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First record of *Cheilomenes sexmaculata* (Fabricius, 1781) (Coleoptera, Coccinellidae) from Colombia

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Abstract

The ladybird *Cheilomenes sexmaculata* is reported for the first time from Colombia. Previously, this species was recorded in Asia and Australia, then introduced to South America and reported from countries such as Chile, Ecuador, Perú, and Venezuela, where it is used for biological control.

Key words

Ladybird beetle; citrus crops; range extension; Neotropics.

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Introduction

Cheilomenes sexmaculata (Fabricius, 1781) is a coccinellid species of the tribe Coccinellini (Slipinski 2007). It was originally described from Asia (India, Bangladesh, Pakistan, Sri Lanka, Bhutan, Myanmar, Malaysia, Indonesia, Vietnam, China, and Japan), but it has also been reported in Australia (Poorani 2002). More recently, it has been reported from countries in South America such as Chile, Ecuador, Perú, and Venezuela (González 2008, Angulo et al. 2011, Cornejo and González 2015, González 2016).

Cheilomenes sexmaculata is a species that has been studied for its potential as a pest control agent in biological control due to its eating habits, being a natural predator of aphid pest species such as *Aphis caccivora* Kock, 1854, *A. gossypii* Glover 1887 and *Lipaphis erysimi* (Kaltenbach, 1843), which are problematic for a variety of crops (Agarwala and Yasuda 2000, Agarwala

et al 2001, Omkar and Bind 2004, Tank and Korat 2007, Joshi and Sharma 2008, Angulo et al. 2011). Moreover, it has been reported feeding on foliar nectaries of *Talipariti pernambucense* (Arruda) Fryxell in mangroves from Ecuador, taking advantage of the sugary substrates of nectaries as a food resource (Cornejo and Gonzalez 2015).

Methods

On 28 April 2016, 9 specimens of *C. sexmaculata* were identified from different citrus plantations across the Caribbean coast of Colombia. Two of the specimens were from an orange plantation *Citrus sinensis* (L) Osbeck located in the Luruaco municipality in the Colombian department of Atlántico (10°59'99" N, 075°18'21" W) at 31 m above sea level (asl). The other 7 specimens were from a lemon plantation *Citrus × limon* (L) Burm located in the Santo Tomas municipality (10°73'2'40" N, 074°81'28" W)

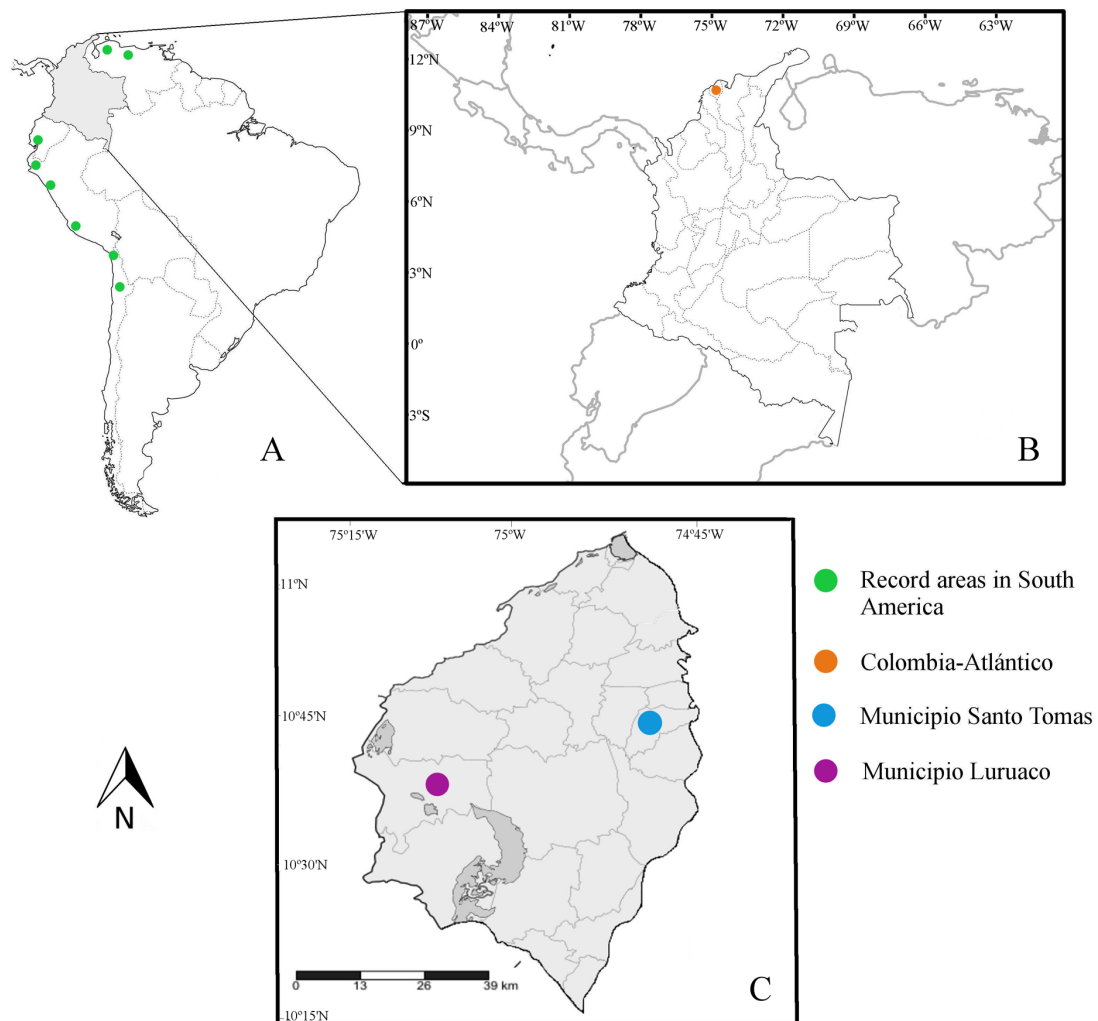


Figure 1. Distribution map of *Cheilomenes sexmaculata* in Neotropical region: **A.** Record areas in South America. **B.** New record from Colombia. **C.** Geographic distribution in Atlántico department.

at 48 m asl (Fig. 1). They were also seen feeding on other citrus crops. The species has been observed preying upon *Capulinia linerosae* Kondo and Gullan (2016) in plantations of guava *Psidium guajava* L.

Species identification was done using a stereomicroscope Leica S8 APO coupled to a digital camera Leica MC170 HD. Images were captured using the software Leica Application Suite (LAS) Version 4.6 and the construction of the final images were done with the software Zerene Stacker Version 1.0. Posterior treatment was performed in Gnu Image Manipulation Program (GIMP) version 2.8.

The specimens were deposited in the entomological collection of the Museo Javierano de Historia Natural “Lorenzo Uribe, S.J.” of the Pontificia Universidad Javeriana from Colombia, catalog numbers MPUJ_ENT 0013112 to MPUJ_ENT 0013120.

Results

New records. Colombia, Atlántico, Luruaco (10°59' 99" N, 075°18'21" W), Yuly Sánchez, 28 April 2016, MPUJ_ENT 0013112 to MPUJ_ENT 0013120, 2 specimens. Colombia, Atlántico, Santo Tomás (10°73'240" N,

074°81'28" W), Yuly Sánchez, 28 April 2016, MPUJ_ENT 0013112 to MPUJ_ENT 0013120, 7 specimens.

Identification. Taxonomic identification was based on the original description of the species (Mulsant 1850) and a recent diagnosis update (Slipinski 2007). *Cheilomenes sexmaculata* can be recognized by the following combination of characteristics: Anterior clypeal border arcuate; antenna 11-segmented; distinctly short, asymmetrical scape and compact 3-segmented club; terminal maxillary palpomere securiforme; prothoracic hypomeron without fovea near anterior angles; intercoxal process with a pair of distinct carinae extending anteriorly; anterior margin of mesostern weakly emarginate medially; elytral margin narrow, raised margins but without thickened border; epipleuron weakly foveate; abdominal postcoxal line not recurved and incomplete laterally, with oblique additional line; penis consists of single sclerite, ovopositor with coxites club-handle type; and ejaculatory duct very long and complex (Slipinski 2007).

The patterns of elytra coloration are highly variable, according Vijay et al (2016); combinations can be presented, such as: elytral yellow, pink, orange, and red, with 3 zig-zags black; elytra with black suture line

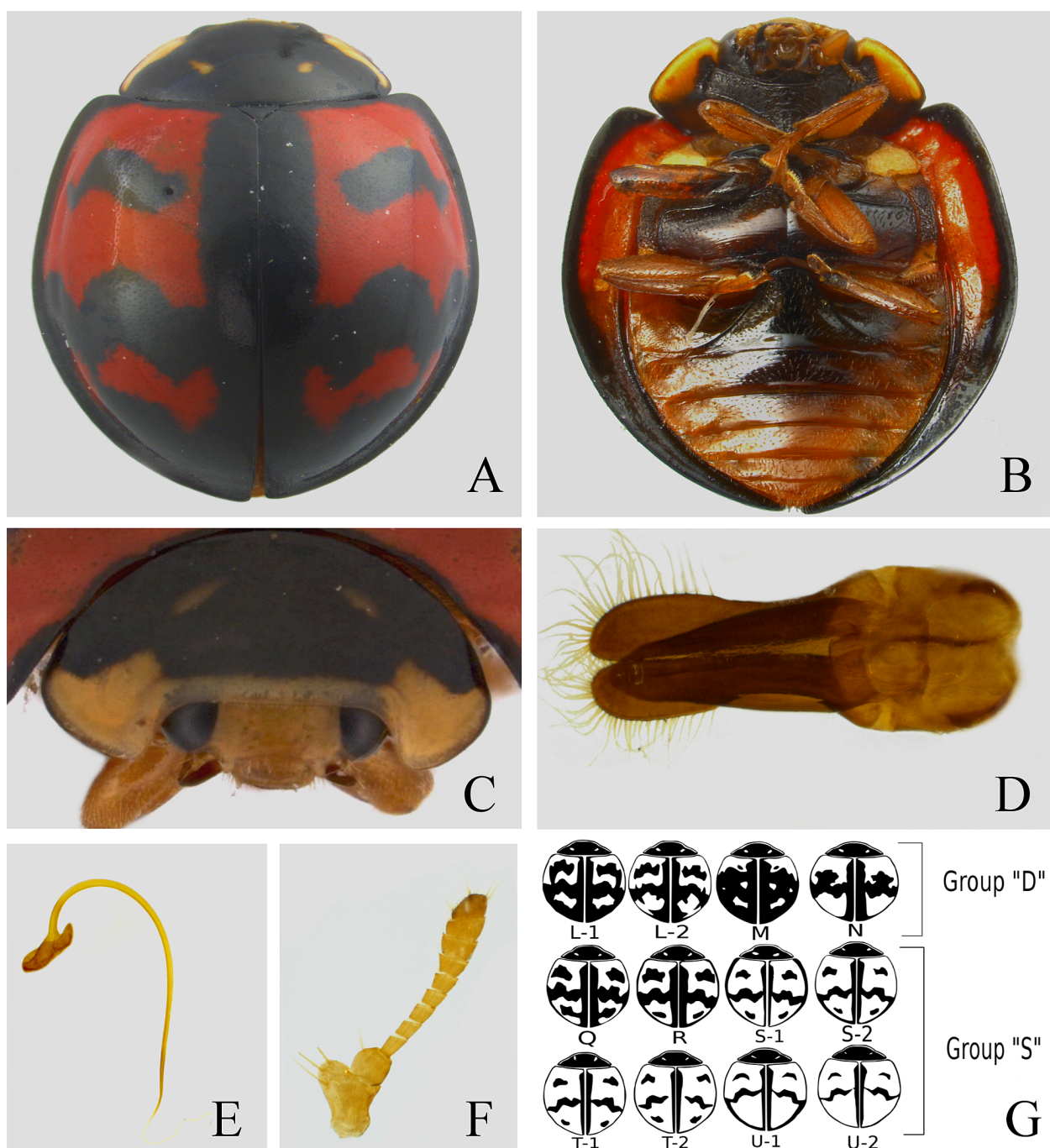


Figure 2. *Cheilomenes sexmaculata*. **A.** Dorsal view. **B.** Ventral view. **C.** Front view. **D.** Male genitalia: phallobase, dorsal view. **E.** Male genitalia: Siphus (penis). **F.** Antenna, asymmetrical scape and compact 3-segmented club. **G.** Phenotypes of group "D" and "S" modified from Kawakami et al. (2013).

without any spot; elytra with any spot; elytral completely black except margins; black elytra with 2 brownish spots on posterior side; and black elytra with yellow zig-zag band in the centre.

Discussion

According to Sasaji and Akamatsu (1979) and Matsuka et al. (1985) *C. sexmaculata* has 23 elytral phenotypes based on color, which have been classified into distinct phenotypic groups: *quadriplagiata*, *unifasciata*, *diversijunata*, and *sexmaculata* form. The specimens observed belong to the *diversijunata* (phenotype L) and *sexmaculata*

(phenotype Q) form, which are distributed in low latitudes and are characterized by presenting a yellow head, black pronotum with small yellow spots in the anterior and discal region, and a reddish-orange coloration in the elytra with bands and black spots (Fig. 2). This study provides new evidence for the ecology and distribution of the species, being reported *C. sexmaculata* for the first time in Colombia.

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Authors' Contributions

YS collected the specimens, JR and GG wrote the text, and JR took the photographs and wrote the text.

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