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FIRST REPORT OF *ACALITUS SIMPLEX* (ACARI: ERIOPHYIDAE) IN THE DOMINICAN REPUBLIC

Primer reporte de *Acalitus simplex* (Acari: Eriophyidae) en República Dominicana

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ABSTRACT

This study confirmed the presence and distribution of the eriophyoid mite *Acalitus simplex* Flechtmann & Etienne (Acari: Eriophyidae), known as the ruellia erinose mite, in multiple locations across the Cibao region of the Dominican Republic. *Acalitus simplex* is an oligophagous mite feeding exclusively on *Ruellia* species, particularly the widely cultivated ornamental *Ruellia simplex*, which is valued for its diverse and colorful blooms. Leaves exhibiting characteristic erinea symptoms were collected from 11 outdoor sites including parks, university campuses, and streets throughout the region. Morphological examination of mites extracted from all samples confirmed *A. simplex* presence across all surveyed locations, representing the first documented record of this species on Hispaniola. This detection extends the mite's known distribution in the Caribbean, previously reported only from Anguilla, Brazil, Cuba, Florida, Guadeloupe, Hawaii and Thailand. This report enhances understanding of the distribution and potential impact of *A. simplex* in the Caribbean Basin and highlights the need for further surveys and molecular studies to clarify its invasion history and develop effective management.

Keywords: *Ruellia,* mite, ornamental plants, Hispaniola, Caribbean.

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RESUMEN

Este estudio confirmó la presencia y distribución del ácaro eriofíido *Acalitus simplex* Flechtmann & Etienne (Acari: Eriophyidae), conocido como el ácaro de la erinea de *Ruellia*, en múltiples localidades de la región del Cibao, República Dominicana. *Acalitus simplex* es un ácaro oligófago que se alimenta exclusivamente de especies del género *Ruellia*, particularmente de *Ruellia simplex*, una planta ornamental ampliamente cultivada y valorada por su diversidad y colorido de flores. Se recolectaron hojas con síntomas característicos de erinea en 11 sitios al aire libre, incluyendo parques, campus universitarios y calles a lo largo de la región. El examen morfológico de los ácaros extraídos de todas las muestras confirmó la presencia de *A. simplex* en todas las localidades estudiadas, representando el primer registro documentado de esta especie en la Hispaniola. Esta detección amplía la distribución conocida del ácaro en el Caribe, previamente reportado solo en Anguila, Brasil, Cuba, Florida, Guadalupe, Hawai y Tailandia. Este reporte contribuye a mejorar el conocimiento sobre la distribución y el posible impacto de *A. simplex* en la cuenca del Caribe, y resalta la necesidad de realizar estudios adicionales y análisis moleculares para esclarecer su historia de invasión y desarrollar estrategias efectivas de manejo.

Palabras clave: *Ruellia*, ácaro, plantas ornamentales, Hispaniola, Caribe.

Acalitus simplex Flechtmann & Etienne, 2002 (Acari: Eriophyidae), known as the ruellia erinose mite (Fig. 1), is an oligophagous eriophyoid mite that feeds exclusively on plant species of the genus *Ruellia* (Acanthaceae) (De Giosa et al., 2025; De la Torre Santana, 2024; Flechtmann & Etienne, 2002; Konvipasruang et al., 2016; Navia et al., 2021). This mite was first observed and described on *Ruellia tuberosa* (Linnaeus) in Guadeloupe (Flechtmann & Etienne, 2002), and has since been reported on *Ruellia simplex* (Wright), in Anguilla, Brazil, Cuba, Florida, Hawaii and Thailand (De Giosa et al., 2025; De la Torre Santana, 2024; Konvipasruang et al., 2016; Navia et al*.,* 2021). *Ruellia simplex*, commonly known as Mexican petunia, Mexican bluebell, or Britton's wild petunia, is an ornamental plant widely used in landscapes (Hammer, 2002). For blooming and having flowers of diverse colors, this ornamental plant is highly appreciated by consumers (Wilson et al., 2020), generating approximately $12 million dollars in the ornamental industry in 2004 (Wirth et al., 2004).

Acalitus simplex infestations reduce the plant's aesthetic appeal by causing the formation of open galls, known as erinea (Karioti et al*.*, 2011). The erinea are hairy patches (Fig. 2), that develop on stems, leaves, petioles, and buds of *R. simplex* (De la Torre Santana, 2024; Navia et al., 2021). Young and soft tissues are often completely covered by erinea, including both upper and lower leaf surfaces, as well as stems and buds (Fig. 3). In contrast, scattered erinea are typically observed on mature, fully differentiated leaves. These affected plant tissues can simultaneously exhibit erinea in varying colors, ranging from white, to dark beige (Navia et al., 2021).

Ruellia simplex leaves with erinea were collected in 99% ethanol from various locations in the Dominican Republic (Table I). Were extracted from all collected samples, slide-mounted in Hoyer's medium (Walter & Krantz, 2009), and examined under a Motic BA310E microscope. All samples from the listed locations contained individuals of *A*. *simplex*, as confirmed by morphological comparison with the original species description. Mounted specimens were

deposited at the Ornamental Entomology and Acarology Laboratory, Tropical Research and Education Center (TREC), University of Florida, Homestead, Florida, 33031, USA; the Instituto de Investigaciones Botánicas y Zoológicas "Prof. Rafael M. Moscoso", Universidad Autónoma de Santo Domingo, and the Museo Nacional de Historia Natural "Prof. Eugenio de Jesús Marcano" (MNHNSD), Santo Domingo, Dominican Republic.

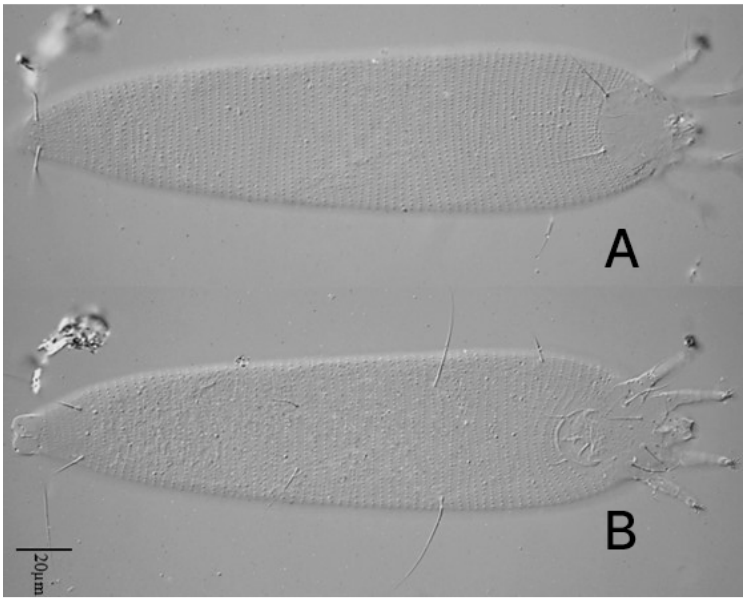

Figure 1. Acalitus simplex. Dorsal view (**A**); ventral view (**B**). Photo: Marcello De Giosa and Alexandra M. Revynthi, TREC, University of Florida.

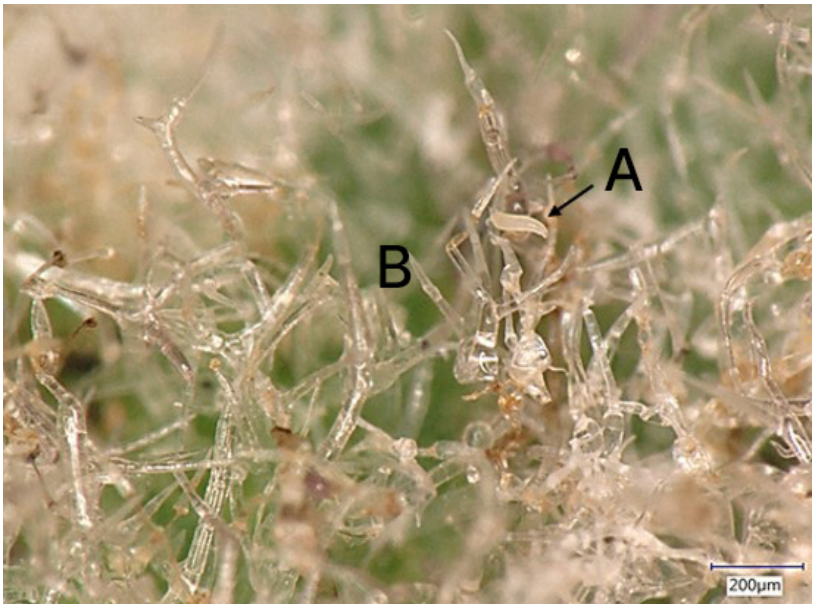

Figure 2. Acalitus simplex (**A**) and erinea (**B**). Photo: Marcello De Giosa and Alexandra M. Revynthi, TREC, University of Florida.

Acalitus simplex is a new record for the island of Hispaniola (Perez-Gelabert, 2020). This first record is important for tracking the spread of *A. simplex* in the Americas. The mite was reported a year ago in neighboring Cuba (De la Torre Santana, 2024), and its recent detection in Anguilla, Cuba, Brazil, Florida, Hawaii and the Dominican Republic suggests a continuing spread in the region. Therefore, we suspect its presence in the nearby Cayman Islands, Haiti, and Jamaica, where the host *R. simplex* is also cultivated (Acevedo-Rodriguez & Strong, 2012). As *R. simplex* is commercialized and widely used as an ornamental plant, the accidental human-mediated transport of infested material may play a significant role in the regional dispersal of *A. simplex* (Navia et al., 2010). However, since several *R. simplex* is native to the Caribbean, it is also possible that *A. simplex* has long been present in the region but remained undetected due to limited scouting efforts and the lack of taxonomic attention specifically directed toward this mite. The growing popularity and commercial distribution of *R. simplex* may have simply increased the visibility of mite-associated symptoms, prompting recent detections. Further historical surveys and molecular studies would be necessary to clarify whether the species represents a recent introduction or a long-overlooked native associate. Additional surveys in the Dominican Republic are needed to explore potential naturally occurring associated predatory mites, none of which were found so far, as well as possible associations with other unreported *Ruellia* species present on the island. Currently, integrated mite management strategies are unavailable for controlling this ornamental pest in landscapes.

Figura 3. Open galls or erinea caused by *Acalitus simplex* in *Ruellia simplex*. Photos: C. Gómez Moya in Cotuí, Sánchez Ramírez province, 02/2025 (left) and Salcedo, Hermanas Mirabal province, 03/2025 (right).

Table I. Sampling locations in the Dominican Republic.

Locations	Coordinates	Collector	Date
University Avenue, Santiago de los Caballeros, Santiago Province, Dominican Republic	19° 3’ 36.57” N, 70° 9’ 32.23” W	Cristina A. Gómez Moya	October 2022
“El Vivero” Experimental Station, Quita Sueño, Cotuí, Sánchez Ramírez Province	19° 3’ 3.80” N, 70° 11’ 49.83” W		
Instituto Superior de Agricultura La Herradura, Santiago de los Caballeros, Santiago Province	19° 27’ 2.86” N, 70° 44’ 50.58” W	Gilberto de Moraes and Cristina A. Gómez Moya	
Águeda Suárez Street, Altos de Alameda, Santo Domingo Oeste, Santo Domingo Province	18° 29’ 58.67” N, 70° 0’ 13.17” W	Cristina A. Gómez Moya	June 2023
Paul Harris Street, El Hato, Cotuí, Sánchez Ramírez Province	19° 3’ 48.57” N, 70° 8’ 50.74” W	Cristina A. Gómez Moya	February 2025
“Ecoparque de La Paz”, Ojo de Agua, Tenares, Hermanas Mirabal Province	19° 23’ 30.82” N, 70° 23’ 10.68” W	Cristina A. Gómez Moya, Jesús Acuña and Daniel Carrillo	
Salcedo, Hermanas Mirabal Province	19° 22’ 31.19” N, 70° 24’ 36.90” W	Cristina A. Gómez Moya, Salvador Cuello Díaz, Oliver José Silverio Rodríguez and Bryant Beltrán Vásquez	March 2025
Monte Grande, Loma de Cabrera, Dajabón Province	19° 27’ 5.70” N, 71° 37’ 37.59” W	Cristina A. Gómez Moya, Marisol Morel Reyes and Ederly José Frías González	April 2025
Gral. Juan Rodríguez Street, Concepción de La Vega, La Vega Province	19° 13’ 30.36” N, 70° 31’ 44.09” W	Cristina A. Gómez Moya	
Villa La Mata, Sánchez Ramírez Province,	19° 5’ 41.63” N, 70° 9’ 44.20” W		

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