



First Report of “Hunter-Fly” *Coenosia attenuata* (Diptera: Muscidae) in Mexico

Authors: Bautista-Martínez, Néstor, Illescas-Riquelme, Carlos Patricio, and García-Ávila, Clemente de Jesus

Source: Florida Entomologist, 100(1) : 174-175

Published By: Florida Entomological Society

URL: <https://doi.org/10.1653/024.100.0126>

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

First report of “hunter-fly” *Coenosia attenuata* (Diptera: Muscidae) in Mexico

Néstor Bautista-Martínez¹, Carlos Patricio Illescas-Riquelme^{1,*},
and Clemente de Jesus García-Ávila²

The family Muscidae (Diptera) is a large group of flies that occupy a great number of ecological niches, and they are found in almost all biogeographic regions. Muscidae possess diverse feeding habits, although most of the species are coprophagous or saprophagous. However, some species are phytophagous or are predators of other arthropods (Huckett & Vockeroth 1987; Carvalho et al. 2005). The sub-

family Coenosiinae includes species that are predators in their larval and adult stages. They feed on other insects and can potentially be used as agents for biological control. This is the case for species of the genus *Coenosia*.

According to Sorokina (2014), 352 species of the genus *Coenosia* have been described worldwide. Of these, 39 are found in the Neo-

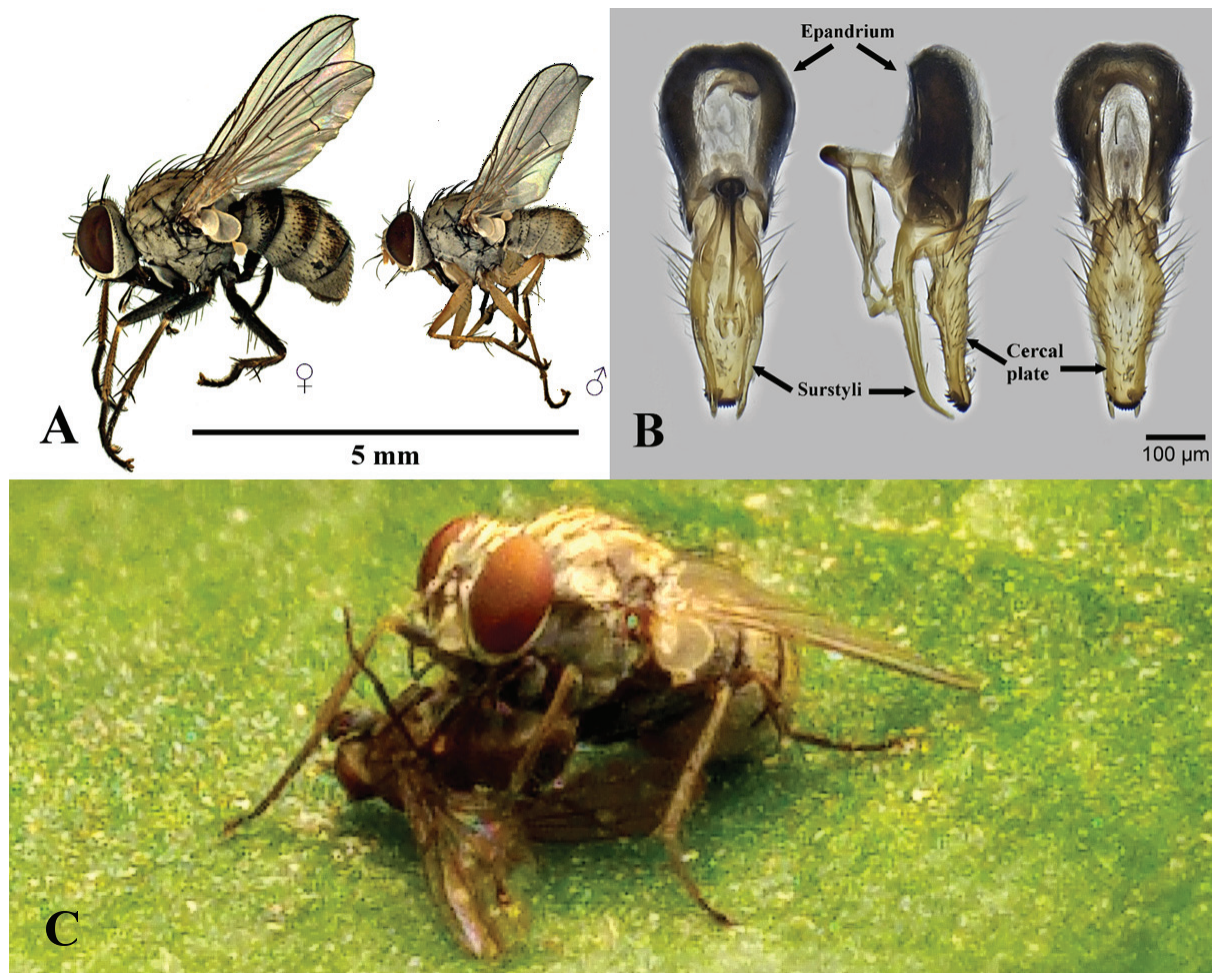


Fig. 1. Adults and male genitalia of *Coenosia attenuata*. A) Sexual dimorphism with female on the left, male on the right, B) ventral, lateral, and dorsal views of male genitalia, and C) a female *C. attenuata* preying on a fungus gnat.

¹Colegio de Postgraduado, Programa Entomología Acarología, km 36.5 carretera México-Texcoco, Montecillo, Texcoco, Estado de México, 56230, México; E-mail: nestor@colpos.mx (N. B.-M.), entoillescas@gmail.com (C. P. I.-R.)

²Servicio Nacional de Sanidad, Inocuidad y Calidad Agroalimentaria-Centro Nacional de Referencia Fitosanitaria. Km 37.5 Carretera federal México-Pachuca, Tecámac, Estado de México, 55740, México; E-mail: clemente.garcia@senasica.gob.mx (C. J. G.-Á)

*Corresponding author; E-mail: entoillescas@gmail.com (C. P. I.-R.)

tropical region (Carvalho et al. 2005). In Mexico, however, studies on this genus are practically non-existent. For this reason, we intend to contribute knowledge on the diversity of the *Coenosia* species that are present in Mexico.

During April 2016, we collected a predator fly that occurs naturally in the municipality of Zapopan, Jalisco (20.79747°N, 103.44381°W), in greenhouses where peppers (*Capsicum annuum* L.; Solanaceae) are produced organically. Based on the report by Pohl et al. (2012) and the keys for *Coenosia* species published by Xue & Tong (2003), the species was identified as *Coenosia attenuata* Stein. This species is commonly called “hunter fly.” Figure 1A shows adults of both sexes. The female is larger and darker than the male. Figure 1B shows different perspectives of the male genitalia as support for identification of the species. The specimens were deposited in the collection at Colegio de Postgraduados, Campus Montecillo (Texcoco, Mexico).

Coenosia attenuata originated in southern Europe (Hennig 1964) and is currently distributed in several countries of Europe, Asia, Africa, and Oceania (Hennig 1964; Pohl et al. 2012). In South America, it has been reported in Peru, Ecuador, Colombia, and Chile (Martínez-Sánchez et al. 2002; Perez 2006; Couri & Salas 2010); in Central America it occurs in Costa Rica (Hernández 2008); and in North America it is found in the United States and Canada (Hoebeke et al. 2003). This report represents the first incidence of *Coenosia attenuata* in Mexico.

We observed the flies feeding on several adult insect taxonomic groups: whiteflies (*Bemisia tabaci* Gennadius; Hemiptera: Aleyrodidae), potato-tomato psyllids (*Bactericera cockerelli* Sulc; Hemiptera: Triozidae), fungus gnats (Diptera: Sciaridae) (Fig. 1C), leaf miners (*Lyriomiza* sp.; Diptera: Agromyzidae), and vinegar flies (*Drosophila* sp.; Diptera: Drosophilidae). With the exception of the last of these taxonomic groups, all are or contain major pests of several important crops.

The flies generally land on the upper face of the leaves, on stems, or on structures used to support the pepper plants. Often, they catch their prey in flight. Through observation of their behavior, it appears that this species possesses vision adapted to respond to rapid movements. On occasion, the flies attacked small balls made of pieces of leaf that were dropped near to them.

Growers use yellow traps with an adhesive to capture whiteflies, but they also capture many adults of *C. attenuata*. If we are to preserve or increase the population of this beneficial species, the impact of this method of whitefly monitoring and control should be evaluated.

Summary

Coenosia attenuata Stein (Diptera: Muscidae) is a predatory fly that feeds on other insects and can be used as a potential biological control agent. This insect is native to southern Europe; however, it has been distributed naturally to various continents, including North and South

America, and is reported herein for the first time in Mexico. The flies were found preying on whiteflies, psyllids, fungus gnats, leaf miners, and vinegar flies in greenhouses with organic vegetable production.

Key Words: Coenosiinae; predator; biological control

Sumario

Coenosia attenuata Stein (Diptera: Muscidae), es una especie de mosca depredadora que se alimenta de otros insectos y puede ser utilizada como un potencial agente de control biológico. Este díptero es originario del sur de Europa, sin embargo, se ha distribuido de manera natural en diversos continentes incluyendo América. En este estudio, es reportado por primera ocasión para México. Las moscas se encontraron depredando mosquitos blancos (aleirodidos), psílidos, sciáridos, minadores y moscas del vinagre en invernaderos con producción orgánica.

Palabras Clave: Coenosiinae; depredador; control biológico

References Cited

- Carvalho CJB, Couri MS, Pont AC, Pamplona D, Lopes SM. 2005. A catalogue of the Muscidae (Diptera) of Neotropical Region. Zootaxa 860: 1–282.
- Couri MS, Salas C. 2010. First record of *Coenosia attenuata* Stein (Diptera, Muscidae) from Chile with biological notes. Revista Brasileira de Entomologia 54: 144–145.
- Hennig W. 1964. Muscidae, pp. 1955–1964 In Lindner E [ed.], Die Fliegen der Paläarktischen Region Volume 7. Schweizerbart Science Publishers, Stuttgart, Germany.
- Hernández JR. 2008. Presencia de la “mosca tigre” en Costa Rica. Actualidad Fitosanitaria 33: 3.
- Hoebeke ER, Sensenbach EJ, Sanderson JP, Wraight SP. 2003. First report of *Coenosia attenuata* Stein (Diptera: Muscidae), an Old World ‘hunter fly’ in North America. Proceedings of the Entomological Society of Washington 105: 769–775.
- Huckett HC, Vockeroth JC. 1987. Muscidae, pp. 1115–1131 In McAlpine JF, Peterson BV, Shewell GE, Teskey HJ, Vockeroth JR, Wood DM [eds.], Manual of Nearctic Diptera Volume 2, Monograph No. 28. Canada Communications Group, Ottawa, Canada.
- Martínez-Sánchez A, Marcos-García MA, Pont AC. 2002. *Coenosia attenuata* Stein, 1903 (Diptera: Muscidae) nueva especie para la fauna neotropical. Bollettino di Zoologia Agraria e di Bachicoltura, Series II 34: 269–272.
- Pérez MM. 2006. Estudio de la morfología externa de los adultos de la mosca cazadora *Coenosia attenuata* Stein, 1903 (Diptera: Muscidae), y primer reporte para Colombia. Revista de la Facultad de Ciencias Básicas 2: 67–87.
- Pohl D, Kühne S, Karaca İ, Moll E. 2012. Review of *Coenosia attenuata* Stein and its first record as a predator of important greenhouse pests in Turkey. Phytoparasitica 40: 63–68.
- Sorokina VS. 2014. On the taxonomy of the genus *Coenosia* Meigen, 1826 (Diptera, Muscidae) in the Russian fauna, with a description of *Coenosia tschernovi* sp. n. Entomological Review 94: 630–638.
- Xue W-Q, Tong Y-F. 2003. A taxonomic study on *Coenosia tigrina* species-group (Diptera: Muscidae) in China. Acta Entomologica Sinica 10: 281–290.