

# A cockroach of the genus *Eurycotis* Stål, 1874 (Blattodea: Eurycotiinae) living in bromeliads from a climatic relict on the Paraguaná Peninsula, northwestern Venezuela

Una cucaracha del género *Eurycotis* Stål, 1874 (Blattodea: Eurycotiinae)  
que habita en bromelias de un relictio climático en la Península de Paraguaná,  
noroeste de Venezuela

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## ABSTRACT

The genus of cockroaches *Eurycotis* Stål, 1874, which currently includes some 60 species, is most diverse in the Greater Antilles, with limited representation in South America, including the Venezuelan species *E. nigra* Princis, 1952. Several species of this genus are known to inhabit bromeliads, particularly in mountainous regions, and some exhibit ecological associations with ants. A cockroach of this genus was found inhabiting an epiphytic bromeliad in the cloud forest of Cerro Santa Ana, an isolated mountain rising above the arid lowlands of the Paraguaná Peninsula in northwestern Venezuela. This cockroach exhibits a distinctive coloration pattern, characterized by the shape and position of the pronotal spots, which simulate eyes, and by unusual pink tones, which distinguish it from other species of the genus. The discovery of phytotelm-dwelling cockroaches on Cerro Santa Ana highlights the biogeographic uniqueness of this relict mountain summit ecosystem, suggesting a high potential for diversity of the genus not yet documented in Venezuela.

**Keywords:** Cerro Santa Ana, cloud forest, ecological island, endemism, relict species.

## RESUMEN

El género de cucarachas *Eurycotis* Stål, 1874, que actualmente incluye unas 60 especies, presenta su mayor diversidad en las Antillas Mayores, con una representación limitada en Sudamérica, incluyendo la especie venezolana *E. nigra* Princis, 1952. Se sabe que varias especies de este género viven en bromelias, particularmente en regiones montañosas, y algunas muestran asociaciones ecológicas con hormigas. Se encontró una cucaracha de este género habitando una bromelia epífita del bosque nublado del Cerro Santa Ana, una montaña aislada que se eleva sobre las áridas tierras bajas de la península de Paraguaná, en el noroeste de Venezuela. Esta cucaracha muestra un patrón de coloración distintivo en la forma y posición de las manchas pronotales, que simulan ojos, y en tonalidades rosadas inusuales, que la diferencian de otras especies del género. El

descubrimiento de cucarachas fitotelmicas en el Cerro Santa Ana resalta la singularidad biogeográfica de este ecosistema relictual de cumbre de montaña y sugiere un alto potencial de diversidad del género aún no documentada en Venezuela.

**Palabras clave:** Cerro Santa Ana, endemismo, especie relictual, isla ecológica, selva nublada.

## INTRODUCTION

Regarding the classification of the genus *Eurycotis*, the first species described was *Polyzosteria azteca* Saussure, 1862, from Puebla, Mexico, which is now considered a synonym of *E. mexicana* (Saussure, 1862) (Hollier *et al.*, 2023). The original generic designation underwent several subsequent changes: from *Polyzosteria* (Brunner von Wattenwyl, 1865), to *Periplaneta* (Walker, 1868), and finally to *Eurycotis* (Stål, 1874). Today, the genus includes 60 recognized species, with some large and well-known species such as the Florida woods cockroach [*Eurycotis floridana* (Walker, 1868)]. Over half of these species (34) have been recorded in Cuba and Hispaniola. In Cuba, 17 species were described between 1865 and 1942, with four additional species identified after 1996. In contrast, Hispaniola had only a single documented species in 1916, and it was not until 2014 that 13 new species were described (Gutiérrez 2013, 2014, 2025; Núñez 2018; Estrada-Álvarez & Gutiérrez 2023; Beccaloni 2025). In South America, only eight species have been reported, including *Eurycotis nigra* Princis, 1952, described from Venezuela (Beccaloni 2025; Cazorla-Perfetti 2019).

Eight species of *Eurycotis* associated with bromeliads have been reported in the literature, seven of which occur in montane regions (Table 1). Notably, in Mexico, adults and nymphs of various developmental stages of another *Eurycotis* species were found living in association with ants of the genus *Camponotus*, within large bromeliads that were attached to oak trees (*Quercus* spp.; Fagaceae), in a

cloud forest at an elevation of 1,840 meters. These cockroaches exhibit a coloration similar to that of the ants, with the anterior portion of the body reddish-brown and the posterior portion black (Sormani, pers. obs.).

## RESULTS AND DISCUSSION

On April 6, 2025, a cockroach of the genus *Eurycotis* Stål, 1874 was found in an epiphytic bromeliad (Bromeliaceae) at an elevation of 650 meters in the cloud forest of Cerro Santa Ana, an isolated mountain on the Paraguaná Peninsula, Falcón State, Venezuela (Fig. 1). While the peninsula is generally arid and xerophytic, higher elevations of this mountain support a tropical rainforest with cloud forest characteristics, rich in bromeliads.

Photographic documentation (Fig. 1) shows that this *Eurycotis* individual exhibits a coloration pattern observed in other cockroaches, with a pair of pronotal spots resembling eyes and contrasting colors that may serve an aposematic function, potentially linked to the repellent chemicals that some cockroaches release to deter predators (Turnbull & Fashing 2002). Its overall appearance and contrasting color pattern resemble those of *Eurycotis decipiens* (Kirby, 1903), a species native to Trinidad & Tobago. However, the pinkish hues seen in the Paraguaná specimens are unusual for the genus.

The Paraguaná Peninsula covers about 2,500 km<sup>2</sup> and is the northernmost part of continental Venezuela. It is connected to the mainland by the 30 km long Médanos isthmus. The landscape consists mainly of low plains, rising

**Table 1.** Species of the genus *Eurycotis* reported to live in association with bromeliads.

Species	Locality (elevation, not mentioned for every source)	Source
<i>Eurycotis biolleyi</i> Rehn, 1918	Pitahaya (?), Puntarenas, Costa Rica (1,400 m)	Picado 1913
<i>Eurycotis floridana</i> (Walker, 1868)	Southeastern United States of America.	Roth & Willis 1960
<i>Eurycotis manni</i> Rehn, 1916	Serra da Itiúba, Bahia, Brazil.	Rocha & Rodrigues 1976
<i>Eurycotis ferrumequinum</i> Rehn & Hebard, 1917	Monte Cuzco, Guantánamo Province, Cuba	Gutiérrez (1990)*
<i>Eurycotis galeoides</i> Rehn & Hebard, 1917	Meseta del Guaso, Guantánamo Province, Cuba	Alfaro (1990)*
<i>Eurycotis</i> sp.	Ixtepeji, Oaxaca, México (2,547 m)	Mondragón 2008
<i>Eurycotis isabeltorres</i> Gutiérrez, 2014	Loma Isabel de Torres, Dominican Republic	Gutiérrez 2014

\*Gutiérrez, E. (pers. comm.).



Figure 1. *Eurycotis* sp. From the Cerro Santa Ana, 650 m, Paraguaná Peninsula, Venezuela.

centrally to the Cocodite Mesa (~200 m elevation) and to the Cerro Santa Ana (830 m elevation). The prevailing climate is arid to semi-arid, with annual rainfall below 500 mm, except possibly at the summit of Cerro Santa Ana. Vegetation is predominantly xerophytic, with very dry tropical forest (referred to as Tropical Thorny Scrub), and deciduous forest at higher elevations, and cloud forests near the summit of the Cerro Santa Ana (Feo-Codécido *et al.* 1974, Lara & González 2007, Molinari *et al.* 2012, Pastor *et al.* 2016).

The mountains and hills that constitute the northern Cordillera (Cordillera de la Costa) in Venezuela are distinguished by the presence of cloud forests found at elevations ranging from 600 to 900 meters above sea level (Fernández Badillo 1997, 2000). However, the Cerro Santa Ana is a distinct and isolated mountain that is not connected to that mountainous chain, and that contrasts starkly with the surrounding landscape (Bendrat 1914, Ataroff & García 2013, Meier 2011). It is also a relict mountain formed by a volcano that became extinct millions of years ago, and its hard volcanic rock has resisted erosion longer than the softer sedimentary rocks that sur-

round it (Bendrat 1914). Thus, from a geographic and climatic perspective, the Cerro de Santa Ana is a relict ecological island.

The comparatively humid climate of Cerro Santa Ana supports the growth of epiphytic plants, such as bromeliads, which benefit from both vertical precipitation in the form of rainfall and horizontal precipitation in the form of fog (Bubb *et al.* 2004, Gómez & Morón 2010, Ray 2013).

## CONCLUSION

Climatic data from the place where our cockroach was found, along with information on other species of *Eurycotis* inhabiting high-altitude regions, suggest a strong correlation between cloud forests, bromeliads, and the diversification of the genus. This pattern indicates a high potential for the discovery of new species of *Eurycotis* in Venezuela, similarly to what happened in Hispaniola, where several species have been recently described (Gutierrez 2014). The isolation and relict nature of the cloud forest on Cerro Santa Ana further suggests that it may serve as a refuge for yet-undescribed *Eurycotis*.

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## REFERENCES

- Ataroff, M. & C. García-Núñez. 2013. Selvas y bosques nublados de Venezuela. pp. 125–155. *In*: Medina, E., O. Huber, J. M. Nassar & P. Navarro (eds.). *Recorriendo el paisaje vegetal de Venezuela*. Caracas: Ediciones IVIC, Instituto Venezolano de Investigaciones Científicas.
- Beccaloni, G. 2025. <https://cockroach.speciesfile.org/>
- Bendrat, T. A. 1914. Rocks of the Cerro Santa Ana on Paraguaná, Venezuela. *American Journal of Science* 37: 268–272.
- Bubb, P., I. May, L. Miles & J. Sayer. 2004. *Cloud Forest Agenda*. UNEP-WCMC, Cambridge, UK. [http://www.unep-wcmc.org/resources/publications/UNEP\\_WCMC\\_bio\\_series/20.htm](http://www.unep-wcmc.org/resources/publications/UNEP_WCMC_bio_series/20.htm)
- Cazorla-Perfetti, D. 2019. Listado actualizado de las cucarachas (Insecta, Dictyoptera, Blattodea) de Venezuela, con siete nuevos registros en el estado Falcón y cinco en el estado Lara. *Saber* (Universidad de Oriente) 31: 39–65.
- Estrada-Álvarez, J. C. & E. Gutiérrez. 2023. Blattodea: Blattaria del continente americano; diversidad y distribución; retos y perspectivas. pp. 15–38. *In*: Estrada-Álvarez, R. Núñez-Bazán, N. Valero-Pérez, M. R. F. Domínguez & M. de Luna (eds.). *Memorias del Primer Coloquio de Cucarachas Silvestres (Blattodea: Blattaria) de Latinoamérica (CCSL)*. YouTube: <https://youtu.be/LZ1SezusDro>
- Estrada-Álvarez, J. C. 2023. Bibliografía taxonómica de las cucarachas (Blattodea: Blattaria) de América (1758-2022). pp. 149–193. *In*: Estrada-Álvarez, R. Núñez-Bazán, N. Valero-Pérez, M. R. F. Domínguez & M. de Luna (eds.). *Memorias del Primer Coloquio de Cucarachas Silvestres (Blattodea: Blattaria) de Latinoamérica (CCSL)*. YouTube: <https://youtu.be/LZ1SezusDro>
- Feo-Codécido, G., C. Martín Bellizzia & P. Bartok. 1974. *Excursión geológica a la Península de Paraguaná. Asociación Venezolana de Geología Minería y Petróleo*. Caracas: Asociación Venezolana de Geología Minería y Petróleo, 47 pp.
- Fernández Badillo, A. 1997. Zonas de vida del Parque Nacional Henri Pittier, Venezuela. *Revista de la Facultad de Agronomía* (Maracay) 23: 249–270.
- Fernández Badillo, A. 2000. El Parque Nacional Henri Pittier. *Revista de la Facultad de Agronomía, Alcance* 60: 1–284.
- Gómez-Gómez, B. & M. A. Morón. 2010. Los escarabajos del Bosque de Niebla en Chiapas (Coleoptera: Melolonthidae). pp. 1–24. *In*: Pérez-Farrera, M. A., Tejada-Cruz, C., Silva-Rivera, E. *Los bosques mesófilos de montaña en Chiapas; situación, diversidad y conservación*. Tuxtla Gutiérrez, Chiapas: Universidad de Artes y Ciencias de Chiapas. Colección Jaguar UNICACH.
- Gutiérrez, E. 2013. El género *Eurycotis* (Dictyoptera: Blattaria: Blattidae: Polyzosteriinae). Especies de La Hispaniola. Primera parte: seis especies nuevas. *Novitates Caribaea* 6: 6–35.
- Gutiérrez, E. 2014. El género *Eurycotis* (Dictyoptera: Blattaria: Blattidae: Polyzosteriinae). Especies de La Hispaniola. Segunda parte: siete especies nuevas. *Novitates Caribaea* 7: 1–21.
- Gutiérrez, E. 2025. A new species of the genus *Eurycotis* Stål (Blattodea, Blattidae) from the eastern region of Cuba. *Zootaxa* 5563: 388–395.
- Gutiérrez, O. M., L. M. Camino, A. F. Castrejón, & P. A. Jiménez, 1993. Arthropods associated with *Bromelia hemisphaerica* (Bromeliales: Bromeliaceae) in Morelos, Mexico. *Florida Entomologist* 76: 616–621.
- Hollier, J., Marshall, J. A., Legendre, F. & R. Poggi. 2023. An annotated list of the Blattodea (Insecta) described by Henri de Saussure. Part 3: the Blattidae. *Revue Suisse de Zoologie* 130(1): 77–88.
- Lara, S. & L. F. González. 2007. Evolución geomorfológica de la planicie lodosa de La Macolla, Península de Paraguaná, Estado Falcón, Venezuela. *Investigaciones Geográficas, Boletín del Instituto de Geografía* (UNAM) 62: 7–30.
- Meier, W. 2011. Los bosques nublados de la Cordillera de la Costa en Venezuela. *BioLlania (Edición Especial)* 10: 106–121.
- Molinari, J., J. M. Nassar, A. García-Rawlins & R. J. Márquez. 2012. Singularidad biológica e importancia socioeconómica de los murciélagos cavernícolas de la península de Paraguaná, Venezuela, con propuestas para su conservación. *Revista de Ecología Latino Americana* 17: 1–40.
- Núñez-Bazán, R. 2018. *La relación entre características morfológicas y el nicho climático en diez especies cubanas del género Eurycotis Stål (Dictyoptera: Blattaria)*. La Habana: Universidad de La Habana. Facultad de Biología., 69 pp. [Tesis de Licenciatura].

- Pastor-Mogollón, J., W. Rivas, M. Rondón & M. Colmenares-Arteaga, 2016. *Ecosistemas terrestres y biodiversidad en la Península de Paraguaná, estado Falcón. Información base para el reporte de CC en Venezuela de la SACC-ACFIMAN*. [Caracas]: 27 pp.
- Picado, C. 1913. Les Broméliacées Épiphytes considérées comme milieu biologique. *Bulletin de la Science de la France et de la Belgique* (7)47(5): 215–360.
- Ray, D. K. 2013. Tropical montane cloud forests. pp. 79–85. In: Pielke, Roger A., Sr. (ed.): *Climate vulnerability: Understanding and addressing threats to essential resources. vol. 4*. [Amsterdam]: Elsevier Inc., Academic Press.
- Rocha e Silva, I. & S. M. Lopes. 1976. Blattaria de bromélia (Dictyoptera). *Revista Brasileira de Biologia* 36: 873–901.
- Roth, L. M. & E. R. Willis, 1960. Biotic Association of cockroaches. *Smithsonian Miscellaneous Collection* 141: 1–470.
- Turnbull, M. W. & N. J. Fashing. 2002. Efficacy of the ventral abdominal secretion of the cockroach *Eurycotis floridana* (Blattaria: Blattidae) as a defense allomone. *Journal of Insect Behavior* 15: 369–384.