

## Biodiversity Record: Mating of sexually dimorphic cedar beetles of the genus *Callirhipis*

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**Recommended citation.** Goh ESC, Yap S & Chong GET (2023) Biodiversity Record: Mating of sexually dimorphic cedar beetles of the genus *Callirhipis*. Nature in Singapore, 16: e2023057. DOI: 10.26107/NIS-2023-0057

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**Subjects:** Cedar beetle, *Callirhipis* sp. (Insecta: Coleoptera: Callirhipidae).

**Subjects identified by:** Sean Yap and Emmanuel S. C. Goh.

**Location, date and time:** Singapore Island, Mandai Track 15; 14 December 2019 at 2129 hrs and 12 January 2023 at 2133 hrs.

**Habitat:** Secondary forest.

**Observers:** Sean Yap, Sankar Ananthanarayanan, Shivaram Rasu, Law Ing Sind and Law Ingg Thong (14 December 2019); Grace E. T. Chong and Emmanuel S. C. Goh (12 January 2023).



Fig. 1. Pair of cedar beetles mating on an exposed log on 14 December 2022. The male has considerably longer antennomeres. (Photograph by: Sean Yap).

**Observations:** Two sightings at the same general location on different days about one month apart —

1) On 14 December 2022, two beetles, each about 2 cm, were observed clinging onto a dead trunk. The pair were observed to be in a mating position, with the male clinging to the rear of the female. The carapace of the male was yellow and black, while the female's carapace was reddish-brown. The antennomeres of the male were at least five times the length of its female counterpart. The pair shifted slightly in response to the lights of the observers, but did not decouple.

2) On 12 January 2023, two beetles, each about 2 cm, were observed clinging onto a rotting stump. The male was similarly clinging to the rear of the female. Aside from the above mentioned differences in the earlier observation, the female of this pair was observed to be significantly wider than its male counterpart. Both beetles remained stationary throughout the observation.



Fig. 2. Frontal (A) and dorsal (B) views of mating cedar beetles on 12 January 2023. The female is the larger and darker of the pair. (Photographs by: Emmanuel S. C. Goh).

**Remarks:** The two observations show that the species of *Callirhipis* herein featured is sexually dimorphic. The male has a yellow and black dorsum, while the female's carapace is dark reddish-brown. The antennomeres of the male are at least five times the length of those on the female. There appears to be scant information on the sexual dimorphism in these beetles. We believe that the enlarged antennomeres of the male probably help to increase detection of female pheromones. However, there seems to be no hypotheses for the differences in colour and morphology between the sexes.

The larvae of Callirhipidae are known to feed on dead wood (Lawrence et al., 2018), which might explain why both observations of mating behaviour were on a dead tree trunk and a rotting tree stump. It is believed that the female would be able to deposit her eggs in the substrate thereafter.

It appears that very little is known of Callirhipidae in Singapore. The Biodiversity of Singapore website ([singapore.biodiversity.online/taxon/A-Arth-Hexa-Coleo-Call](http://singapore.biodiversity.online/taxon/A-Arth-Hexa-Coleo-Call)) illustrates only one example of an unidentified species of *Callirhipis* without further information. In a world catalogue of the Callirhipidae, Hájek (2011) lists three species recorded from Singapore: *Callirhipis dissimilis*, *Callirhipis residua* and *Callirhipis scutellata* (synonym of *Callirhipis suturalis*). It is not known if any of these names fits the identity of the featured subjects.

**Literature cited:**

Hájek J (2011) World catalogue of the family Callirhipidae (Coleoptera: Elateriformia), with nomenclatural notes. *Zootaxa*, 2914: 1–66.

Lawrence JF, Hastings AM, Dallwitz MJ, Paine TA & Zurcher EJ (2018) Elateriformia (Coleoptera). Callirhipidae. [delta-intkey.com/elateria/www/call.htm](http://delta-intkey.com/elateria/www/call.htm) (Accessed 13 June 2023]