

Research article

Submitted: Marchth, 2026 – Accepted: Aprilth, 2026 – Published: June 30th, 2026
DOI: 10.13133/2284-4880/1968

New records of tiger beetles from Brunei Darussalam, with description of the male of *Neocollyris (Orthocollyris) rectangulivertex* (Horn, 1929) (Carabidae, Cicindelinae)

Niccolò MASSIMO^{1,*}, Riccardo SCIAKY², Rodzay bin Haji Abdul WAHAB³

¹ Via Cigole 19, I-25025, Manerbio BS (Italy). E-mail: nico99.ferri@gmail.com

² Via Fiamma 10, I-20129, Milano (Italy). E-mail: riccardo.sciaky@virgilio.it

³ Universiti Brunei Darussalam, Institute for Biodiversity and Environmental Research, Jalan Universiti, Brunei Darussalam. E-mail: rodzay.wahab@ubd.edu.bn

* Corresponding author

Abstract

Four species of Cicindelinae (Coleoptera, Carabidae) are reported as new country records for Brunei Darussalam: *Neocollyris (Orthocollyris) rectangulivertex* (Horn, 1929); *N. (Stenocollyris) constricticollis* Dheurle, 2016; *Therates rugulosus* (Horn, 1900) and *T. erinnys tepa* Moulton, 1910. The male of *N. (O.) rectangulivertex* is described herein for the first time and illustrated. The current knowledge of tiger beetle fauna of Brunei is discussed.

Key words: Borneo, rainforest, Insecta, Coleoptera, tiger beetle

Introduction

Brunei Darussalam is a small Islamic sultanate located in northern Borneo, which, despite its small land size (5765 km²), is of primary importance in the conservation of tropical rainforests of this island, since its forest is not turned into oil palm plantations and about 72% of its territory is still covered by forests. The country falls in the tropical rainforest climate region, characterized by high temperatures and humidity and high average rainfall throughout the year. The territory (Fig. 1) is surrounded by the Malaysian state of Sarawak, and it is divided into two enclaves, of which the eastern one (1,306 km²) is occupied entirely by the Temburong district, through which flows the Temburong River. Ulu Temburong National Park occupies the southern portion of this district, and it preserves 550 km² of tropical lowland and lower montane rainforests.

The tiger beetle fauna of Brunei has been investigated in two studies by Wiesner (1998) and Damken et al. (2017) which led to several new records of species of Cicindelinae and increased the number of known species to 30, of which 23 have been found in Temburong district. However, the number of actual species may be much higher, since

many other species are known from the neighboring state of Sarawak (Damken et al. 2017). During July and August 2024 a research survey focused on arthropods was conducted in Ulu Temburong National Park, Temburong district, in the primary dipterocarp forest surrounding Kuala Belalong Field Studies Center. The intensive research led to new discoveries on the Cicindelinae fauna of Brunei, which are the object of this paper.

Materials and methods

All the specimens reported in this paper were collected between July and August 2024 in the Ulu Temburong National Park during the project “A study of arthropods in Ulu Temburong National Park” with permission to do research granted by Universiti Brunei Darussalam. The specimens were collected both during the day, by means of sweeping nets among the vegetation, and during the night, attracted by artificial white and UV lights, and preserved in 75° ethanol.

The male specimens were dissected to examine genitalia, which were included in DMHF for a better vision

of the internal structures, sometimes after clarification in KOH if necessary. The observations and measurements were carried out by means of a Leica Wild Heerbrugg stereomicroscope. The photographs are composite images obtained with progressive focusing with a Canon EOS 70D digital camera equipped with a lens Canon Macro MP-E 65mm, then processed with HeliconFocus® 6.7.1 and optimized with open source software GIMP 2.8.20.

Abbreviations:

CNM: Niccolò Massimo collection, Manerbio (Brescia), Italy
 CRS: Riccardo Sciaky collection, Milan, Italy (part of the Zoologische Staatssammlung München, Germany)
 CVG: Valerio Gerace collection, Rome, Italy
 CFC: Fabio Cassola collection, Museo Civico di Zoologia of Rome, Italy
 SDEI: Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany

KBFSC: Kuala Belalong Field Studies Center

TBL: total body length (measured from the tip of the labrum to the elytral apex)

MW: maximum width

TL: total length

Results

Family Carabidae Latreille, 1802

Subfamily Cicindelinae Latreille, 1802

Tribe Collyridini Brullé, 1834

Subtribe Collyridina Brullé, 1834

Genus *Neocollyris* W. Horn, 1901

Subgenus *Orthocollyris* Naviaux, 1995

***Neocollyris (Orthocollyris) rectangulivertex* (W. Horn, 1929)**

(Figs. 2, 3)

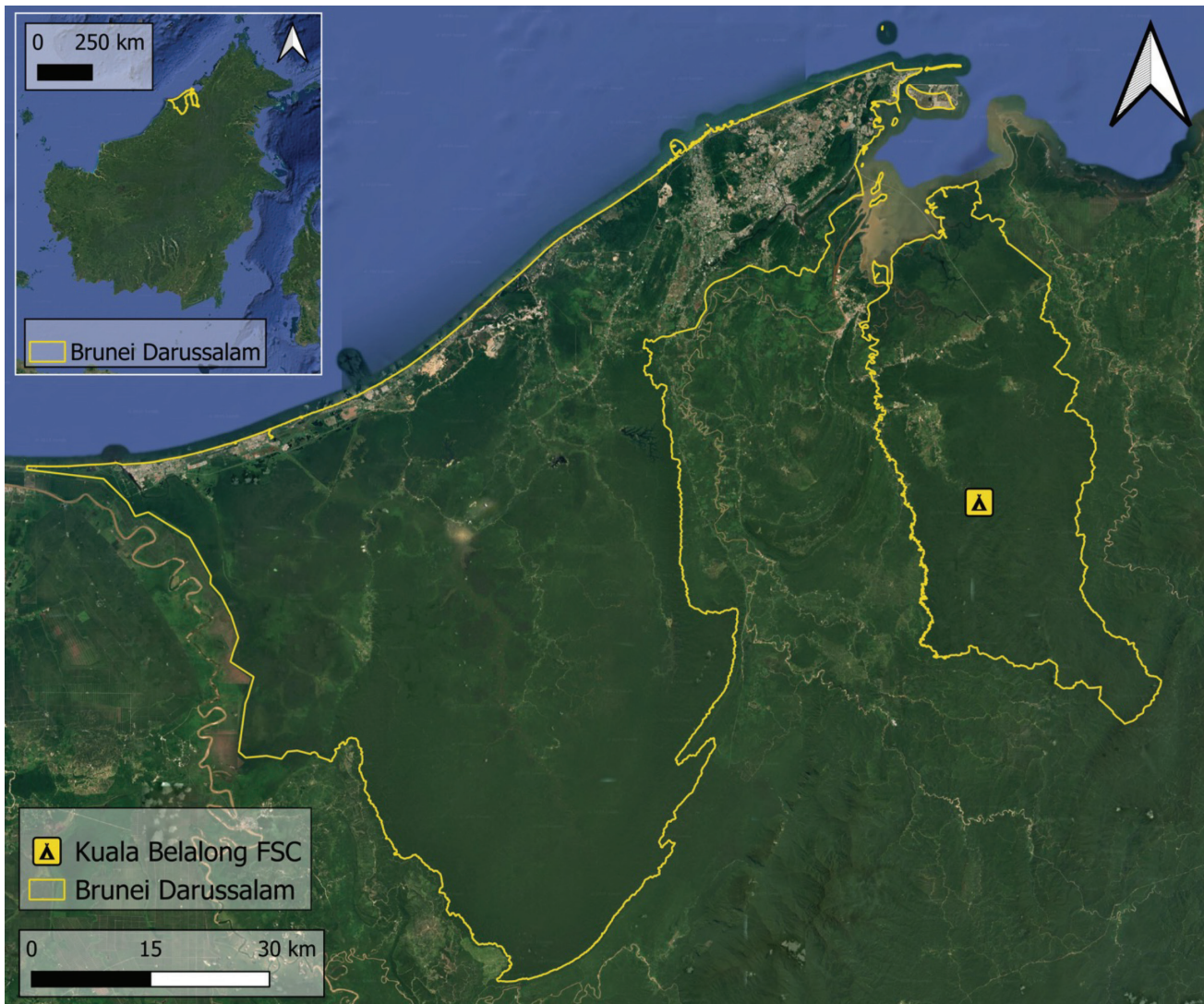


Fig. 1. Map of Brunei Darussalam. The position of Kuala Belalong Field Studies Center is highlighted; Apan River is located approximately 2 km north.

Notes. This species has been described by Horn (1929) and later redescribed by Naviaux (1995) on the basis of two female specimens (Fig. 3) from Sandakan (Malaysia, Sabah), currently preserved in Walter Horn's collection (SDEI), which remain, to our knowledge, the only known specimens up to now. The type locality is located in North-east Borneo.

Examined material. BRUNEI: Temburong District, Ulu Temburong National Park, near Apan River; 4.555N, 115.154E; 13-14 Aug 2024; N. Massimo, E. Pulvirenti and V. Gerace leg.; sweeping, hand collecting; 1 ♂, CNM.

Description of the male. TBL: 10.9 mm. Habitus as in Fig. 2A. Small size, overall shape cylindrical, legs short.

Coloration. Body dark with blue-violet metallic luster on head, pronotum and lateral sides of the elytra; elytral disc with greenish luster. Labrum black with a violet luster (Fig. 2C). Labial palpomeres entirely black. Ventral side of mesothorax, metathorax and abdomen black with

blue-violet luster and white pubescence. Antennae: antennomeres 1–2 black with violet metallic luster, 3–5 testaceous with black apex, 6–7 testaceous, 8–11 dark brown, gradually darkened. Legs: coxae and trochanters black with violet metallic luster; femora reddish except for the apex, which is black; protibiae black with faint blue luster; mesotibiae black with bluish luster but with extreme apex testaceous; metatibiae black with blue-violet luster in the basal two-thirds, the apical third reddish, pro- and mesotarsomeres black, metatarsomeres 1–3 reddish, 4 black with a reddish base, 5 black.

Head (Figs. 2A–C). Head small and elongated, subrectangular in dorsal view. Temples rounded, discretely separated from the neck, interocular cavity wide and shallow, with two longitudinal furrows. Eyes only moderately prominent. Occiput smooth; vertex, in side view, dilated, abruptly protruding from the neck, forming a right angle; the level of the interocular cavity is higher than the upper

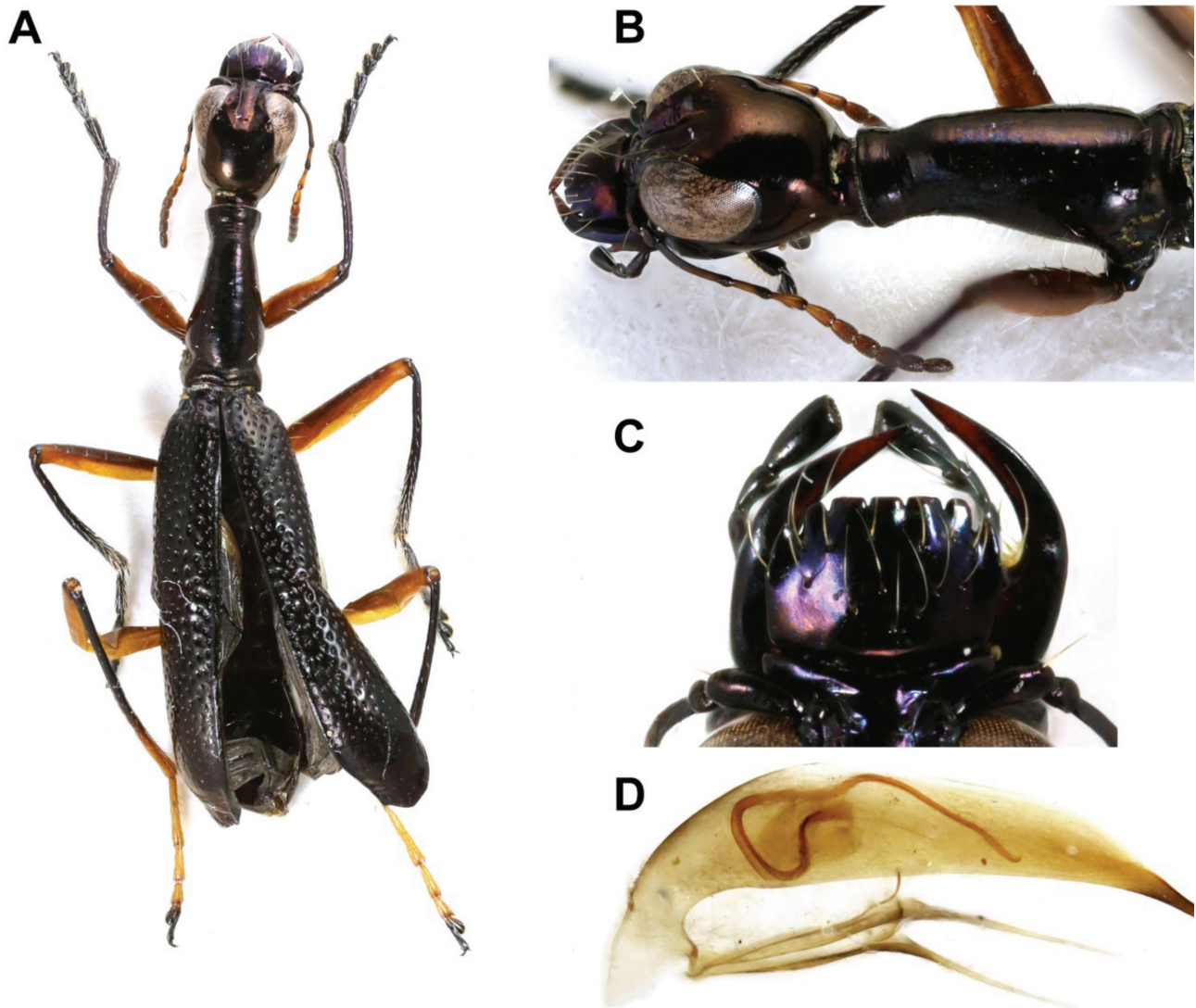


Fig. 2. *Neocollyris* (*Orthocollyris*) *rectangulivertex*. **A**, male habitus in dorsal view; **B**, male head and prothorax in dorsolateral view; **C**, male labrum; **D**, aedeagus.

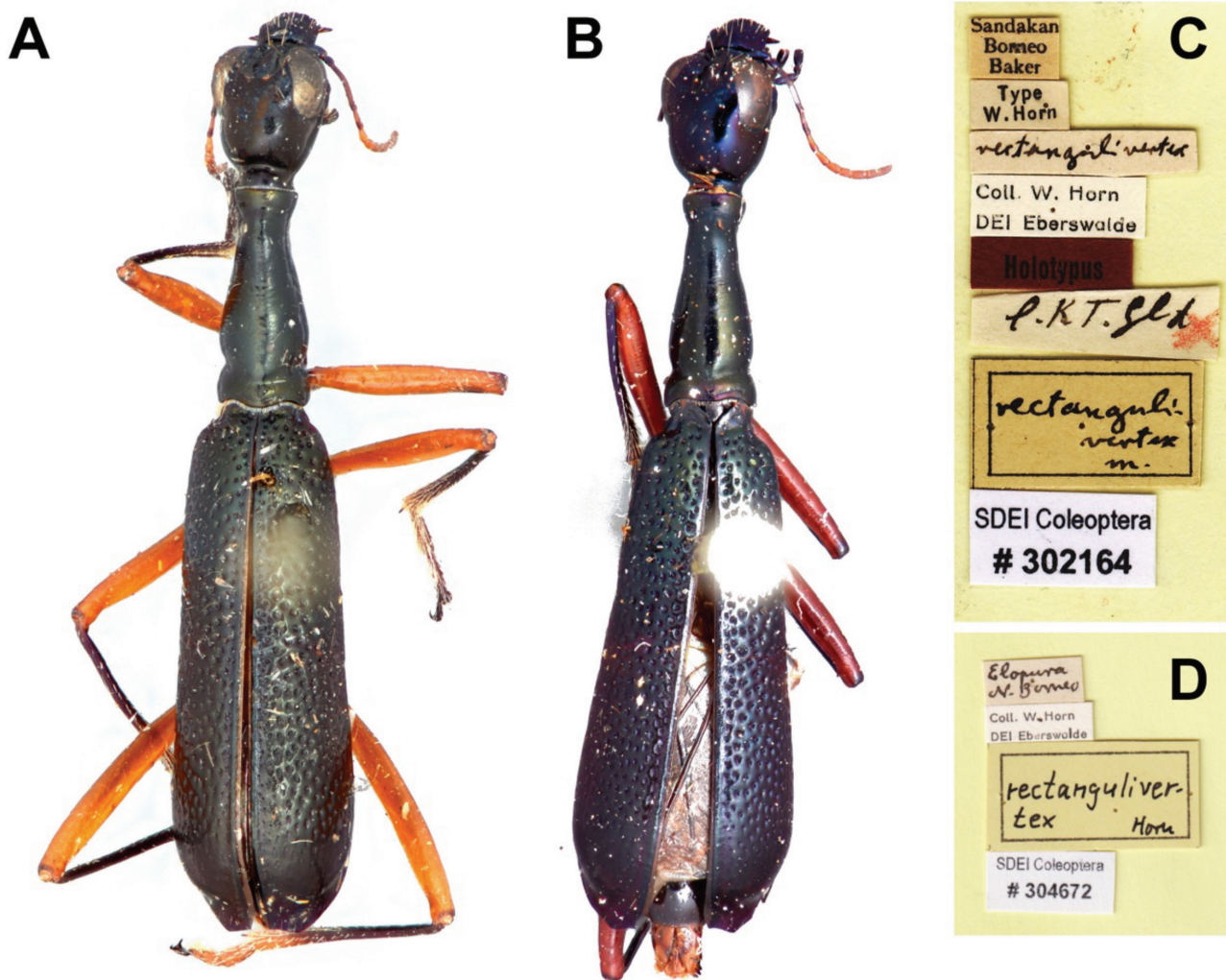


Fig. 3. *Neocollyris (Orthocollyris) rectangulivertex* (photos courtesy of Momo Larisch, SDEI). **A**, female holotypus, habitus in dorsal view; **B**, female non-type specimen; **C**, holotypus, labels; **D**, non-type specimen, labels.

margin of the eyes (Fig. 2B). Two supraorbital setae. Antennae short, reaching approximately the apical third of the pronotum. Labrum (Fig. 2C): MW/TL ratio: 1.38; with 7 teeth, the inner 5 rectangular and almost flattened; 15 setae on the labrum, arranged as in Fig. 2C. Labial palps rather stout; palpomere 2 about twice as long as wide, with outer margin slightly sinuated and inner margin with a slight gibbosity in the apical half; labial palpomere 3 drop-shaped.

Prothorax (Figs. 2A-B). TL/MW ratio: 2.25. Overall shape fusiform (sensu Naviaux 1995), if seen from above (Fig. 2A), with smooth surface except for sparse setae on the dorsal surface. Lateral and ventral surfaces with denser pilosity. The neck waist positioned in the apical fourth of the pronotum, pronounced in both dorsal and lateral views (Fig. 2B). Central part of the pronotum forms an almost flat plateau, only slightly and smoothly raised from the base and the neck.

Elytra (Fig. 2A). Elytra damaged, but overall shape approximately cylindrical. Elytra apically truncate, with oblique truncation and both subapical and sutural angles

obtuse. Sculpture uniform on almost the whole elytra, composed of big rounded points widely separated by a flat surface. At the apical declivity the points are gradually reduced until they disappear. Whole elytral surface between points with isodiametric microsculpture.

Aedeagus (Fig. 2D). Length (measured sensu Naviaux 2004): 2.1 mm. Overall shape as in Fig. 2D. Base curved smoothly, without bumps; the width increases up to the proximal third of the aedeagus, after which it gradually decreases up to the apex, which is slightly tilted downwards and darkened. After the base, the lower margin is almost rectilinear up to the apical third, where it is smoothly curved downwards, following the curvature of the apex. Inner sclerites as in Fig. 2D, basal sclerite very small; flagellum long and sinuous, forming a wide arc backwards and then extending forward up to approximately 2/3 of the length of the aedeagus.

Remarks. New country record for Brunei Darussalam and new district record for Temburong. Despite the damaged elytra and hind legs, the male described above is

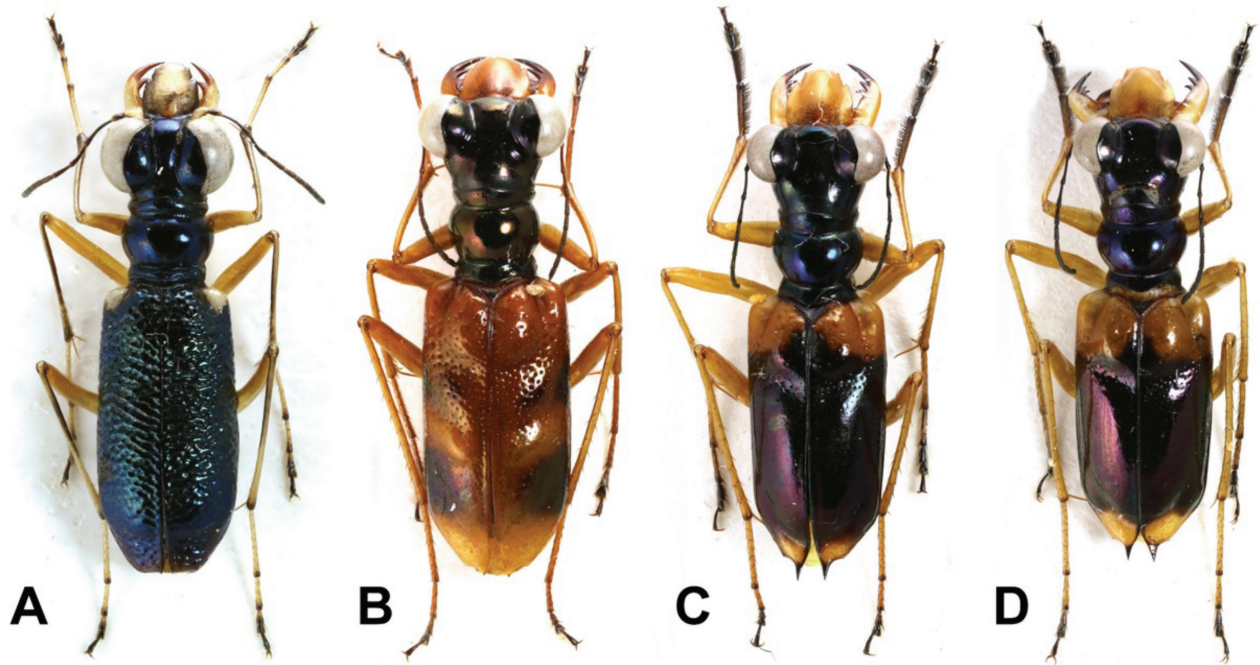


Fig. 4. *Therates* spp., habitus in dorsal view. A, *T. rugulosus*, female; B, *T. erinnyss* ssp. *tepa*, female; C, *T. dimidiatus* ssp. *wallacei*, male; D, *T. bruneiensis*, male.

attributable to this species due to the characteristic shape of the head. This finding extends the known distribution of *N. rectangulivertex*, up to now only known from the type locality in Northeast Borneo (Sabah). This specimen has been hand collected in a secondary forest near Apan River, a tributary to Temburong River.

Subgenus *Stenocollyris* Naviaux, 1995

Neocollyris (*Stenocollyris*) *constricticollis* Dheurle, 2016

Examined material. BRUNEI: Temburong District, Ulu Temburong National Park, near KBFSC, Ashton Trail, 4.547N, 115.158E, 30 Lug-17 Aug 2024, N. Massimo,

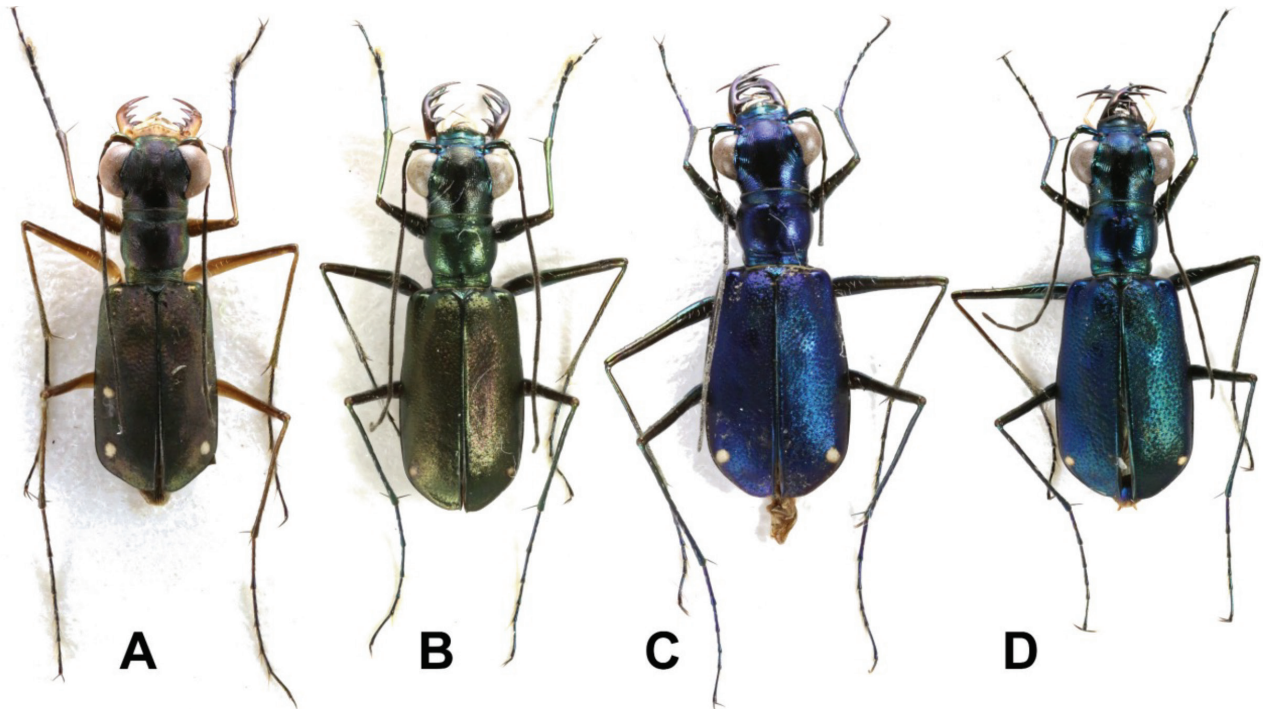


Fig. 5. *Cylindera* (*Leptinomera*) spp., habitus in dorsal view. A, *C. (L.) hammondi*, male; B, *C. (L.) kibbyana*, male; C–D, *idem*, females.

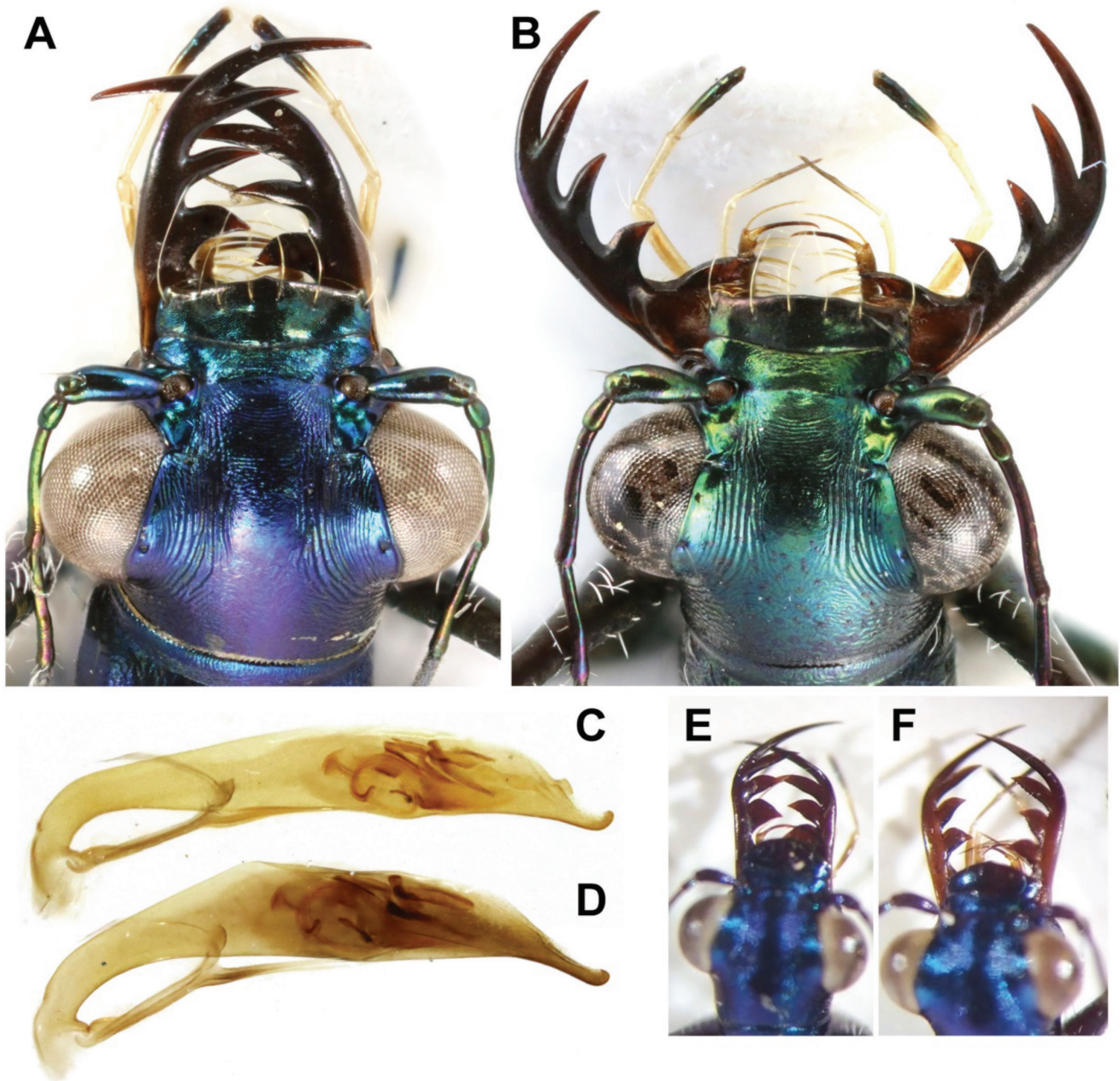


Fig. 6. *Cylindera (Leptinomera)* spp. **A**, *C. (L.) kibbyana*, female mandibles; **B**, idem, male; **C**, *C. (L.) hammondi*, aedeagus; **D**, *C. (L.) kibbyana*, aedeagus; **E**, *C. (L.) macrodonta*, female mandibles; **F**, idem, male.

E. Pulvirenti and V. Gerace leg., sweeping, hand collecting, 1 ♂, CNM; Temburong District, Ulu Temburong National Park, near Apan River, 4.555N, 115.154E, 13-14 Aug 2024, N. Massimo, E. Pulvirenti and V. Gerace leg., sweeping, hand collecting, 1 ♂, CNM.

Remarks. New country record for Brunei Darussalam and new district record for Temburong of a recently described species. The specimens have been collected by means of sweeping nets in a primary natural mixed dipterocarp forest (near KBFSC) and in a secondary forest near Apan River. This species was known only, as far as we know, from Kubah National Park (Sarawak) from a

single male specimen (Dheurle 2016); the female remains, therefore, unknown. The *Neocollyris (Stenocollyris) sarawakensis* species-complex, to which this species belongs, has been recently revised by Dheurle & Moravec (2025), who pointed out the diagnostic characters among all the morphologically similar species of this group. The characters mentioned for *N. (S.) constricticollisoides* fit those observed in the two specimens collected by us.

***Neocollyris (Stenocollyris) leucodactyla* (Chaudoir, 1860)**

Examined material. BRUNEI: Temburong District, Ulu Temburong National Park, near KBFSC, Ashton Trail,

4.547N, 115.158E, 30 Lug-17 Aug 2024, N. Massimo, E. Pulvirenti and V. Gerace leg., sweeping, hand collecting, 2 ♂♂, 1 ♀, CNM; Temburong District, Ulu Temburong National Park, near KBFSC, East Trail, 4.547N, 115.158E, 30 Lug-17 Aug 2024, N. Massimo, E. Pulvirenti and V. Gerace leg., sweeping, hand collecting, 1 ♀, CNM.

Records from literature. Brunei, Temburong, Kuala Belalong (Wiesner 1998: 372).

Subtribe Tricondyliina Naviaux, 1991

Genus *Tricondyla* Latreille, 1822

Subgenus *Stenotricondyla* Naviaux, 2002

***Tricondyla (Stenotricondyla) reducta* Naviaux, 2002**

Examined material. BRUNEI: Temburong District, Ulu Temburong National Park, KBFSC, 4.547N, 115.158E, 30 Lug-17 Aug 2024, N. Massimo, E. Pulvirenti and V. Gerace leg., at night, 1 ♂, CNM.

Records from literature. Brunei, Temburong, Kuala Belalong (Naviaux 2002: 70,71).

Remarks. The remains of the only collected specimen were found on the stairs of KBFSC during the night. Despite the absence of the head and of part of the legs, luckily the abdomen and the aedeagus were intact, which allowed for the identification. This species is absent in the checklist of Cicindelinae from Brunei by Damken et al. (2017), however the original description by Naviaux (2002) reports that a male paratype has been collected in Temburong district, whose full collecting data are: “Borneo, Brunei, Temburong, Kuala Belalong, R. Bocherding leg., 11–16.III.1995”. *T. (S.) reducta* is currently known for Brunei and Malaysia (Sabah) (Naviaux 2002; Wiesner 2020).

Tribe Cicindelini Latreille, 1802

Subtribe Theratina W. Horn, 1893

Genus *Therates* Latreille, 1816

***Therates rugulosus* (Horn, 1900)**

(Fig. 4A)

Examined material. BRUNEI: Temburong District, Ulu Temburong National Park, near KBFSC, Ashton Trail, 4.547N, 115.158E, 30 Lug-17 Aug 2024, N. Massimo, E. Pulvirenti and V. Gerace leg., sweeping, hand collecting, 1 ♀, CNM.

Remarks. New country record for Brunei Darussalam and new district record for Temburong. This species has a wide distribution in Southeast Asia, including Vietnam, Laos, China (Yunnan), Thailand, Indonesia (Sumatra, doubtful for Java) and Malaysia (Sarawak, Sabah) (Wiesner 2020). Due to the geographical position of Brunei Darussalam, the presence of *Therates rugulosus* in Ulu Temburong National Park is not unexpected. The specimen has been collected by means of sweeping nets in a primary natural mixed dipterocarp forest.

***Therates erinnys* ssp. *tepa* Moulton, 1910**

(Fig. 4B)

Examined material. BRUNEI: Temburong District, Ulu Temburong National Park, near KBFSC, Ashton Trail, 4.547N, 115.158E, 30 Lug-17 Aug 2024, N. Massimo, E. Pulvirenti and V. Gerace leg., sweeping, hand collecting, 1 ♀, CNM.

Remarks. New country record for Brunei Darussalam and new district record for Temburong. Published records of this subspecies include Malaysia (Sarawak, Sabah) and Indonesia (Kalimantan timur) (Wiesner 2020). As for *T. rugulosus*, the presence of this species in Brunei Darussalam is not unexpected, given the previous records from Sarawak and Sabah. The specimen has been collected by means of sweeping nets in a primary natural mixed dipterocarp forest.

***Therates dimidiatus* ssp. *wallacei* J.Thomson, 1857**

(Fig. 4C)

Examined material. BRUNEI: Temburong District, Ulu Temburong National Park, near KBFSC, Ashton Trail, 4.547N, 115.158E, 30 Lug-17 Aug 2024, N. Massimo, E. Pulvirenti and V. Gerace leg., sweeping, hand collecting, 2 ♂♂, CNM.

Records from literature. Brunei, Temburong, Kuala Belalong (Wiesner 1998: 373).

***Therates bruneiensis* Votruba, 2009**

(Fig. 4D)

Examined material: BRUNEI: Temburong District, Ulu Temburong National Park, near KBFSC, Ashton Trail, 4.547N, 115.158E, 30 Lug-17 Aug 2024, N. Massimo, E. Pulvirenti and V. Gerace leg., sweeping, hand collecting, 1 ♂, CNM; Temburong District, Ulu Temburong National Park, near Apan River, 4.555N, 115.154E, 13-14 Aug 2024, N. Massimo, E. Pulvirenti and V. Gerace leg., sweeping, hand collecting, 1 ♂, 1 ♀, CNM.

Records from literature: Brunei, Temburong, Kuala Belalong (Votruba 2009: 325, 326); Temburong, Labu FR (Damken et al. 2017: 4).

Remarks: This species has been described from exactly the same area where we have collected a male specimen. In spite of the great similarity with the sympatric *Therates dimidiatus* ssp. *wallacei*, the differences pointed out by Votruba (2009) seem to be valid and allow distinguishing between the two species.

***Therates batesi* ssp. *batesi* J.Thomson, 1857**

Examined material: BRUNEI: Temburong District, Ulu Temburong National Park, near KBFSC, Ashton Trail, 4.547N, 115.158E, 30 Lug-17 Aug 2024, N. Massimo, E. Pulvirenti and V. Gerace leg., sweeping, hand collecting, 7 ♂♂, 2 ♀♀, CNM; Temburong District, Ulu Temburong National Park, near KBFSC, East Trail, 4.547N, 115.158E, 30 Lug-17 Aug 2024, N. Massimo, E. Pulvirenti and V. Gerace leg., sweeping, hand collecting, 1 ♀, CNM; same data, 2 ♂♂, 1 ♀, CRS; Temburong District, Ulu Temburong National

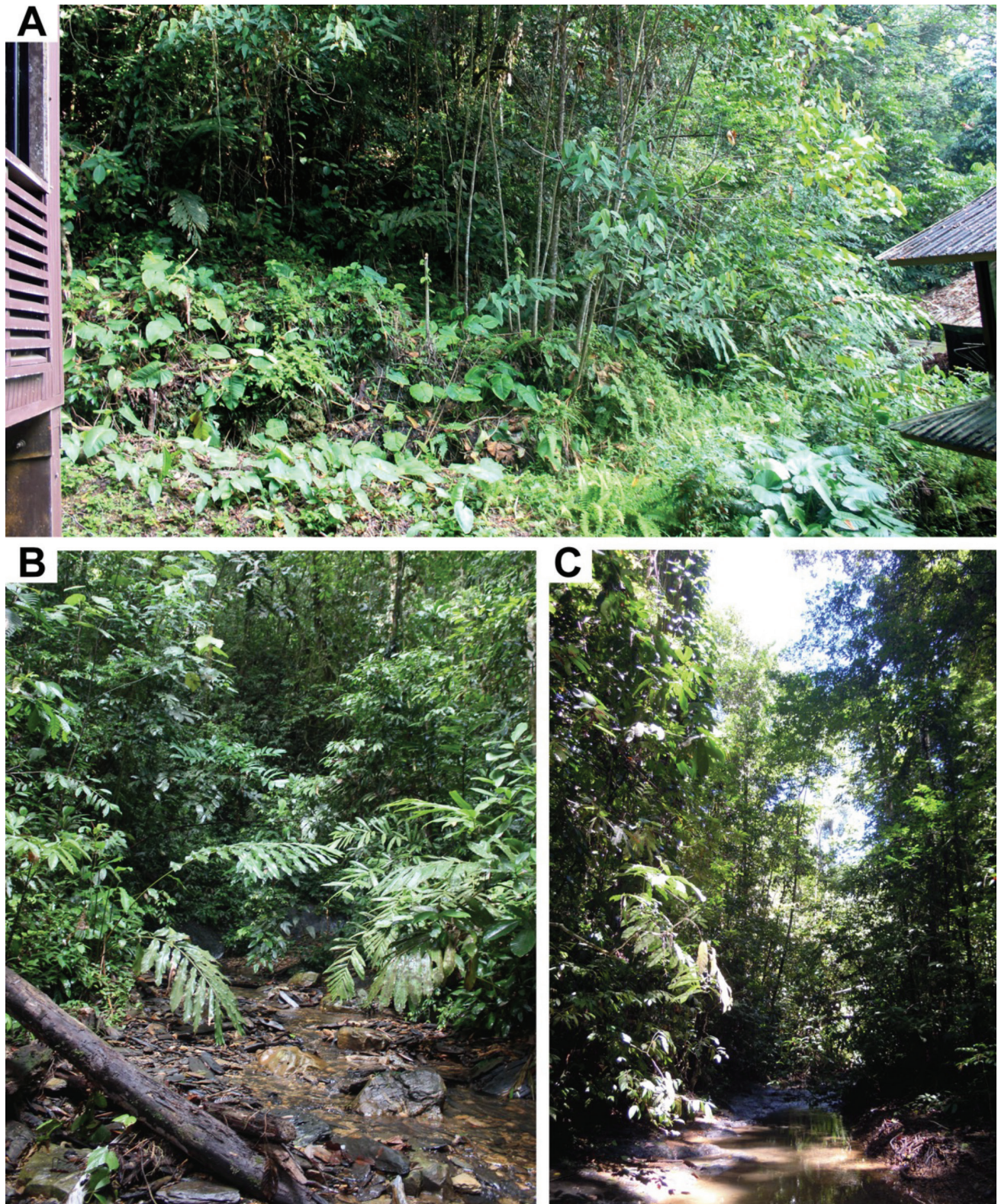


Fig. 7. Habitat. **A**, Vegetation around Kuala Belalong Field Studies Center, habitat of *Tricondyla reducta*, *Calomera crespignyi*, *Cosmodela aurulenta*, *Cylindera discreta* ssp. *discreta*, *C. kibbyana* and *C. sp.*; **B**, Sungai Mata Ikan, habitat of *Neocollyris leucodactyla*, *N. constricticollisoides*, *Therates rugulosus*, *T. dimidiatus* ssp. *wallacei*, *T. bruneiensis*, *T. batesi* ssp. *batesi* and *Cylindera hammondi*; **C**, Apan River, habitat of *Neocollyris rectangulivertex*, *N. constricticollisoides*, *Therates bruneiensis*, *T. batesi* ssp. *batesi* and *Cylindera hammondi* (photo courtesy of Edoardo Pulvirenti).

Park, near Apan River, 4.555N, 115.154E, 13-14 Aug 2024, N. Massimo, E. Pulvirenti and V. Gerace leg., sweeping, hand collecting, 2 ♂♂, 1 ♀, CNM.

Records from literature: Brunei, Temburong, Kuala Belalong (Wiesner 1998: 373); Temburong, Ashton Trail (Damken et al. 2017: 4).

Subtribe Cicindelina Latreille, 1802

Genus *Cosmodela* Rivalier, 1961

***Cosmodela aurulenta* (Fabricius, 1801)**

Examined material: BRUNEI: Temburong District, Ulu Temburong National Park, KBFSC, 4.547N, 115.158E, 30 Lug-17 Aug 2024, N. Massimo, E. Pulvirenti & V. Gerace leg., night, UV/white light, 3 ♂♂, 2 ♀♀, CNM; Temburong District, Ulu Temburong National Park, near KBFSC, Ashton Trail, 4.547N, 115.158E, 30 Lug-17 Aug 2024, N. Massimo, E. Pulvirenti & V. Gerace leg., Malaise trap, 3 ♂♂, CNM; same data, 1 ♂, CVG.

Records from literature: Brunei, Temburong, Kuala Belalong (Wiesner 1998: 373); Temburong, Mount Pagon (Damken et al. 2017: 5); Belait, Labi (Damken et al. 2017: 5).

Genus *Calomera* Motschulsky, 1862

***Calomera crespignyi* Bates, 1871**

Examined material: BRUNEI: Temburong District, Ulu Temburong National Park, KBFSC, 4.547N, 115.158E, 30 Lug-17 Aug 2024, N. Massimo, E. Pulvirenti & V. Gerace leg., night, UV/white light, 1 ♂, 1 ♀, CNM.

Records from literature: Brunei, Temburong, Kuala Belalong (Wiesner 1998: 373; Damken et al. 2017: 5).

Genus *Cylindera* Westwood, 1831

Subgenus *Ifasina* Jeannel, 1946

***Cylindera (Ifasina) discreta* ssp. *discreta* (Schaum, 1863)**

Examined material: BRUNEI: Temburong District, Ulu Temburong National Park, KBFSC, 4.547N, 115.158E, 30 Lug-17 Aug 2024, N. Massimo, E. Pulvirenti & V. Gerace leg., night, UV/white light, 1 ♂, 1 ♀, CNM.

Records from literature: Brunei, Temburong, Kuala Belalong (Wiesner 1998: 376); Temburong, Belalong, Outward Brunei Darussalam Batang Duri Camp (Damken et al. 2017: 7); Temburong, Ulu Ulu Resort (Damken et al. 2017: 7); Belait, Labi (Damken et al. 2017: 7).

Subgenus *Leptinomera* Rivalier, 1961

***Cylindera (Leptinomera) hammondi* Cassola, 1983**

(Figs. 5A, 6C)

Examined material: BRUNEI: Temburong District, Ulu Temburong National Park, near KBFSC, Ashton Trail, 4.547N, 115.158E, 30 Lug-17 Aug 2024, N. Massimo, E. Pulvirenti and V. Gerace leg., window trap, 1 ♂, CNM; Temburong District, Ulu Temburong National Park, near Apan River, 4.555N, 115.154E, 13-14 Aug 2024, N. Massimo, E. Pulvirenti and V. Gerace leg., sweeping, hand collecting, 1 ♂, CNM.

Records from literature: Brunei, Tutong, Lamunin, Bukit Sulang (Stork 1986: 9); Temburong, Belalong (Damken et al. 2017: 6).

Remarks: The subgenus *Leptinomera* is particularly difficult from the systematic point of view both because of the intraspecific variability and of the rarity of many species. In this case we are rather confident in the determination of this species, described from Sarawak but already known for Brunei (Cassola 1983; Damken et al. 2017), because all of the characters of the two specimens collected seem to fit very well with those pointed out in the original description (Cassola 1983).

***Cylindera (Leptinomera) kibbyana* Cassola, 1983**

(Figs. 5B-D, 6A-B,D)

Examined material: BRUNEI: Temburong District, Ulu Temburong National Park, KBFSC, 4.547N, 115.158E, 30 Lug-17 Aug 2024, N. Massimo, E. Pulvirenti & V. Gerace leg., night, UV/white light, 4 ♂♂, 2 ♀♀, CNM; same data, 2 ♂♂, CRS.

Records from literature: Brunei, Temburong, Kuala Belalong (Wiesner 1998: 376; Damken et al. 2017: 6); Temburong, Mount Pagon (Damken et al. 2017: 6).

Remarks: Within the subgenus *Leptinomera* this species, described from Sarawak but already known for Brunei (Cassola 1983; Damken et al. 2017), stands out for its peculiar sexual dimorphism concerning the body color: emerald green in the males (Fig. 5B), metallic blue in the females (Figs. 5C-D). The specimens collected by us perfectly fit this pattern. It is interesting to notice the degree of intraspecific variability in the shape of the basal tooth of the right mandible, which ranges from being moderately wide (Fig. 6A) to about two thirds of such width (Fig. 6B). This variability had initially led us to attribute one female specimen to *Cylindera (Leptinomera) macrodonta* Cassola and Probst, 1995 (whose mandibles are shown in Figs. 6E-F), but the examination of some paratypes of both species in CFC persuaded us that in *C. (L.) macrodonta* this character is much more evident, being modified also the second and third teeth. Furthermore, the antennae of the majority of the specimens reach posteriorly the elytral apical spots (Figs. 5B-C), as described by Cassola (1983), except in one female specimen in which they are much shorter (Fig. 5D).

Cylindera (Leptinomera) sp.

Examined material: BRUNEI: Temburong District, Ulu Temburong National Park, KBFSC, 4.547N, 115.158E, 30 Lug-17 Aug 2024, N. Massimo, E. Pulvirenti & V. Gerace leg., night, UV/white light, 1 ♂, CNM.

Remarks: This single male specimen of *Cylindera (Leptinomera)* corresponds to the photograph of a female specimen presented in Damken et al. (2017, fig. 17) as belonging to *C. (L.) hammondi*. We note that *C. (L.) hammondi* is described as having yellowish legs, so the identification is

very unlikely. The specimen examined by us has something in common with *Cylindera* (*Leptinomera*) *catoptroides* (W. Horn, 1892), already mentioned from Temburong district (Wiesner 1998; Damken et al. 2017), but does not completely correspond to it. This issue will be the subject of a future work of revision of this subgenus (the Authors, in prep.).

Discussion

A total of 55 specimens belonging to 15 species of Cicindelinae were collected during the project “A study of arthropods in Ulu Temburong National Park”, of which four are here reported for the first time for Brunei Darussalam. Thus, the total number of species currently known for Brunei increases to 35, as summarized in Table 1. It is likely that future surveys will lead to further discoveries, as the newly collected species have been found only in the proximity of KBFSC (mainly by sweeping the vegetation and by means of a light trap) and in a small area along a forest path near Apan River. It has been impossible, due to weather conditions, to place a light trap on the nearby canopy walk, however during field surveys described by Damken et al. (2017) it is reported that no specimens were collected attracted by light in that locality.

The only genera that have been attracted by UV/white light during our survey were *Cosmodela*, *Calomera* and *Cylindera*. Most of the specimens of *Cylindera* (*Leptinomera*) (*C. (L.) kibbyana* and *C. (L.)* sp.) were collected by means of a light trap near Belalong River, due to their high speed during the day. Specimens with bright metallic blue coloration belonging to this subgenus (*C. (L.) kibbyana*) were observed during the day while running and flying on vegetation around KBFSC, which is located on the western bank of Belalong River (Fig. 7 A), and on Ashton Trail in proximity to Sungai Mata Ikan, a small forest stream (Fig. 7 B). The two specimens of *C. (L.) hammondi* were collected sweeping the vegetation near Apan River (Fig. 7 C) and with a window trap placed in a small clearing near Sungai Mata Ikan. This seems to fit the ecology notes by Bouchard (1901), Bryant (1919) and Moulton (1914), reported by Cassola (1983), who state that species of the subgenus *Leptinomera* seem to be found exclusively along mountain streams on the surrounding vegetation or on damp mossy rocks.

No *Therates*, *Neocollyris* or *Tricondyla* were attracted by the light trap; specimens belonging to these genera were observed and collected on the vegetation near Apan River and near KBFSC along the East Trail and the Ashton Trail, especially in a small clearing near Sungai Mata Ikan. A few specimens of *Therates batesi batesi* were found at night while resting on the underside of leaves along Ashton Trail. A *Tricondyla* of unknown species was observed running among leaf litter on the forest floor near the summit of Ashton Trail, on the western ridge of Belalong River valley, but unfortunately, it was not possible to collect it.

Acknowledgements

We wish to express our gratitude to Valerio Gerace and Edoardo Pulvirenti for their friendship and help during the research survey in Ulu Temburong National Park, and also to Teddy Chua Wee Li, Wafi Juffery and all the members of the staff in Kuala Belalong Field Studies Center for their invaluable logistic support. We also wish to thank UBD and IBER for the permission to do research which allowed for the collection of the Cicindelinae specimens object of this paper. Permissions for collecting and exporting material in Brunei Darussalam were granted by the Forestry Department, Ministry of Primary Resources and Tourism, Brunei Darussalam (JPH/UND/17 [JPH/IND/SPL/FORM7/2024/029] and (JPH/HOB/AD/51) respectively). Lastly, our thanks go to Roberto Casalini, Fabio Pesci and Massimo Appolloni of the Museo Civico di Zoologia of Rome, who made possible the examination of Fabio Cassola's collection, to Momo Larisch, Vinicius Ferreira and Mandy Schröter of Senckenberg Deutsches Entomologisches Institut, who kindly provided us with the photo of the specimens of *Neocollyris rectangulivertex*, and to Pierfilippo Cerretti of “La Sapienza” University of Rome for providing the Malaise trap.

References

- Bates H.W. 1871. Description of three new species of Cicindelidae. The Transactions of the Entomological Society of London: 377–379.
- Bouchard M. 1901. Sur quelques Cicindèles de Sumatra (Col.). Bulletin de la Société entomologique de France, 6(17): 295–296. <https://doi.org/10.3406/bsef.1901.22915>
- Bryant G.E. 1919. Entomology in Sarawak, Borneo. The Entomologist's Monthly Magazine, 55: 70–76.
- Cassola F. 1983. Studi sui Cicindelidi. 32. Le *Cylindera* del subgen. *Leptinomera* Rivalier (Coleoptera Cicindelidae). Redia, 66: 9–35.
- Cassola F., Probst J. 1995. A new *Cylindera* (subgenus *Leptinomera* Rivalier) from Brunei, northern Borneo (Coleoptera: Cicindelidae). Schwanfelder Coleopterologische Mitteilungen, 10: 11–15.
- Chaudoir M. 1860. Matériaux pour servir à l'étude des Cicindèles et des Carabiques, 1e Partie, Cicindèles. Bulletin de la Société Impériale des Naturalistes de Moscou, 33(2): 1–69.
- Damken C., Wiesner J., Wahab R.H.A. 2017. Notes on the tiger beetles (Coleoptera: Carabidae: Cicindelinae) of Brunei Darussalam. 137. Contribution towards the knowledge of Cicindelinae. Insecta Mundi, 0552: 1–15.
- Dheurle C. 2016. Description de six espèces nouvelles du genre *Neocollyris* Horn, 1901 (Coleoptera, Cicindelidae). Arvernensis, 75–76: 1–14.
- Dheurle C., Moravec J. 2025. *Neocollyris* (*Stenocollyris*) *renenovaki* sp. nov. with comparison to four similar species occurring in Borneo (Coleoptera: Cicindelidae). Zootaxa, 5722(3): 369–390. <https://doi.org/10.11646/zootaxa.5722.3.4>
- Fabricius C. 1801. Systema eleutheratorum: secundum ordines, genera, species adiectis synonymymis, locis, observationibus,

Table 1. Updated checklist of Cicindelinae from Brunei, modified and updated from Damken et al. 2017 (the species reported for the first time for Brunei in this report are marked with an asterisk).

Species	Brunei (location not specified)	Belait	Tutong	Brunei-Muara	Temburong	Brunei (total) [E=endemic]	Malaysia (Sarawak)	Malaysia (Sabah)	Indonesia (Kalimantan)
<i>Protocollyris bryanti</i> Mandl, 1975	X					X	X		X
<i>Neocollyris</i> (s. str.) <i>emarginata</i> (Dejean, 1825)				X		X	X		X
<i>N.</i> (s. str.) <i>labiomaculata</i> (Horn, 1892)		X				X	X		
<i>N.</i> (<i>Stenocollyris</i>) <i>constricticollis</i> (Horn, 1909)					X	X	X		X
<i>N.</i> (<i>S.</i>) <i>constricticollis</i> Dheurle, 2016 *					X	X	X		
<i>N.</i> (<i>S.</i>) <i>leucodactyla</i> (Chaudoir, 1870)					X	X	X		
<i>N.</i> (<i>Orthocollyris</i>) <i>rectangulivertex</i> (Horn, 1929) *					X	X		X	
<i>Tricondyla</i> (s. str.) <i>beccarii beccarii</i> Gestro, 1874		X			X	X	X	X	X
<i>T.</i> (s. str.) <i>wallacei</i> Thomson, 1857		X				X	X		
<i>T.</i> (<i>Stenotricondyla</i>) <i>doriai</i> Gestro, 1874					X	X	X		
<i>T.</i> (<i>S.</i>) <i>reducta</i> Naviaux, 2002					X	X		X	
<i>Therates batesii batesii</i> Thomson, 1857					X	X	X	X	X
<i>T. bruneiensis</i> Votruba, 2009					X	E			
<i>T. bryanti</i> Horn, 1922			X			X	X		X
<i>T. dimidiatus wallacei</i> Thomson, 1857					X	X	X	X	X
<i>T. erinnys tepa</i> Moulton, 1910 *					X	X	X	X	X
<i>T. rugulosus</i> Horn, 1900 *					X	X	X	X	
<i>T. spectabilis flavissimus</i> Brouerius van Nidek, 1957					X	X	X		X
<i>Heptodonta analis analis</i> (Fabricius, 1801)					X	X	X	X	X
<i>Calomera crespignyi</i> (Bates, 1871)					X	X	X	X	X
<i>Cosmodela aurulenta</i> (Fabricius, 1801)		X			X	X	X	X	
<i>C. velata</i> (Bates, 1872)		X			X	X	X		
<i>Lophyra</i> (s. str.) <i>fuliginosa</i> (Dejean, 1826)		X	X	X		X			
<i>Cylindera</i> (<i>Eugrapha</i>) <i>minuta</i> (Olivier, 1790)					X	X	X	X	
<i>C.</i> (<i>Ifasina</i>) <i>discreta discreta</i> (Schaum, 1863)		X			X	X	X	X	
<i>C.</i> (<i>Leptinomera</i>) <i>filigera</i> (Bates, 1878)					X	X	X	X	X
<i>C.</i> (<i>L.</i>) <i>catoptroides</i> (Horn, 1892)					X	X	X	X	
<i>C.</i> (<i>L.</i>) <i>plasoni</i> (Horn, 1903)					X	X	X	X	
<i>C.</i> (<i>L.</i>) <i>hammondi</i> Cassola, 1983			X		X	X	X		
<i>C.</i> (<i>L.</i>) <i>kibbyana</i> Cassola, 1983					X	X	X	X	
<i>C.</i> (<i>L.</i>) <i>macrodonata</i> Cassola & Probst, 1995					X	E			
<i>C.</i> (<i>Verticina</i>) <i>versicolor</i> (Macleay, 1825)					X	X	X	X	
<i>Myriochila</i> (s. str.) <i>specularis brevipennis</i> (Horn, 1897)				X	X	X	X		
<i>Abroscelis tenuipes araneipes</i> (Schaum, 1863)			X			X	X	X	
<i>Callytron doriai</i> (Horn, 1897)				X	X	X	X		
Total number of taxa	1	7	4	4	28	35	30	18	12

- descriptionibus. Tome 1, xxiv + 506pp; Tome 2, Bibliopolii Academici Novi, Kiliae, 687 pp.
- Horn W. 1892. Fünf Dekaden neuer Cicindeleten. Deutsche Entomologische Zeitschrift (1): 65-92.
- Horn W. 1900. De novis Cicindelidarum speciebus. Deutsche Entomologische Zeitschrift (1): 193-212.
- Horn W. 1929 Some Cicindelidae from British North Borneo. Journal of the Federated Malay States Museums, 14(3/4): 464-468.
- Moulton C. 1910. A List of the bornean Cicindelidae. Notes from the Leyden Museum, 32: 187-192.
- Moulton C. 1914. Zoological notes on a collecting expedition in Borneo. Zoologist, 18(4): 361-74 and 414-431.
- Naviaux R. 1995. Les *Collyris* (Coleoptera Cicindelidae), Révision des genres et description de de nouveaux taxons. Bulletin mensuel de la Société linnéenne de Lyon, Separatum: 1-332; Periodicum: 63(4): 106-116 (1994), 63(5): 133-164 (1994), 63(6): 185-216 (1994), 63(7): 233-264 (1994), 63(8): 273-304 (1994), 64(1): 9-40 (1995), 64(2): 57-88 (1995), 64(3): 105-136 (1995), 64(4): 153-184 (1995), 64(5): 201-232 (1995), 64(6): 259-290 (1995).
- Naviaux R. 2002. Les Tricondyline (Coleoptera, Cicindelidae), Révision des genres *Tricondyla* Latreille et *Derocrania* Chaudoir et descriptions de nouveaux taxons. Mémoires de la Société entomologique de France, 5: 1-106.
- Naviaux R. 2004. Les *Collyris* (Coleoptera Cicindelidae), Complément à la "Révision du genre *Collyris* (sensu lato)" et description de nouveaux taxons. Bulletin mensuel de la Société linnéenne de Lyon, 73(3): 55-142. <https://doi.org/10.3406/linly.2004.13506>
- Schaum H. 1863. Contributions to the knowledge of the Cicindelidae of tropical Asia, containing descriptions of new species, a list of those hitherto described and synonymical notes. Journal of Entomology, 8: 57-74.
- Thomson J. 1857. Description de quatorze espèces nouvelles. Archives Entomologiques, 1: 129-136.
- Votruba P. 2009. A new species of the Genus *Therates* from Brunei (Coleoptera: Cicindelidae). Studies and reports of District Museum Prague-East, Taxonomical Series, 5(1/2): 325-328.
- Wiesner J. 1998. Beitrag zur Kenntnis der Sandlaufkäfer von Brunei (Coleoptera: Cicindelidae) (52. Beitrag zur Kenntnis der Cicindelidae). Entomologische Zeitschrift, 108(9): 372-376.
- Wiesner J. 2020. Checklist of the Tiger Beetles of the World, 2nd. edition. Edition Winterwork, Borsdorf. 540 pp.