Acta Biol. Univ. Daugavp. 22 (1) 2022
ISSN 1407 - 8953

NOTES ON THE ECOLOGY OF *CALLIMETOPUS LUMAWIGI* BREUNING, 1980 (COLEOPTERA: LAMIINAE: PTEROPLIINI) IN MINDANAO, PHILIPPINES

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Medina M.N.D., Cabras AA., Tandang D.N., Barševskis A. 2022. Notes on the ecology of *Callimetopus lumawigi* Breuning, 1980 (Coleoptera: Lamiinae: Pteropliini) in Mindanao, Philippines. *Acta Biol. Univ. Daugavp., 22 (1): 91 – 95.*

Abstract
This paper reports some ecologic observations on *Callimetopus lumawigi* Breuning, 1980 in the ancestral domain of Ovu-manuvu part of Mount Apo Range in Davao City, Philippines. Data on its population, habitat, food plant, feeding habit, and threats are presented for the first time. This information is essential for developing future strategic conservation initiatives for the species.

Keywords. Cerambycidae, Conservation, Ecology, Davao, Philippines.

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INTRODUCTION

Since early and up to the present times, the majority of the works on Philippine beetles, particularly on Cerambycidae fauna is, focused mainly on cataloging, providing new faunistic records (e.g., Baer, 1886; Schultze, 1916; Hüdepohl, 1987, 1996; Medina et al. 2021a) or taxonomy (e.g., Breuning, 1980; Barsevskis, 2014 a,b, 2016; Medina et al. 2021b). Since most of the materials used by foreign taxonomists come from local collectors, ecologic data about the species is often missing. Recently, our work has shifted into exploring and understanding ecological information, which is vital for developing future conservation initiatives.

A joint coleopterological expedition between the Daugavpils University, Latvia, and Coleoptera Research of the University of Mindanao, Philippines was recently conducted to perform coleopterological surveys in different mountain ecosystems in Mindanao, including Mt. Apo Range in Davao del Sur, Mindanao. Recently, a new species of *Cereopsius*, *C. erasmus* Medina et al. 2021, was discovered, suggesting a high

species richness in the area. For the first time, crucial ecological information is presented for *Callimetopus lumawigi* Breuning, 1980, a Mindanao endemic cerambycid in the Philippines.

The genus *Callimetopus* Blanchard, 1853 is distributed in the Oriental Region with 44+ species (Barševskis, 2016), and about 90% of them are considered endemic to the Philippines. This genus is recognized by its elongate body, semi-flat head, parallel-sided elytra, and usually setose dorsum. Since its description (Breuning, 1980), the ecologic data of *C. lumawigi* are unknown. Knowing its limited distribution range, preservation and protection are noteworthy.

METHODS

Coleopterological expedition was conducted within the ancestral domain of the Obu-manuvu tribe in Davao City, Mindanao, Philippines. Before collecting, all pertinent documents were secured from the Department of Environment and Natural Resources Region XI. The specimens are temporarily deposited at the University of Mindanao Coleoptera Research Center and were collected by beating or picking and killed in vials with ethyl acetate. Morphological characters were observed using a Luxeo 4D and a Nikon SMZ745T stereomicroscopes. Images of the habitus and genitalia were taken using a Nikon D5300 digital camera with a Sigma 18–250 macro lens. All images were stacked and processed using a licensed version of a Helicon Focus 6.7.0 and a Photoshop CS6 software.

Comparative material and specimens used in the study are deposited in the following institutional collections:

DUBC Ilgas Research Center, Daugavpils University Biological Collections, Latvia.

UMCRC University of Mindanao Coleoptera Research Center, Davao City Philippines.
Materials examined. 5 males: PHILIPPINES—Mindanao / Davao del Sur / Mt. Apo Range / 21-26.III.2022 / local collector (MNDM coll.). 5 females: PHILIPPINES—Mindanao / Davao del Sur / Mt. Apo Range / 21-26.III.2022 / local collector (MNDM coll.).

RESULTS

Geographical range and habitat

Currently, the geographic distribution of *C. lumawigi* appears restricted to southern Mindanao. The taxon occurred in two sub-populations: Mt. Apo Natural Park Range, Davao del Sur, and Maharlika, Bukidnon (Barševskis, 2018). The species inhabited a relatively higher elevation of Mt. Apo, between 1200-1600 masl perching on *Hydrangea chinensis* Maxim. At this elevation, the ecosystem type is predominantly montane, and the temperature recorded was between 27°C during daytime and 13-17°C during nighttime.

Population

A total of 10 (5 male and 5 female) mature individuals of *C. lumawigi* was recorded from three sampling sites: Mabanlas 1400-1600 masl, Dipala 1200-1400 masl, and Karilongan 800-1000 masl, all within the Ovu-manubu ancestral domain. Among the three sampling sites, Mabanlas harbors the highest population with 7 individuals. Three recorded in Dipala and none in Karilongan. The zero observation in Karilongan might be because *C. lumawigi* depends on its food plant, and the host thrives at a higher elevation (1200-1600 masl) of Mt. Apo range.

Host plant and feeding habit

The food plant *Hydrangea chinensis* is a species of flowering plant of the family Hydrangeaceae native to Myanmar, Southeast China, and Taiwan (Fig. 2 A-B). In the Philippines, it is widely distributed in the entire country from Batanes, Luzon, and Mindanao (Pelser et al., 2011). Based on observation, *C. lumawigi* feeds on the soft tissues of the plant, including young

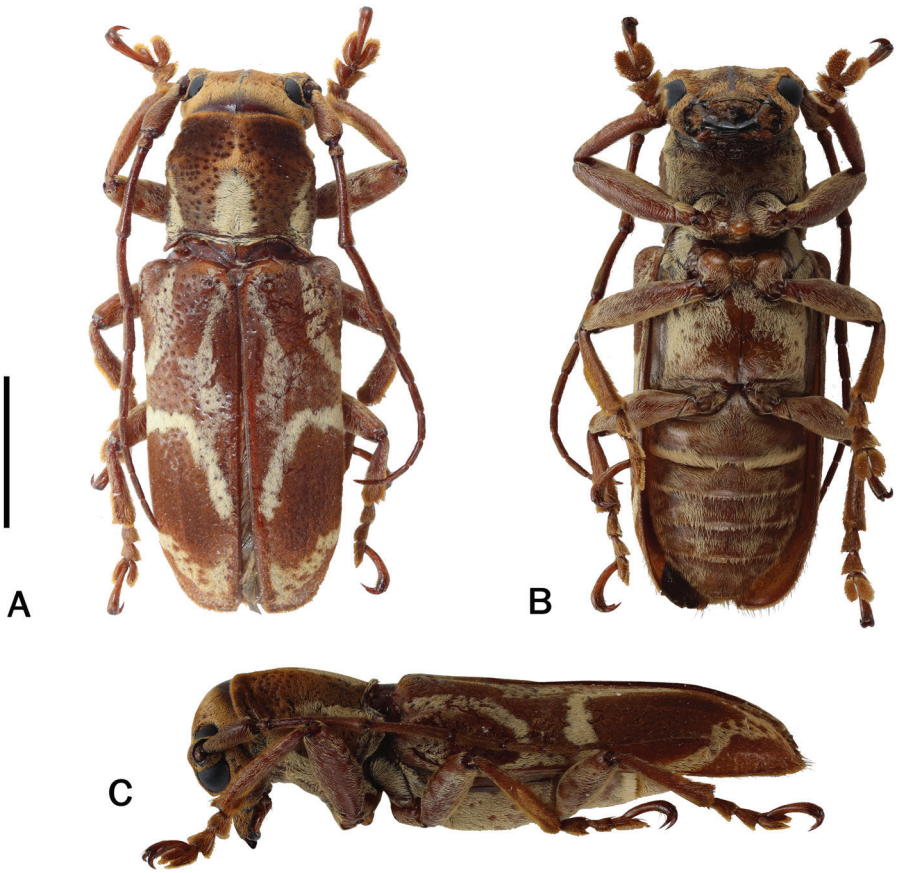

Figure 1. *Callimetopus lumawigi* Breuning, 1980, habitus: A: Dorsal view, B: Ventral view, C: Lateral view (Scale bar: 5 mm).

shoot and branch, sometimes creating a peculiar circular biting pattern (Fig. 2 C-D). The feeding time was between 8:00AM and 10:00AM; afterward, the species tended to rest on the branch or the petiole and started to look for a mate for a couple of hours (Fig. E).

Threats, notes on conservation and future research

At present, the habitat of *C. lumawigi* is within the ancestral domain of Ovu-manuvu tribe in Davao City. The tribe has developed so-called 'Bantay Bukid' or forest guards, who monitor all activities within their ancestral domains. However, based on our field observations since 2019 and the testimonies of our field guides who are at the same time the forest guards in Ovu manuvu ancestral domain, land encroachment is still happening in the remote areas. Especially those not easily monitored by the forest guards.

The best way to conserve the species is to protect the food plant (*H. chinensis*) and its habitats. The host is not an endemic species but not known to be hazardous or invasive and thriving well with other endemic species. Moreover, population assessment of *C.lumawigi* in the other areas of Mt. Apo Range could be done to have a more detailed estimation of the mature population in the wild. The botanical or medical potential of the food plants can also be explored. Since the sub-population is identified within the ancestral domain, routine, scheduled visits by the forest guards are welcome to ensure the integrity of the habitat.

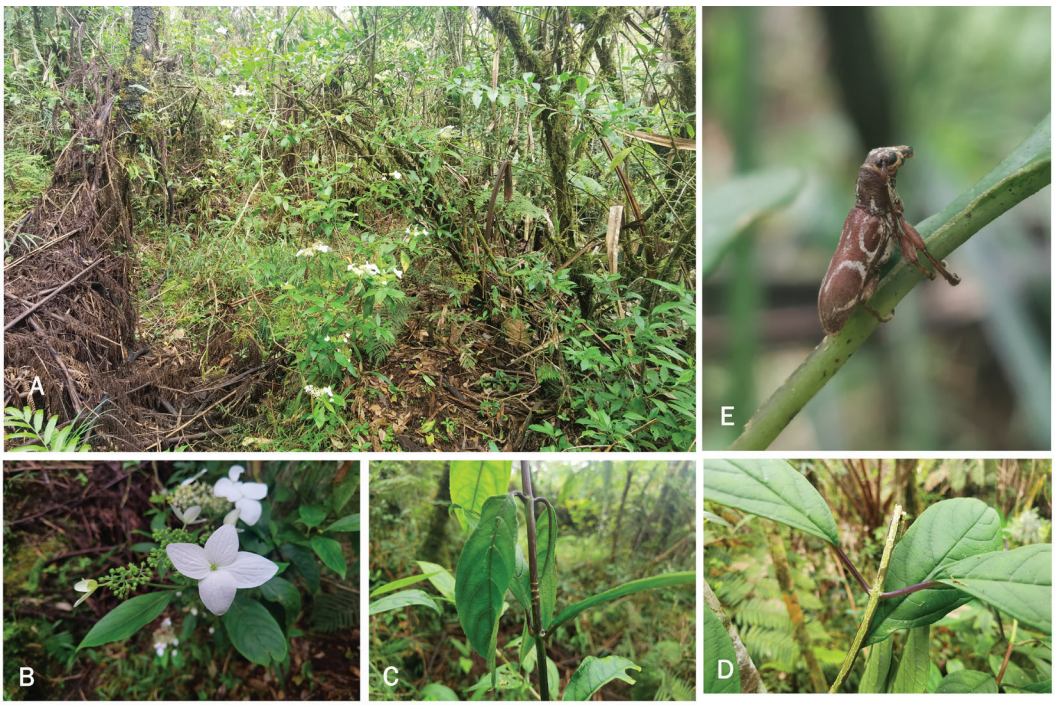

Figure 2. *Hydrangea chinensis* Maxim.: A: Plant habit, B: Flowers, C-D: Bite patterns of *C. lumawigi* on *H. chinensis*, E: *Callimetopus lumawigi* resting at the petiole of *H. chinensis*.

ACKNOWLEDGEMENTS

Our gratitude to our colleagues who helped in the data collection: Felix Landim, Reno Landim, Rolando Ilando, Joel Mailan, Ren-Ren, Dexter Patalita all from Davao City Philippines. To Alexander Anichtchenko and Anastasija Vasiljeva from Daugavpils University, Latvia. To Joshua Donato and the EGIP Foundation for coordinating our access in Ovu-manuvu ancestral domain. Our colleagues in the IUCN-SSC Dave Waldien, Gregory Setliff, and Monika Bohm. The field expedition was funded by the University of Mindanao Research and Publication Center and the Erasmus Mobility Plus program of the European Union of Daugavpils University, Daugavpils, Latvia.

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Received: 20.04.2022.
Accepted: 05.07.2022.