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## A new species of *Ceratoderus* from Cambodia (Coleoptera, Carabidae, Paussinae)

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<https://zoobank.org/References/4517F774-A117-4D1D-BC8B-C3DBF5116B34>

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**Abstract.** – A new Paussinae species, *Ceratoderus maruyamai* n. sp., within the *C. bifasciatus* group, is described and illustrated. This species is close to *C. jendeki* Maruyama, 2014, but can be differentiated from the latter by the shape of the pronotum, the more elongated elytra and the less punctate body. A comparative diagnosis with the other species in the *C. bifasciatus* group is provided, as well as a list of the species belonging to the *C. bifasciatus* group with their distribution.

**Résumé.** – Une nouvelle espèce de *Ceratoderus* du Cambodge (Coleoptera, Carabidae, Paussinae). Une nouvelle espèce de Paussinae, *Ceratoderus maruyamai* n. sp., faisant partie du groupe de *C. bifasciatus*, est décrite et illustrée. Cette espèce est proche de *C. jendeki* Maruyama, 2014, mais peut être différenciée de celle-ci par la forme du pronotum, les élytres plus allongés et le corps moins ponctué. Une diagnose comparative avec les autres espèces du groupe *C. bifasciatus* est fournie, ainsi qu'une liste des espèces appartenant au groupe *C. bifasciatus* avec leur répartition.

**Keywords.** – Ceratoderina, ground beetle, myrmecophily, taxonomy, Southeast Asia.

The genus *Ceratoderus* Westwood, 1842 (Carabidae, Paussinae) belongs to the subtribe Ceratoderina and is widely distributed in the Oriental region. It currently comprises 13 species from India, Nepal, Myanmar, Pakistan, Afghanistan, China, Vietnam, Laos, Philippines and Indonesia (MARUYAMA, 2014, 2018; BEDNAŘÍK, 2023). The genus is characterized by bean pod-shaped antennal club and pronotum without deep trichome-bearing groove (DARLINGTON, 1950).

Within the genus, MARUYAMA (2014) highlighted the existence of a group of four species closely related to *C. bifasciatus* (Kollar, 1836): *C. jendeki* Maruyama, 2014, *C. kentaroï* Maruyama, 2014, *C. tonkinensis* Wasmann, 1921, and *C. yunnanensis* Maruyama, 2014. Recently, BEDNAŘÍK (2023) described and added two new species to the *C. bifasciatus* group, and included *C. klapperichi* Reichensperger, 1954, and *C. oberthueri* Gestro, 1901, to the latter. Therefore, the number of species in the group increased to nine. Examining the Cambodian Entomology Initiatives (CEI) collection in the Royal University of Phnom Penh, two *Ceratoderus* specimens were found

and belong to a new species within the *C. bifasciatus* group. In this contribution, *Ceratoderus maruyamai* n. sp. is described, illustrated, and a comparative diagnosis with other species in the group is provided, as well as a list of the species belonging to the *C. bifasciatus* group with their distribution.

### MATERIALS AND METHODS

The material examined in this study is deposited in the Cambodian Entomology Initiatives collection (CEI) at the Royal University of Phnom Penh, and in the personal collection of the first author (FC).

The photographs were taken by Denis Keith, using a Canon Eos R7 camera with a Canon 100L f2.8 macro lens in automatic focus bracketing mode topped with a Raynox DCR-250 below. The resulting images were processed further in Photoshop CC2024 (Adobe systems Inc. USA).

Terminology follows that of MARUYAMA (2014) and NAGEL (2018). The following measurement abbreviations are used: BL, body length; ACL, maximum antennal club length; ACW, maximum antennal club width; HW, maximum head width; PL, pronotum length (along the middle line); PAW, width of anterior part of pronotum; PPW, width of posterior part of pronotum; HTL, hind tibia length; EL, elytra length (along the elytral suture); EW, maximum elytra width. All measurements are given in millimetres.

### TAXONOMY

Family **Carabidae** Latreille, 1802

Subfamily **Paussinae** Latreille, 1807

Tribe **Paussini** Latreille, 1807

Subtribe **Ceratoderina** Darlington, 1950

Genus ***Ceratoderus*** Westwood, 1841

*Ceratoderus* Westwood, 1841: 51 (type species: *Paussus bifasciatus* Kollar, 1836: 336); FOWLER, 1912: 454 (diagnosis); DARLINGTON, 1950: 98 (diagnosis); LUNA DE CARVALHO, 1989: 410 (review of species); MARUYAMA, 2014: 33 (diagnosis).

***Ceratoderus maruyamai* Cabon, n. sp.**

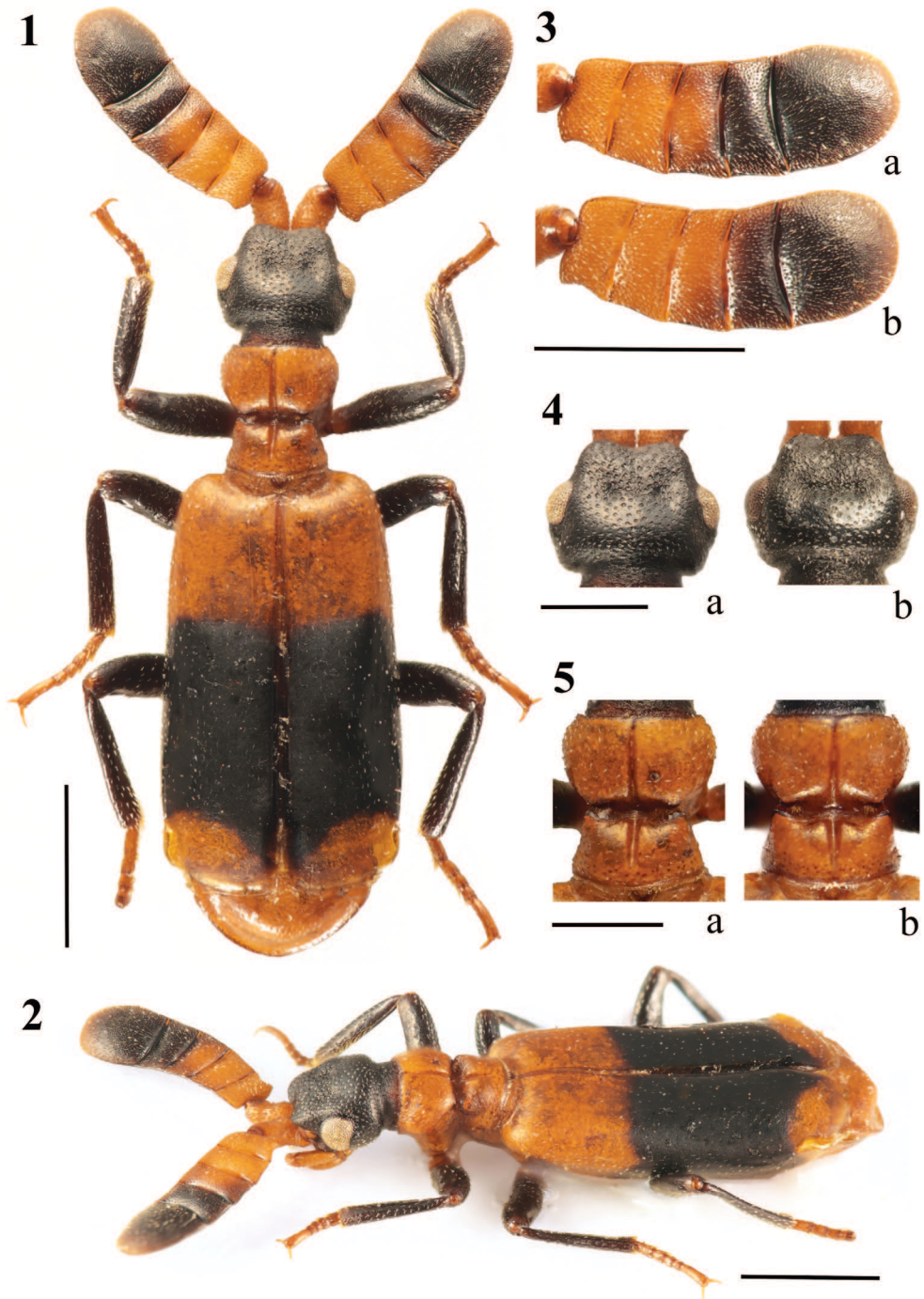
<https://zoobank.org/NomenclaturalActs/C78506B3-DC62-47B6-AD6A-D40205F92B14>

**Type material.** – HOLOTYPE (CEI): ♂, handwritten red label in Indian ink “CAMBODIA, Kampong Thom Pr. / Prey Kbal Ou Kror Nhak / 13°5.655’N, 105°19.149’E / 11.XII.2021. Coll. by Sin *et al.* // Elevation: 35m / Grass and shrubs in forest / Collected by sweep net”; handwritten red label in Indian ink “HOLOTYPE / *Ceratoderus maruyamai* / F. Cabon, 2024”.

PARATYPE (FC): 1 ♂, same data as holotype; handwritten red label in Indian ink “PARATYPE / *Ceratoderus maruyamai* / F. Cabon, 2024”.

**Description.** – BL: 4.50-4.56; ACL: 1.55-1.58; ACW: 0.55-0.57; HW: 0.84; PL: 0.80-0.81; PAW: 0.72-0.75; PPW: 0.63; HTL: 0.90-0.92; EL: 2.61-2.62; EW: 1.49-1.50.

**Body** (fig. 1-2). Black except mouthparts; antennomere I (scape) of the antennae and pseudo-flagellomeres I to III of antennal club, pronotum, first third of elytra, elytral apex and tergite IX (pygidium), which are orangish. Dorsal part of head coarsely punctate, more densely in its anterior part; inter-dot spaces shiny on vertex. Antennomere I of the antenna granular in appearance, covered with short setae. Antennal club, covered with small granules bearing microsetae, with longer irregularly arranged setae, except at the transition zones between



**Fig. 1-5.** - *Ceratoderus maruyamai* Cabon, n. sp. - 1-2, Holotype, habitus. - 3, Right antennal club of holotype (a) and paratype (b). - 4, Dorsal view of the head of holotype (a) and paratype (b). - 5, Dorsal view of the pronotum of holotype (a) and paratype (b). Scale bars: 10 mm, except fig. 4 and 5, 5mm. (Photos taken by Denis Keith).

pseudo-flagellomeres, which are smooth. Pronotum very finely punctate, appearing smooth, with a few short bristles. Legs smooth with short bristles, more abundant at the apex of the tibiae. Elytra very finely punctate with short, barely visible setae. Tergite IX (pygidium) finely punctate with short bristles in median area.

**Head** (fig. 3-4). Slightly broader than pronotum with a pair of depressions on the forehead. Vertex slightly convex with steep posterior declivity when viewed from the side. Temples rounded and pronounced. Eyes slightly projected laterally. Antennal club long, composed of five pseudo-flagellomeres, thin and widened at apex, widest in the first third of pseudo-flagellomere V. Anterior margin slightly depressed throughout. Posterior margin rounded overall; first segment bears blunt tooth, pseudo-flagellomeres II to IV slightly hollowed. Pseudo-flagellomere V generally rounded, slightly elongated and slightly angular around the edge.

**Thorax** (fig. 5). Anterior part of pronotum slightly wider than posterior part. Indistinct longitudinal groove reaching the anterior margin of pronotum, reaching three-quarters of posterior part. Width and depth of longitudinal groove greater in posterior part. Posterior margin of anterior part slightly inclined towards its median part, with rounded and barely visible postero-lateral teeth. Posterior part with pronounced anterolateral lobes, projected laterally and slightly curved inward at their apex, not reaching the posterior margin of the anterior part. Legs slender, femora slightly compressed. Tibiae short and compressed in their first third, dilated at their end. Elytra slender with almost parallel sides, widest around apical one third; surface with some glabrous lines.

**Abdomen** (fig. 1-2). Tergite IX (pygidium) with a strongly convex and rounded median area, its steep posterior margin surrounded by a groove; disc glabrous around anterior and posterior area.

**Etymology.** – This species is named for Munetoshi Maruyama, a specialist in Asian Paussinae who has made a major contribution to our knowledge of Ceratoderina.

**Differential diagnosis.** – Within the *Ceratoderus bifasciatus* group, *C. maruyamai* n. sp. is very similar to *C. jendeki* but can be differentiated from the latter by its less punctate body, its more elongated elytra, its shorter posterior part of pronotum and its more constricted pronotum. The new species can be differentiated from the other species with similar coloration (*C. bifasciatus*, *C. kentaroi*, *C. tonkinensis*, *C. yunnanensis*, *C. klapperichi*, *C. oberthueri*) by its antennal club fully covered by setae, its slightly compressed legs, the presence of antero-lateral lobes on the posterior part of the pronotum and its more constricted pronotum. It can be easily differentiated by *C. anthicoides* and *C. kalamensis* by the general coloration and the presence of antero-lateral lobes on the posterior part of the pronotum.

**Distribution.** – Cambodia (Kampong Thom province).

**Biology.** – The two specimens were collected at the same time in a forest with grass and shrubs (fig. 6) using a sweep net. The host is, therefore, unknown.



**Fig. 6.** – Kampong Thom province, Prey Kbal Ou Kror Nhak: type locality of *Ceratoderus maruyamai* Cabon, n. sp. (Photos taken by Mr. Seiha Hun).

**Remarks.** – Both specimens of *C. maruyamai* n. sp. exhibit a certain range of differences, as has already been observed for other *Ceratoderus* species such as *C. bifasciatus* and *C. jendecki* (M. Bednařík, pers. comm.). The pair of depressions on the frontal area can be clearly separated (fig. 4a) or confluent (fig. 4b), the shape of the pseudo-flagellomere V can be more or less elongated and more or less angular (fig. 3), and the prominence of the antero-posterior lobes of the pronotum display variability with varying degrees of predominance (fig. 5). In addition, the integuments can be dull or shiny, probably depending on the condition and age of the individual.

**List and distribution of the *Ceratoderus* belonging to the *C. bifasciatus* group**

- C. anthicoides* Bednařík, 2023 (Philippines)
- C. bifasciatus* (Kollar, 1836) (Pakistan, India, Nepal, Myanmar, Thailand)
- C. jendecki* Maruyama, 2014 (Laos)
- C. kalamensis* Bednařík, 2023 (Sulawesi)
- C. kentaroï* Maruyama, 2014 (Vietnam)
- C. klapperichi* Reichensperger, 1954 (Afghanistan, India)
- C. maruyamai* Cabon, n. sp. (Cambodia)
- C. oberthueri* Gestro, 1901 (India)
- C. tonkinensis* Wasmann, 1921 (China, Laos, Vietnam)
- C. yunnanensis* Maruyama, 2014 (China)

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