species are designated as well. Short redescriptions of the three species are provided together with a key, and illustrations of their habitus.

Key words. Taxonomy, tiger beetles, Oriental region, new status

ZooBank registration. urn:lsid:zoobank.org:pub:F75A9FC0-B171-48D4-824C-7B2563120875

Introduction

Cicindela duponti was described by Dejean (1826: 419) from specimens collected at the type locality, a former colony of French Indochina (Cochin China), now southern Vietnam. Gestro (1893: 360) described *Cicindela barmanica* as a variety of *C. duponti* based on different (purpurescent) shades of the elytral lateral and sutural bands of specimens, collected in Carin Cheba, in the Karen Hills of eastern Myanmar (formerly Burma), a mountainous region situated at the SW corner of Shan State and in Kayah State. *Cicindela indica* was described as a variety of *C. duponti* by Fleutiaux (1893: 490) based on blue-green specimens from Assam, India. Horn (1926: 179) treated *barmanica* and *indica* as color forms of *C. duponti*. Rivalier (1961: 128) transferred *Cicindela duponti* to the genus *Cosmodela* Rivalier, 1961. Naviaux and Pinratana (2004: 110) treated *barmanica* as a subspecies of *duponti* and *indica* as a synonym of *duponti*. Based on clear and recognizable features of colour, pubescence, and differences in the shape of aedeagus, we elevate *barmanica* and *indica* to species rank and thus divide the previously single species *Cosmodela duponti* into a complex of three independent but closely related species.

Materials and Methods

Photos of the specimens were taken using a Canon MP-E 65mm/2.8 1–5× macrolens attached to a Canon EOS 550D camera. Partially focused images of each specimen were stacked using the Helicon Focus 3.20.2 Pro software.

Specimens mentioned here are deposited in:

JSPC Jaroslav Šafanda collection, Praha, Czech Republic
JWWC Jürgen Wiesner collection, Wolfsburg, Germany
MJOC Milada Jančíková collection, Olomouc, Czech Republic
MKPC Miroslav Klícha collection, Praha, Czech Republic
MMPC Miloslav Mýlek collection, Nová Pláň, Czech Republic
MNHN Muséum national d'histoire naturelle, Paris, France
NMPC Natural History Museum Prague, Czech Republic

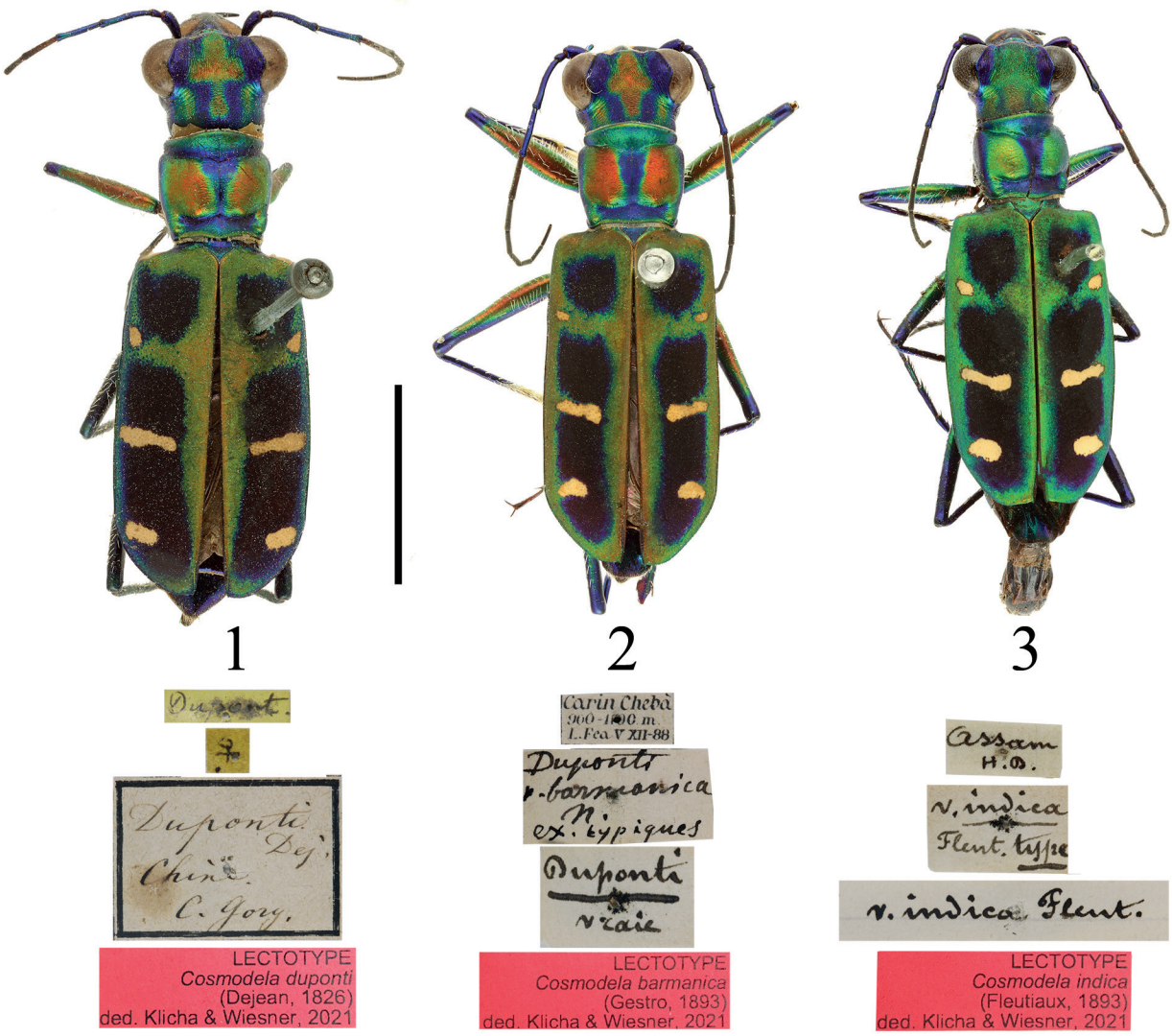
OSJC Ondřej Šafránek collection, Jiřetín p. Jedlovou, Czech Republic
ZGMC Zdenek Gartus, Valašské Meziříčí, Czech Republic

We examined 260 specimens of these three species from the above collections plus photos of four type specimens.

Taxonomy

1. *Cosmodela duponti* (Dejean, 1826)

Type depository. Lectotype ♀ (Fig. 1) in MNHN.



Figures 1–3. Habitus of lectotypes and type labels of *Cosmodela* spec., scale = 5 mm, digital images by Azadeh Taghavian, MNHN. **1)** *Cosmodela duponti* (Dejean, 1826), lectotype ♀. **2)** *Cosmodela barmanica* (Gestro, 1893), lectotype ♂. **3)** *Cosmodela indica* (Fleutiaux, 1893), lectotype ♀.

Type status. Lectotype ♀, designated here. *Type labels*: "Dupont [handwritten, yellow]"; "♀ [handwritten, yellow]"; "Duponti Dej. / Chine / C. Gory. [handwritten]"; "LECTOTYPUS / *Cosmodela duponti* / (Dejean, 1826) / ded. Klícha & Wiesner, 2021" [printed, red]; (Fig. 1).

Redescription. *Size:* Total length (without labrum) 16–18 mm. Habitus robust and convex. The dominant colour is deep bright green, mostly with light golden up to bright red reflections (Fig. 4–7). Specimens from Laos and eastern Thailand have more greenish tones while specimens from Vietnam show prevailing reddish up to clear red colours on the sutural band and extension line, as well as on the pronotum and head. *Head*: broad, coarsely striate between eyes, forehead with deep wrinkles, clypeus waved in the center, metallic deep bright green and blue with violet reflections. Labrum wide with broad carina, black with two wide light-yellow patches in the central part, divided by the carina, with six long white setae. Genae coarsely striate, front part deep green, the rear part dark blue with violet reflections, totally glabrous. *Pronotum*: with shallow wrinkles, continuously bevelled backward, the sides slightly rounded in the front part, the base is mildly narrowed. Pronotal disc glabrous, proepisterna with few long white bristles. *Elytra*: parallel, curved at the apical part towards the sutural line, in ♀♀ the curve is slightly waved. The basic colour is satin deep blue, the specimens from Laos show slight green tone. The sutural and marginal bands as well as the base and extension line situated on the first quarter of elytra are bright green with light golden up to clear red tones as mentioned above. The marginal bands are irregular, the widest part is in the joint with the extension line and then make a thin irregular line up to the elytral apex. The extension line is short and does not touch the first patch in many specimens (mainly from Vietnam) or sits slightly on it but does not cover the patch in full width (specimens from Laos). Each elytron has a white humeral dot and three white elytral patches, the first one, touching the extension line is reduced to a dot, the central one is extended to a longitudinal short strip and the apical one is irregularly rounded. Epipleura bluish green. *Ventral aspect*: metallic blue green, partly white setose, abdominal sternites black with green and blue reflection, legs dark blue with bright green and violet reflections, trochanters metallic black. *Aedeagus*: size approx. 5 mm (Fig. 15–16), the upper back side rises sharply to a bulged top, behind which it tapers obliquely to the slightly rounded apex; the lower part is bent towards the apex, slightly wavy in the middle. Aedeagus is not as robust as in the following two species.

Distribution. Eastern Thailand, Laos, Vietnam, Cambodia.

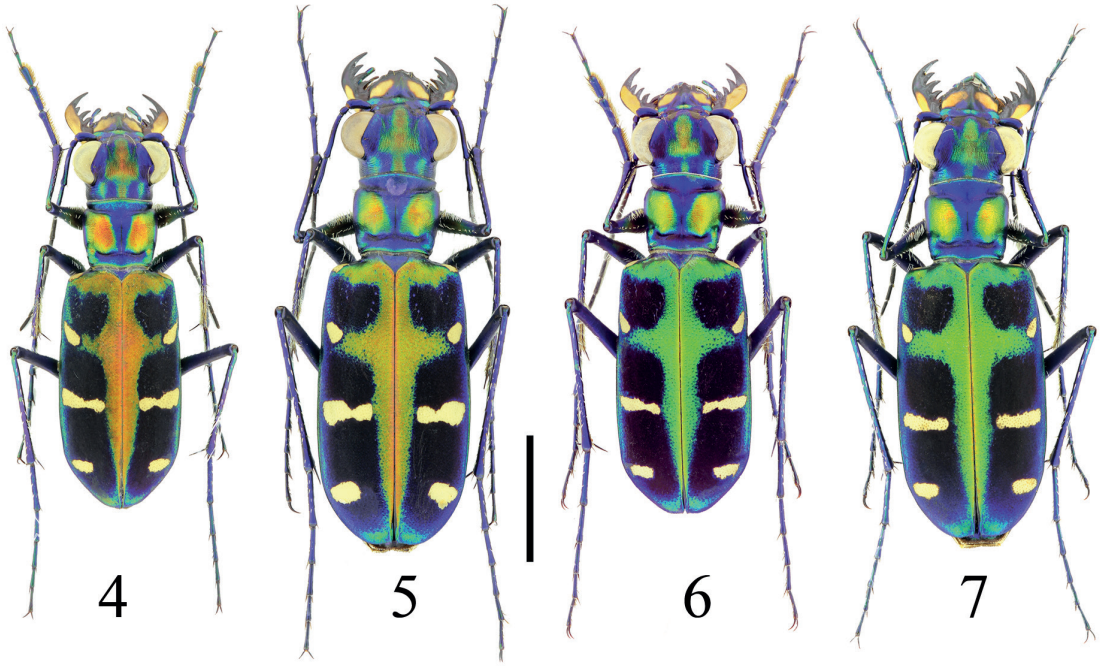
Records. Vietnam: northern Vietnam: Bác-Ha prov., Lao Cai, 1 ♂, 1 ♀ (ZGMC); southern Vietnam: Nam Cat Tien 4 ♂♂, 9 ♀♀ (JWWC); Bach-Ma Nat. Park, 1 ♂ (MKPC); Lien Khuong Waterfalls, 1 ♀ (MKPC), 7 ♂♂, 1 ♀ (MMPC), 4 ♂♂, 3 ♀♀ (MJOC); **Laos**: central Laos: Khammouan Prov., Nakai Env. 4 ♂♂, 2 ♀♀ (JWWC); Nakkai vill. env. ca 70 km NNE Muang Khammouan, 1 ♂, 4 ♀♀ (OSJC); Bolikhamsai prov., Ban Nape, Kaew Nua Pas 1 ♂, 1 ♀ (JWWC); southern Laos: Champasak prov., 40 km NE Pakse, 1 ♂, 2 ♀♀ (JWWC); Paksong env. 1 m (OSJC); Attapo prov., Bolaven Plateau 2 ♂♂, 3 ♀♀ (JWWC), 2 ♂♂, 1 ♀ (OSJC); Bolaven Plateau, Ban Itou, 2 ♂♂, 1 ♀ (ZGMC), 3 ♂♂, 2 ♀♀ (MKPC); Annam Highlands, 2 ♂♂, 2 ♀♀ (OSJC); Sekong prov. 50 km N of Sekong, 5 ♂♂, 3 ♀♀ (OSJC). **Thailand**: Ubon Ratchathani prov., Khung Chiam, 1 ♂ (Naviaux and Pinratana 2004: 162).

2. *Cosmodela barmanica* (Gestro, 1893), new status

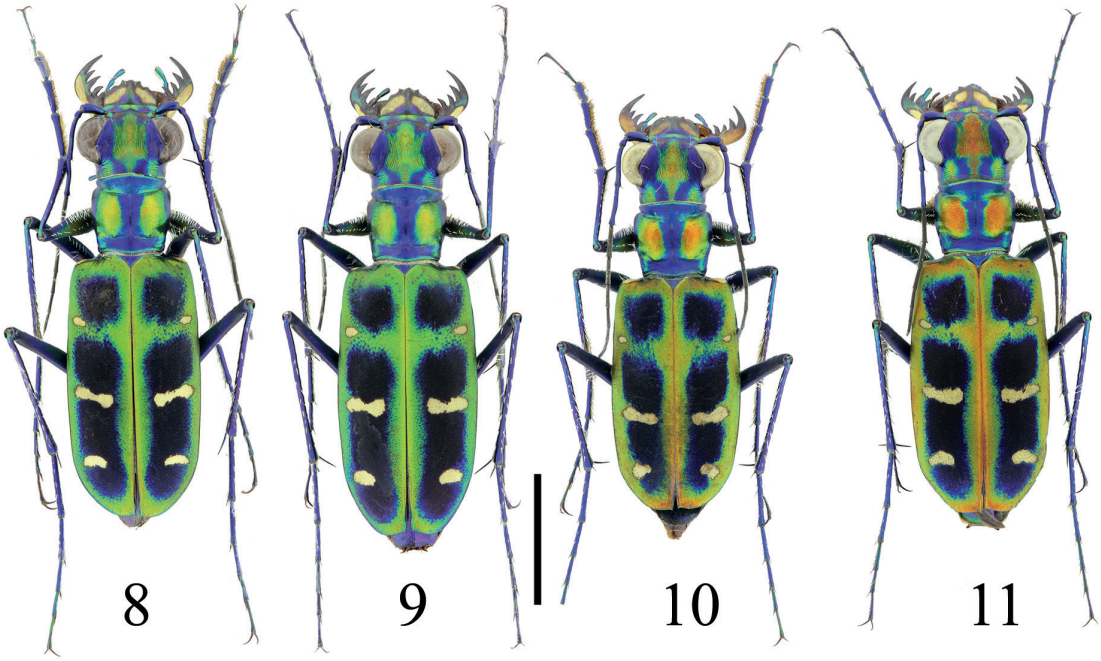
Type depository. Lectotype ♂ (Fig. 2) in MNHN.

Type status. Lectotype ♂, designated here. *Type labels*: "Carin Cheba / 900–1700 m / L. Fea V XII-88 [printed]"; "Duponti / v. barmanica / n / ex. typiques [handwritten]"; "Duponti / N Caie [printed]"; "LECTOTYPUS / *Cosmodela barmanica* / (Gestro, 1893) / ded. Klícha & Wiesner, 2021" [printed, red]; (Fig. 2).

Redescription. *Size:* Total length (without labrum) 14–17 mm. Habitus less robust than the following species. The dominant colour is bright green predominantly mixed with golden or bright red reflections (Fig. 8–11), the red tone is variable and may change after specimens are dried, as seen by the first author when collecting a series of this species in Myanmar (Yangon Region, Taikkyi-Nyaunggon Hills, 32 ♂♂, 18 ♀♀ and Moon State, Kyaikto, 12 ♂♂, 15 ♀♀). Indian specimens tend to have the green colour prevailing on the sutural band and extension line, as well as on the pronotum and head, while the red tone of those parts is dominant in the specimens from Myanmar and Thailand. However, due to the colour changes in specimens after drying and due to the continuous transition of shades in the population from India to Thailand, we do not consider this feature a reliable distinguishing



Figures 4–7. *Cosmodela duponti* (Dejean, 1826), habitus, scale = 5 mm. **4)** ♂: S Vietnam, 5./6. 1994, Nam Cat Tien, leg. Dembicky and Pacholatko (JWWC). **5)** ♀: Laos centr., Khammouan prov. Nakai env., 4–8. 5. 1998, Route No. 8, alt. 560 ± 20 m, N17°42.8′, E105°08.9′ (GPS), E. Jendek and O. Šauša leg. (JWWC). **6)** ♂: Laos south, Attapu prov., Boaven Plateau, 18–30. IV. 1999, 15 km SE of Ban Houaykong, Non Lom (lake) env., N15°02′, E106°35′, alt. 800 m, E. Jendek and O. Šauša leg. (JWWC). **7)** ♀: Laos south, Attapu prov., Boaven Plateau, 18–30. IV. 1999, 15 km SE of Ban Houaykong, Non Lom (lake) env. N15°02′, E106°35′, alt. 800 m, E. Jendek and O. Šauša leg. (JWWC).



Figures 8–11. *Cosmodela barmanica* (Gestro, 1893), habitus, scale = 5 mm. **8)** ♂: South India, VI. 2004, Mysore State, 2000 ft, Shimoga Dist., Agumbe Ghat, T. R. S. Nathan coll. (JWWC). **9)** ♀: South India, V. 2001, Mysore State, 2000 ft, Shimoga Dist., Agumbe Ghat, T. R. S. Nathan coll. (JWWC). **10)** ♂: 4. VI. 2018, Myanmar, Moon State, Kyaikto, road from Bilin to Pyintha, Miroslav Klicha Lgt. (MKPC). **11)** ♀: 4. VI. 2018, Myanmar, Moon State, Kyaikto, road from Bilin to Pyintha, Miroslav Klicha Lgt. (MKPC).

character. *Head*: broad, coarsely striate between eyes, forehead with deep wrinkles, clypeus waved in the center, metallic deep bright green with golden and red reflections. Labrum wide with broad carina, black with two wide light–yellow patches in the central part, divided by the carina, with six long white setae. Genae coarsely striate, front part bright green with golden and red reflections, the rear part dark blue, lightly white setose. *Pronotum:* with shallow wrinkles slightly bevelled backward, the sides visibly rounded in the front part, the base is slightly narrowed; pronotal disc glabrous, proepisterna with few long white bristles. *Elytra*: parallel, gradually curved at the apical part towards the sutural line, in ♀♀ the curve is slightly waved. The basic colour is satin deep greenish blue. The sutural and marginal bands as well as the base and extension line situated on the first quarter of elytra are bright green with golden up to clear red tones. The marginal bands create a regular line from the base up to the elytral apex, the extension line is fully joint to the marginal band absorbing the first elytral macula. Each elytron has a white humeral dot and three white elytral patches, the first one, located in the extension line is reduced to a dot which is variable, sometimes almost invisible, sometimes creating a small round lunula. The central patch is extended to a longitudinal short strip and the apical one is irregularly rounded. Epipleura green, some specimens with bluish reflections. *Ventral aspect*: metallic blue green, partly white setose, abdominal sternites black with green and blue reflection legs dark blue with bright green and violet reflections, trochanters metallic black with violet reflections. *Aedeagus*: size approx. 5 mm (Fig. 17–18), the upper back side of the aedeagus rises slightly bevelled to the top, then descends smoothly to the step in the last third of the aedeagus, behind which it descends gently to a beak-like bend up to the rounded apical end. The lower part goes almost horizontally to the apical end, slightly curved in the center.

Distribution. India (Arunachal Pradesh, Goa, Jharkhand, Karnataka, Kerala, Mahya Pradesh, Maharashtra, Manipur, Mizoram, Nagaland, Tamil Nadu), Bangladesh, Myanmar, western and central Thailand, Malaysia (Malacca).

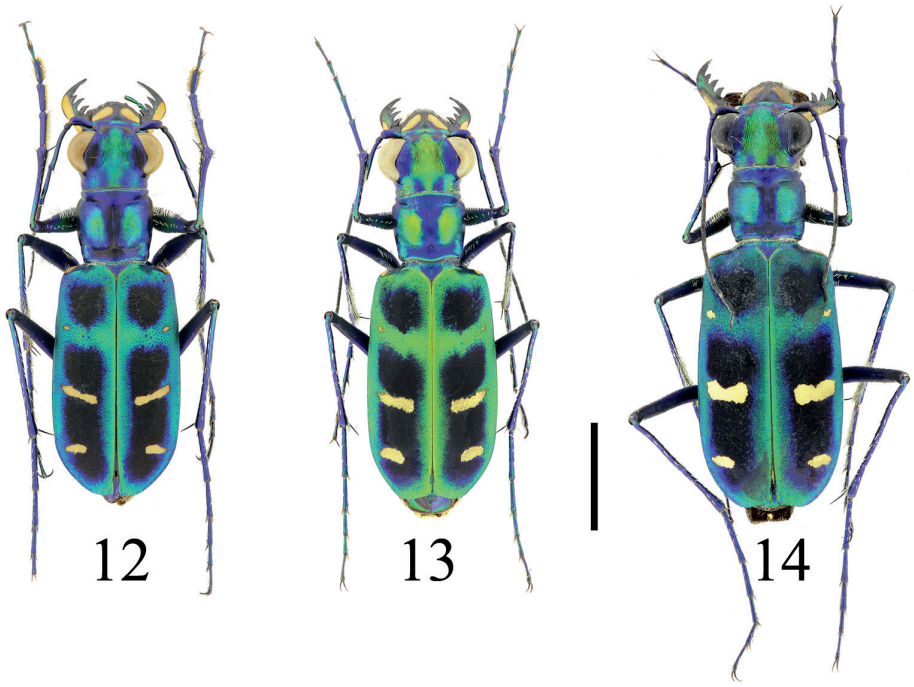
Records. India: Nilgiri Hills, 6 ♂♂, 3 ♀♀ (JWWC); West Ghats, 1 ♂ (JWWC); Bihar, Palawan Nat. P., 1 ♀ (JWWC); southern India: Shimoga dist. Agumbe Ghat, 1 ♂, 1 ♀ (JWWC); Mysore State, Shimoga Dist., Agumbe Ghat, 11 ♂♂, 16 ♀♀ (JWWC); Karnakata state, W. Ghats, 2 ♂♂ (JWWC); Western Ghats Mts, 3 ♀♀ (OSJC); Kerala state, Cardamon Hills, 1 ♂ (OSJC); Cardamon Hills ca 50 km NW of Pathanamthitta, 1 ♀ (MKPC); Cardamon Hills, 15 km SW of Munnar, 1 ♂ (MKPC); Coorg distr., Virajpet, 1 ♀ (OSJC); Ponmudi Hill resort, 1 ♂, 1 ♀ (OSJC). **Myanmar:** Shan State, Schweudaung Wildlife Sanct., 1 ♂ (JWWC); Yangon Region, Taikkyi-Nyaunggon Hills, 32 ♂♂, 18 ♀♀ (MKPC), 2 ♂♂, 2 ♀♀ (ZGMC); Moon State-Kyaikto 12 ♂♂, 15 ♀♀ (MKPC), 1 ♂ (ZGMC), 1 ♂, 3 ♀♀ (JSCP), 5 ♂♂, 4 ♀♀ (MMPC). **Thailand:** Chiang Mai, Chiang Mai, 1 ♀ (MJOC) 2 ♂♂ (MJOC); Samoeng, 4 ♂♂, 4 ♀♀ (JWWC); Mae Hon Son, 2 ♂♂ (JWWC), 1 ♀ (MKPC); Mae Hong Son-Ban Huai Po, 1 ♂ (MKPC); Mae Hong Son Pai, 3 ♂♂, 1 ♀ (ZGMC); (erroneously stated Vietnam) Huai Sua Tao, 1 ♂ (JWWC); Chiang Mai, Doi Inthanon, 1 ♀ (Naviaux and Pinratana 2004: 162).

Remarks. There is one specimen of *Cosmodela barmanica* in the collection of the second author whose locality label bears confusing data: Vietnam, Th. Huai Sua Tao,11.0–17.5.1992, leg. Dembicky. We assume that this specimen was collected in Thailand (the abbreviation Th.) as Huai Sua Tao refers to the village in the northern Thailand and the specimen corresponds to the distribution of this species. The first line of the label: Vietnam was probably included with the locality data by mistake as Mr. Dembicky collected a long series of *C. duponti* in southern Vietnam and used the pre-prepared labels when making a locality label of the above-mentioned specimen. We note this case to avoid confusion in setting up the territorial areas of both species, given that there may be additional incorrectly labeled specimens in different collections.

3. *Cosmodela indica* (Fleutiaux, 1893), new status

Type depository. Lectotype ♀ (Fig. 3) in MNHN.

Type status. Lectotype ♀, designated here. *Type labels*: "Assam / H. B. [handwritten]"; "v. indica / Fleut. type [handwritten]"; "v. indica Fleut. [handwritten]"; "LECTOTYPUS / *Cosmodela indica* / (Fleutiaux, 1893) / ded. Klícha & Wiesner, 2021" [printed, red]; (Fig. 3).



Figures 12–14. *Cosmodela indica* (Fleutiaux, 1893), habitus, scale = 5 mm. **12)** ♂: NE India, Meghalaya State, W. Garo Hills, Balphakram Nat. Park, 24.–26.V.1996, alt. 100 ± 50 m, GPS N25°11′, E90°52′ (WGS 84), E. Jendek and O. Šauša leg. (JWWC). **13)** ♀: NE India, Meghalaya State, W. Garo Hills reg., Tura, 29.–31.V.1996, alt. 700 ± 100 m, GPS N25°30.7′, E90°13.9′ (WGS 84), E. Jendek and O. Šauša leg. (JWWC). **14)** ♀: Indie, VII.1997, R. Chlopčík (MKPC).

Figures 15–19. Left lateral view of aedeagi of *Cosmodela* spec., scale = 1 mm. **15–16.** *C. duponti* (Dejean, 1826). **15)** reddish form, S. Vietnam, 5./6. 1994, Nam Cat Tien, leg. Dembicky and Pacholatko (JWWC). **16)** greenish form, Laos south, Attapu prov., Boaven Plateau, 18–30. IV. 1999, 15 km SE of Ban Houaykong, Non Lom (lake) env. N15°02′, E106°35′, alt. 800 m, E. Jendek and & O. Šauša leg. (JWWC). **17–18.** *barmanica* (Gestro, 1893). **17)** Greenish form, South India, VI. 2004, Mysore State, 2000 ft, Shimoga Dist., Agumbe Ghat, T. R. S. Nathan coll. (JWWC). **18)** Reddish form, 4. VI. 2018, Myanmar, Moon State, Kyaikto, road from Bilin to Pyintha, Miroslav Klicha Lgt. (MKPC). **19)** *C. indica* (Fleutiaux, 1893), NE India, Meghalaya State, W. Garo Hills, Balphakram Nat. Park, 24.–26.V.1996, alt. 100 ± 50 m, GPS N25°11′, E90°52′ (WGS 84), E. Jendek and O. Šauša leg. (JWWC).

Re-description. *Size:* Total length (without labrum) 17–19 mm. Habitus is robust and convex. The dominant colour is deep bright green to blue with no red reflections (Fig. 12–14). Some specimens show light golden tone in elytral sutural and marginal bands as well as on pronotum and head. This tone is more visible on specimens from Assam, while specimens from Meghalaya show darker tones of green and blue. *Head*: broad, coarsely striate between eyes, forehead with deep wrinkles, clypeus waved in the center, metallic deep bright green and blue, sometimes with subtle golden reflections; labrum wide with broad carina, black with two wide light-yellow patches in the central part, divided by the carina, with six long white setae. Genae coarsely striate, deep bright blue and green, the rear part lightly white setose. *Pronotum*: with shallow wrinkles, more bevelled backward, the sides not so rounded as in *C. barmanica*; the base is considerably narrowed; pronotal disc glabrous, proepisterna with few long white bristles. *Elytra*: slightly widened posteriorly, gradually curved at the apical part towards the sutural line, in ♀♀ the curve is slightly waved; the basic colour is satin deep greenish blue, the sutural and marginal bands as well as the base and extension line situated on the first quarter of elytra are bright blue and green, in some specimens with slight golden tone as mentioned above; the marginal bands create a regular line from the base up to the elytral apex, the extension line is fully joined to the marginal band incorporating the first elytral macula. Each elytron has a white humeral dot and three white elytral patches, the first one, located in the extension line is reduced to a tiny dot, the central one is extended to a short, transverse band and the apical one is irregularly rounded. Epipleura bluish green. *Ventral aspect*: metallic blue green, partly white setose, abdominal sternites black with green and blue reflection, legs dark blue with bright green and violet reflections, trochanters metallic black. *Aedeagus*: size approx. 5,2 mm (Fig. 19); the upper back side rises in a continuous curve to the top, then descends slightly to the step in the last third of the aedeagus, behind which it goes in a short, horizontal line to a beak-like bend up to the rounded apical end; the lower part goes almost horizontally to the apical end, slightly curved in the center.

Distribution. It is the most restricted species of this group found only in the NE India, namely in Assam and Meghalaya states.

Records. NE India: Meghalaya State: W. Garo Hills, Balphakram N.P., 3 ♂♂, 3 ♀♀ (JWWC); Tura, 1 ♂, 1 ♀ (OSJC); Khasi hills, 1 ♀ (MKPC), 2 ♂♂, 1 ♀ (MJOC); Assam state: Umrongbo, 2 ♂♂, 2 ♀♀ (JWWC).

Key to distinguish *Cosmodela duponti*, *C. barmanica* and *C. indica*

1. Genae glabrous, the sutural and marginal iridescent bands not fully developed, the lateral bands are narrow and irregular, the widest part of the lateral band is situated at mid elytra; aedeagus slender, behind the bulge obliquely tapering to the mildly rounded apex . . . . ***Cosmodela duponti* (Dejean)**
— Genae setose, the sutural and marginal iridescent bands fully developed, the lateral bands make a regular wide line from the humera to the elytral apex; aedeagus robust, apex bluntly rounded **2**
2(1). Robust species, total length 17–19 mm; sutural and marginal bands bright deep green, sometimes with golden reflections; elytra slightly widened posteriorly, curved at the apex towards the sutura, in ♀♀ the curve is slightly waved; basal part of aedeagus regularly curved toward the top of the aedeagus, the line behind the step is short and horizontal up to a beak-like bend, aedeagus approx. 5.2 mm long . . . . . ***Cosmodela indica* (Fleutiaux)**
— Slender species, total length 13–17 mm; sutural and marginal bands with a brighter, lighter green colour, often with a hint of red (in some specimens from Myanmar and western Thailand the red hue may be prevailing, thus resembling the specimens of *Cosmodela duponti* from Vietnam); elytra parallel, gradually curved at the apex towards the sutura, in ♀♀ the curve is slightly waved; basal part of aedeagus slightly bevelled toward the top of the aedeagus, the line behind the step descends slightly up to a beak-like bend, aedeagus approx. 4.5 mm long . . . . . ***Cosmodela barmanica* (Gestro)**

Discussion

Cosmodela duponti was first described by Dejean based on the type specimen from Cochin China (Cochinchina) in southern Vietnam, however, its name was later applied to a wide variety of specimens from India to Vietnam. When *Cosmodela barmanica* was described based on colour differences (as discussed in the short diagnosis of

that species), however, this feature led to confusion in the determination, given that both *C. duponti* and *C. barmanica* are variable in colour, and specimens with red and green reflections occur continuously within the range of their occurrence. The probability of possible inclusion of more species under the name *Cosmodela duponti* was previously suggested (Acciavatti and Pearson 1989: 136, 137; Pearson et al. 2020).

Cosmodela duponti and *C. barmanica* are closely related species with a similar pattern of different colour variations. *C. barmanica* occurs in the western part of the region, while *C. duponti* inhabits the eastern part. Most likely, the division line between these two species is situated in Thailand where both species have been found. While there is yet no evidence that they are sympatric, we cannot exclude that possibility. For example, a pair of similarly related species *Calochroa sexpunctata* Fabricius, 1775) and *Calochroa flavomaculata* (Hope, 1831) (Klícha and Wiesner 2020: 715) show considerable overlap in their ranges.

Shook and Wu (2007: 28) reported the occurrence of *Cosmodela duponti* in China, Yunnan, without locations. We have not obtained any further data to confirm this occurrence. The habitus-photo shown in that publication was taken from a specimen collected outside China and most probably refers to the greenish variety of *C. duponti* collected in Laos.

Cosmodela indica was originally described as a variety of *C. duponti*. Of all the forms discussed here, it shows the most stabile colour variation and is less variable than the preceding two species. It is also the largest in size of this group of closely related species.

Acknowledgments

We are grateful to our colleagues and friends Zdeněk Gartus, Milada Kadlčíková, Miloslav Mýlek, Jaroslav Šafanda and Ondřej Šafránek all from the Czech Republic for making available the data and specimens of the discussed species for exploration, comparison, and evaluation of feature differences. We would also like to give our special thanks to Richard Sehnal, Czech University of Life Sciences Prague, FAPPZ, Department of Zoology and Fisheries, Praha for making professional photos for this article and to David L. Pearson (Tempe, AZ) and Andrey Matalin (Moscow) for reviewing the manuscript. We also wish to express our gratitude to Georges Colas, first assistant secretary of the Entomological Society of France, for providing copies of the original works describing the mentioned type specimens, and to Azadeh Taghavian, Muséum national d'histoire naturelle, Paris, France, for sending photographs of type specimen, including labels.

Literature Cited

Acciavatti RE, Pearson DL. 1989. The tiger beetle genus *Cicindela* (Coleoptera, Insecta) from the Indian subcontinent. Annals of the Carnegie Museum 58(4): 77–353.

Dejean PFMA. 1826. Species général des coléoptères de la collection de M. le Comte Dejean. Tome second. Crevot; Paris. 501 p.

Fleutiaux E. 1893. Remarques sur quelques Cicindelidae et descriptions d'espèces Nouvelles. Annales de la Société Entomologique de France 62: 483–495.

Gestro R. 1893. Viaggio di Leonardo Fea in Birmania e regioni vicine, LII, enumerazione delle Cicindele. Annali del Museo Civico di Storia Naturale di Genova, Ser. 2a, 13: 348–381.

Horn W. 1926. Carabidae, Cicindelinae. p. 1–345. In: Junk W, Schenkling S (eds.). Coleopterorum Catalogus, pars 86. W. Junk; Berlin. 345 p.

Klícha M, Wiesner J. 2020. Identification and Natural History of *Calochroa sexpunctata* (Fabricius, 1775) and *Calochroa flavomaculata* (Hope, 1831) (Coleoptera: Cicindelidae) from Myanmar. Giornale Italiano di Entomologia 15(64): 715–718.

Naviaux R, Pinratana A. 2004. The tiger beetles of Thailand (Coleoptera, Cicindelidae). Sunprinting, Brothers of St. Gabriel in Thailand; Bangkok. 177 p.

Pearson DL, Wiesner J, Acciavattii RE, Uniyal VP, Anichtchenko A. 2020. A field guide to the tiger beetles of India. Identification and biology of the Cicindelidae. Bishen Singh Mahendra Pal Singh; Dehradun. 315 p.

Rivalier E. 1961. Demembrement du genre *Cicindela* L. (Suite) (1). IV. Faune indomalaise. Revue francaise d'Entomologie 28(3): 121–149.

Shook GA, Wu X-Q. 2007. Tiger beetles of Yunnan. Yunnan Publishing Group Corporation, Yunnan Science and Technology Press; Kunming. 119 p.

Received April 27, 2021; accepted June 28, 2021.
Review editor M.J. Paulsen.