

Nota

Plants species associated with *Leucanella hosmera* (Schaus 1941) (Lepidoptera: Saturniidae: Hemileucinae) in Cerro Punta, Chiriquí, Panama

Isid:zoobank.org/pub:05B56181-42F6-46C7-9EB1-FEC77A99EDD6

Rubén D. Collantes G^{1,2} , Alonso Santos Murgas^{3,4} 

¹Universidad Metropolitana de Educación, Ciencia y Tecnología (UMECIT), Sede David – Chiriquí, Panamá. ²Instituto de Innovación Agropecuaria de Panamá (IDLAP), Estación Experimental de Cerro Punta – Chiriquí, Panamá. E-mail: rdeg31@hotmail.com

³Universidad de Panamá, Facultad de Ciencias Naturales, Exactas y Tecnología, Escuela de Biología, Departamento de Zoología. ⁴Estación Científica Coiba AIP, Ciudad de Saber, Panamá, Panamá. E-mail: santosmurgasa@gmail.com

Abstract

The Hemileucinae subfamily (Lepidoptera: Saturniidae) includes species of medical importance, whose larvae armed with stinging spines connected to poison glands can cause damage to people who come into contact with them. The species *Leucanella hosmera* (Schaus 1941) has been found in productive agroecosystems of Cerro Punta, so the study aimed to identify the plants associated with this insect. The nature of the research was descriptive and exploratory, for which, from October 2022 to August 2024, random sampling was carried out in a location where the presence of the insect was previously reported. A photographic record was kept and specimens were collected for preservation and subsequent confirmation in the laboratory. The results revealed the identification of four plant species associated with *Leucanella hosmera* (Schaus 1941), which are *Faramaea occidentalis* (Linnaeus 1759) (Rubiaceae), *Coffea arabica* Linnaeus (1753) (Rubiaceae), as well as cultures of *Allium cepa* Linnaeus (1753) (Alliaceae) and *Lactuca sativa* Linnaeus (1753) (Asteraceae). It is known that these caterpillars are polyphagous, and to synthesize the venom they possess, they can sequester secondary metabolites present in plants such as Rubiaceae. Although there are reports of other host plants, this work confirmed at least one wild and three cultivated plant species associated with *Leucanella hosmera* in Cerro Punta.

Key words: *Allium cepa*, *Coffea arabica*, *Faramaea occidentalis*, *Lactuca sativa*, poisonous larvae

Introduction

The Hemileucinae subfamily (Lepidoptera: Saturniidae) includes insects species of agricultural and forestry importance as they feed on cultivated plants, in addition to representing a risk to human health (Santos-Murgas *et al.* 2022, Jerkovic *et al.* 2023); given that its larvae (caterpillars) are provided with spines or bristles connected to poison glands, which upon contact with people's skin can cause multiple symptoms such as burning, pain, inflammation, allergic reactions, even hemorrhages, and in extreme conditions, death (Specht *et al.* 2005, Haddad and Lastória 2014, Sánchez *et al.* 2016).

Cerro Punta, Tierras Altas district, Chiriquí province, Panama, is the main vegetable producing area in the country; responsible for supplying close to 80% of the national demand for these items and also offers agroecotourism attractions (Lindsay and Weinberg 2019). In the vicinity of the agricultural areas, part of the La Amistad International Park (PILA) is located, in which the presence of Hemileucinae species such as *Leucanella hosmera* (Schaus 1941) was reported (Ríos-González *et al.* 2019); which was also found in horticultural crops (Collantes *et al.* 2022).

Considering that poisoning caused by these insects represents a concern that deserves to be understood and

Recibido: 23-X-2024, Revisado: 28-I-2025, Aceptado: 15-II-2025

COLLANTES GRD, SANTOS-MURGAS A. 2025. Plants species associated with *Leucanella hosmera* (Schaus 1941) (Lepidoptera: Saturniidae: Hemileucinae) in Cerro Punta, Chiriquí, Panama. ENTOMOTROPICA, 40: 20-24.

on line Junio-2025

addressed through research on the matter (Seldeslachts et al. 2020), identifying the plant species associated with these organisms can contribute to the prevention of accidents related to erucism (contact with stinging caterpillars). Furthermore, this knowledge allows exploring the chemical compounds (sequestration of secondary metabolites) present in the plants that serve as food for the caterpillars (Santos 2019). Therefore, the aim of the present study was to identify the plant species associated with *Leucanella hosmera* (Schaus 1941) in Cerro Punta, Chiriquí, Panama.

Materials and methods

The research is descriptive, exploratory and non-experimental in nature. It took place in Cerro Punta, Tierras Altas district, Chiriquí province, Republic of Panama (Lat 8°51'13" N Long 82°34'16" W, 1949 m a. s. l.) (Figure 1). From October 2022 to August 2024, periodic field trips were carried out on approximately 3 ha (two per month). The variables of interest were the presence of *Leucanella hosmera* (Schaus 1941) larvae and the plant species in which they were found.

Once the larvae were located and identified (Wolfe 2015), we proceeded with a photographic record and data collection, and then collected them with the help of forceps and plastic containers, avoiding direct contact with them. They were placed in hot water for a few

minutes, and then placed in glass vials with 70% ethanol (Collantes et al. 2022). This procedure is necessary to fix their proteins and prevent them from deteriorating when transferred to ethanol, but the original coloration of the specimens can be altered, so photographic recording before collecting is necessary (Santos-Murgas et al. 2022).

The data were analyzed descriptively with the help of the Microsoft Excel program, to quantify the total number of larvae found per plant and during the study period. The photographic record allowed only the strictly necessary collections of specimens to be carried out, in order to respect the natural balance of the agroecosystem.

We worked in an area of only 3 hectares, because it is the farm in which there is constant access to carry out these observations in the field, which was compensated by the frequency and period in which the research was carried out (23 months, two samplings per month), covering both dry and rainy seasons, being October the month with the highest precipitation (Weather Spark 2024).

Given that integrated pest management (IPM) is practiced in the crops of this location, the impact risks on organisms that are not subject to control, such as the Hemileucinae, are significantly reduced. These kinds of studies are replicable in other conditions, because insects are usually used as environmental indicators (Roncal et al. 2013, Salcedo and Trama 2014).



Figure 1. Study area location in Cerro Punta, Chiriquí, Panama (Google Earth 2025).

Results and discussion

According to the results (Table 1), four plant species associated with *Leucanella hosmera* (Schaus 1941) larvae were identified in Cerro Punta, which were *Faramea occidentalis* (Linnaeus 1759) (Rubiaceae), *Coffea arabica* Linnaeus (1753) (Rubiaceae) and cultivated *Allium cepa* Linnaeus (1753) (Alliaceae) and *Lactuca sativa* Linnaeus (1753) (Asteraceae). This confirmed what was found and identified in previous studies (Collantes et al. 2022), regarding both the presence of *Leucanella hosmera* (Schaus 1941) in Cerro Punta, as well as three of the four plant species associated with it: *Allium cepa* Linnaeus (1753), *Lactuca sativa* Linnaeus (1753) and *Faramea occidentalis* (Linnaeus 1759).

About having found *Leucanella hosmera* (Schaus 1941) in coffee plots (Figure 2), it is close to what was reported in other locations in the Chiriquí province dedicated to coffee growing, where other Hemileucinae species like *Automeris zozine* Druce (1886) were found (Collantes et al. 2024). However, the fact that few larvae were found during the study period and most observations were made on *Faramea occidentalis*, suggests that this plant is the main host and that other crops have been more casual, leading us to consider this species as a facultative polyphagous with a marked preference for Rubiaceae. On the other hand, no adults were observed, because they are nocturnal and the study was conducted during daylight hours.

Regarding other host plant species associated with *Leucanella hosmera* (Schaus, 1941), Umaña (2017) reported for the Guanacaste Conservation Area, Costa Rica, the species *Schwartzia costaricensis* (Gilg) Bedell (Marcgraviaceae), *Trema micrantha* (Linnaeus) Blume (Cannabaceae), *Weinmannia wercklei* Standl. (Cunoniaceae) and *Ternstroemia tepezapote* Schltdl. and Cham. (Pentaphylacaceae). On the other hand, Specht et al. (2005) listed host plants of *Leucanella viridescens* (Walker 1855) as *Persea americana* Mill. (1768), *Acacia* sp., *Populus* sp., *Solanum tuberosum* Linnaeus (1753), *Solanum melongena* Linnaeus (1753), *Cinnamomum verum* J. Presl (1825), *Quercus suber* Linnaeus (1753), *Ilex paraguariensis* A.St.-Hil. (1822), *Psidium* sp., *Hedera* sp., *Dalbergia* sp., *Actinidia deliciosa* (A. Chev.) C.F. Liang & A.R. Ferguson, *Zea mays* Linnaeus (1753), *Olea europaea* Linnaeus (1753), *Cocos nucifera* Linnaeus (1753), *Pyrus communis* Linnaeus (1753), *Prunus* sp., among others; which reaffirms the polyphagous condition of these insects.

Climatic factors such as temperature and precipitation may have limited the possibility of finding more *Leucanella hosmera* larvae; given that 2023 was a particularly cold year and rainfall began in late April with an average of 83 mm per month and reached its peak in October with an average of more than 300 mm per month (IMHPA, 2025).

Respecting secondary metabolites of biological and pharmacological interest present in *Faramea occidentalis* (Linnaeus 1759), mainly indolic alkaloids (a condition

Table 1. Plants species associated with *Leucanella hosmera* caterpillars in Cerro Punta.

Months	Family	Plant species	Number of <i>Leucanella hosmera</i> (Schaus 1941) caterpillars
X/2022	Rubiaceae	<i>Faramea occidentalis</i>	8
XI/2022	Alliaceae	<i>Allium cepa</i>	1
XII/2022	Rubiaceae	<i>Coffea arabica</i>	1
I/2023	Asteraceae	<i>Lactuca sativa</i>	1
II/2023	Rubiaceae	<i>Faramea occidentalis</i>	1
III/2023 – I/2024	-	-	0
II/2024	Rubiaceae	<i>Faramea occidentalis</i>	1
III – VII/2024	-	-	0
VIII/2024	Rubiaceae	<i>Faramea occidentalis</i>	1
Totales	3	4	14



Figure 2. Plants associated with *Leucanella hosmera* caterpillars in Cerro Punta: A) *Faramaea occidentalis*; B) *Allium cepa* plot; C) *Coffea arabica*; D) *Lactuca sativa*.

shared with other Rubiaceae) and coumarins have been found (Bullaín *et al.* 2014). Also, Martins *et al.* (2014) found compounds with antioxidant, insecticidal and cytotoxic activity in the species *Duroia macrophylla* Huber (Rubiaceae). This reaffirms the fact that the Rubiaceae, being a diverse and widely distributed group in the world, comprise plant species with cytotoxic, antibacterial, anti-inflammatory and antioxidant potential (Mendoza and Veladez 2021).

The ability of organisms such as *Leucanella hosmera* (Schaus 1941) caterpillars to feed on these plants and sequester secondary metabolites as components of their venom has been explained by Santos (2019); which reaffirms the strategic importance of knowing both the components of the agroecosystem and the complex trophic interactions that can occur in it.

Regarding natural enemies of *Leucanella hosmera* (Schaus 1941) caterpillars, due to their poisonous spines, there are few predators that attack them; However, there are reports of parasitoids (wasps and flies) and virus infections (Umaña 2017). Although this study emphasized the identification of *Leucanella hosmera* (Schaus 1941) larvae, it is also necessary to know the other stages of development of the insect, as being illustrated by Umaña (2017).

Conclusions

From this work it can be concluded that at least one wild plant species (*Faramaea occidentalis* [Linnaeus 1759]) and three cultivated plants (*Allium cepa* [Linnaeus

1753], *Coffea Arabica* [Linnaeus 1753] and *Lactuca sativa* [Linnaeus 1753]) are confirmed associated with *Leucanella hosmera* (Schaus 1941) in Cerro Punta, Tierras Altas, Chiriquí, Panamá. To the extent that this research continues to develop, the role that biodiversity plays in the agroecosystem will be better understood functionally, in addition to being able to prevent potential accidents caused by erucism, which in some cases are serious and could require medical attention.

Literature cited

- BULLAÍN M, TORRES E, HERMOSILLA R. 2014. Tamizaje fitoquímico de los extractos de *Faramaea occidentalis* (L.) A. Rich. (nabaco). *Revista Cubana de Plantas Medicinales*, 19(1): 421-432.
- COLLANTES R, SÁNCHEZ-GONZÁLEZ E, SANTOS MURGAS A. 2024. Orugas urticantes (Lepidoptera) asociadas a agroecosistemas cafetaleros en Río Sereno – Chiriquí, Panamá. *Saluta*, 1(10): 48-55. <https://doi.org/10.37594/saluta.v1i10.1350>
- COLLANTES R, SANTOS A, PITTÍ J, ATENCIO R, BARBA A, CARDONA J. 2022. Larvas urticantes (Lepidoptera) asociadas con cultivos hortícolas en Cerro Punta, Chiriquí, Panamá. *Manglar*, 19(2): 161-166. <http://doi.org/10.17268/manglar.2022.020>
- GOOGLE EARTH. 2025. Location map of Cerro Punta. https://earth.google.com/web/search/IDIAP+Cerro+Punta/@8.87479371,-82.69913971,1803.55166353a,106442.94038063d,35y,0h_0t,0r/

- HADDAD JV, LASTÓRIA JC. 2014. Envenomation by caterpillars (erucism): Proposal for simple pain relief treatment. *Journal of Venomous Animals and Toxins including Tropical Diseases*, 20(21). <https://doi.org/10.1186/1678-9199-20-21>
- IMHPA (INSTITUTO DE METEOROLOGÍA E HIDROLOGÍA DE PANAMÁ). 2025. Datos Climáticos Históricos. <https://www.imhpa.gob.pa/es/clima-historicos>
- JERKOVIC M, COLLANTES R, SANTOS-MURGAS A. 2023. Larvas urticantes (Lepidoptera) y sus potenciales riesgos para la salud humana. *Llalliq*, 3(2): 364-377. <https://doi.org/10.32911/llalliq.2023.v3.n2.1050>
- LINDSAY O, WEINBERG N. 2019. Desastres Naturales en Cerro Punta: Historia e Impactos. McGill/Smithsonian Tropical Research Institute/FUNDICCEP.
- MARTINS D, FACHIN-ESPINAR M, ALMEIDA DE OLIVEIRA T, LIMA K, CAVALCANTI R, TELES B, NUNEZ, C. 2014. Tamizaje fitoquímico y evaluación de las actividades biológicas de *Duroia macrophylla* (Rubiaceae). *Journal of Pharmacy & Pharmacognosy Research*, 2(6): 158-171.
- MENDOZA L, VELADEZ M. 2021. Descripción de las plantas medicinales de la familia Rubiaceae con actividad biológica. *Publicación semestral, Educación y Salud Boletín Científico Instituto de Ciencias de la Salud Universidad Autónoma del Estado de Hidalgo*, 9(18): 168-174.
- RÍOS-GONZÁLEZ TA, SALDAÑA YT, VARGAS GA, BERNAL-VEGA JA. 2019. Sphingidae y Saturniidae (Insecta: Lepidoptera) de la Reserva Forestal Fortuna y el Parque Internacional La Amistad, Panamá. *Revista Mexicana de Biodiversidad*, 90: e902837. <https://doi.org/10.22201/ib.20078706e.2019.90.2837>
- RONCAL M, DÍAZ D, RONCAL C, RABANAL W. 2013. Huacaybamba: Riqueza biológica del Maraón. Primera edición. Universidad Nacional de Cajamarca, PE. 128 p.
- SALCEDOS, TRAMAF. 2014. Manual de identificación de macroinvertebrados acuáticos de la microcuenca San Alberto, Provincia de Oxapampa, Perú. Primera edición. CONCYTEC/FONDECYT, PE. 116 p.
- SÁNCHEZ MN, VALDOVINOS B, MARUÑAK S, PEICHOTO ME, TEIBLER GP. 2016. Situación actual de la Oruga Taturana (*Lonomia obliqua*) en el Nordeste Argentino. *NEA*, 6(34): 15-17.
- SANTOS A. 2019. Lepidoptera. In: López O, Mainieri M, editors, Importancia médica de la flora y la fauna panameña, Primera Edición. Secretaría Nacional de Ciencia, Tecnología e Innovación (SENACYT), p. 162-179.
- SANTOS-MURGAS A, JERKOVIC M, ATENCIO R, COLLANTES R. 2022. Larvas urticantes *Automeris* (Lepidoptera: Saturniidae) en *Cajanus cajan*: riesgo para la salud de productores panameños. *Revista Peruana De Ciencias De La Salud*, 4(4): 226-231. <https://doi.org/10.37711/rpcs.2022.4.4.390>
- SELDESCHLACHTS A, PEIGNEUR S, TYTGAT J. 2020. Caterpillar Venom: A Health Hazard of the 21st Century. *Biomedicine*, 8(6), 143. <https://doi.org/10.3390/biomedicine8060143>
- SPECHT A, CORSEUIL E, FORMENTINI AC. 2005. Lepidópteros de importância médica ocorrentes no Rio Grande Do Sul. III. Saturniidae – Hemileucinae. *Biociências, Porto Alegre*, 13(2): 149-162.
- UMAÑA C. 2017. *Leucanella hosmera* (Saturniidae). Área de Conservación Guanacaste. <https://www.acguanacaste.ac.cr/paginas-de-especies/insectos/102-saturniidae/4004-i-leucanella-hosmera-i-saturniidae>
- WEATHER SPARK. 2024. El clima y el tiempo promedio en todo el año en Cerro Punta. <https://es.weatherspark.com/y/16724/Clima-promedio-en-Cerro-Punta-Panam%C3%A1-durante-todo-el-a%C3%B1o>
- WOLFE K. 2015. The Kirby Wolfe Saturniidae Collection. <http://www.silkmoths.bizland.com/kirbywolfe.htm>