PEST ALERT

FDACS-P-02248
Pest Alert created June 2025

Florida Department of Agriculture and Consumer Services
Division of Plant Industry

Gymnandrosoma aurantianum Lima, Citrus Fruit Borer, detected in the USA

James E. Hayden, Ph.D., Bradley Danner
Bureau of Entomology, Nematology and Plant Pathology
DPIHelpline@FDACS.gov or 1-888-397-1517

INTRODUCTION

Gymnandrosoma aurantianum Lima, the citrus fruit borer moth (Lepidoptera: Tortricidae) (Fig. 1), is an important exotic pest of *Citrus* and other fruits. It is one of the most important pests of citrus in Brazil (Silva Carvalho et al., 2015). This species was recently detected in Texas by Cooperative Agricultural Pest Survey (CAPS) program personnel, and its identity was confirmed by the USDA Systematic Entomology Laboratory and subject experts (Adamski and Brown, 2001). Native to the New World tropics, the citrus fruit borer has been intercepted in baggage numerous times for many years (Brown, 2019), and it remains a priority target pest for monitoring due to its high likelihood of establishment (SAFARIS, 2025) and presence of economically important hosts in Florida.

BIOLOGY

The caterpillars bore into live fruit on the tree and consume seeds. In addition to the direct damage, the tunnels facilitate infection by pathogens and make the fruit unmarketable. Pupation happens in the soil, or less commonly inside the fruit. There may be up to 10 generations per year. The moths are not thought to fly far from the host plants, and the movement of fruit is the primary means of dispersal (EPPO, 2020).

DISTRIBUTION

The citrus fruit borer is established in most countries of South and Central America and Caribbean Islands, including Puerto Rico (Cabrera-Asencio, 2013; Brown, 2019). The northernmost established populations are in Veracruz in eastern Mexico (EPPO, 2022) and The Bahamas (Florida Museum Lepidoptera Collection, 2025).

HOST PLANTS

The larvae feed on at least 22 species of plants belonging to 14 families (Brown, 2019). Host preference is indiscriminate, and the moths are probably attracted to any fruit (J.W. Brown, pers. comm.). Hosts with interception records include citrus, guava, mango, macadamia, peach, Spanish lime and other fruits important to Florida's plant industry, such as sugar apple, litchi, loquat and plantain (Brown, 2019).

SURVEY AND IDENTIFICATION

Larvae can be detected by frass (excrement) extruded from the borehole on the surface of the fruit (Figs. 2-3). The larvae are cream-colored with round, brown spots and a distinct rounded head. Cutting the fruit open may reveal more frass. The moths are small (ca. 1 cm wing length) and brown. They are attracted to a pheromone lure (Leal et al., 2001). The Florida CAPS program has been surveying for this pest since 2022. Approximately 40 pheromone-baited Delta traps with sticky-board inserts are deployed at high-risk sites in South and Central Florida where the majority of citrus is grown. Trapping procedures follow the 2025 Approved Methods for Pest Surveillance on the on CAPS Resource and Collaboration website (CAPS, 2025). A few other species of *Gymnandrosoma* Dyar, *Cydia* Hübner and *Ecdytolopha* Zeller that are not pests can be attracted to the same lure (CAPS data). Some of the other species can be screened using external male characters, but authoritative determination of *G. aurantianum* requires dissection and DNA barcoding. Trap inserts must be submitted in sufficiently good condition to allow dissection of the genitalia and extraction of DNA from the thorax if needed.

REFERENCES

Adamski, D. and Brown, J.W. (2002 [2001]). Systematic revision of the *Ecdytolopha* group of genera (Lepidoptera: Tortricidae: Grapholitini) in the New World. Entomologica Scandinavica Supplement 58: 1–86.

Brown, J.W. (2019). *Gymnandrosoma aurantianum* (citrus fruit borer). CABI Compendium 20360. Available at: https://www.cabidigitallibrary.org/doi/full/10.1079/cabicompendium.20360. Accessed 5 May 2025. https://doi.org/10.1079/cabicompendium.20360

Cabrera-Asencio, I., Vélez, A.L., Henríquez, S.A. and Santiago-Blay, J.A. (2013). *Melicoccus bijugatus* Jacquin (Sapindaceae), quenepa: a new host plant record for the Citrus Fruit Borer, *Gymnandrosoma aurantianum* Lima, 1927 (Lepidoptera: Tortricidae) and the genus *Gymnandrosoma* in Puerto Rico. Life: The Excitement of Biology 1(1): 3–16.

CAPS (2025). Citrus fruit borer – *Gymnandrosoma aurantianum*. Approved Methods for Pest Surveillance. CAPS Resource and Collaboration Site. Hosted by Purdue University. Available at: https://approvedmethods.ceris.purdue.edu/sheet/1747. Accessed 7 May 2025.

EPPO. (2020). Pest risk analysis for *Gymnandrosoma aurantianum* (Lepidoptera: Tortricidae), citrus fruit borer, macadamia fruit borer. EPPO, Paris. Available at https://gd.eppo.int/taxon/ECDYAU/documents.

EPPO. (2022). EPPO Datasheet: *Gymnandrosoma aurantianum*. EPPO Datasheets on Pests Recommended for Regulation. P. 387–393. DOI: 10.1111/epp.12830

Florida Museum Lepidoptera Collection. (2025). Florida Museum of Natural History, Gainesville, Florida. Available at: https://specifyportal.floridamuseum.ufl.edu/leps/. Accessed 5 May 2025.

Leal, W.S., Bento, J.M.S., Murata, Y., Ono, M., Parra, J.R.P. and Vilela, E.F. (2001). Identification, synthesis, and field evaluation of the sex pheromone of the citrus fruit borer *Ecdytolopha aurantiana*. Journal of Chemical Ecology 27: 2041–2051.

SAFARIS (2025). CAPS: Citrus Fruit Borer. Spatial Analytic Framework for Advanced Risk Information Systems. Hosted by NC State University. Available at: https://safaris.cipm.info/safarispestmodel/StartupServlet?caps&pid=CFB. Accessed 7 May 2025.

Silva Carvalho, J.H., Barbosa, J.C., Yamamoto, P.T. and Bicalho, I.B. (2015). Distribuição especial do bicho-furão, *Gymnandrosoma aurantiana* (Lima, 1927) (Lepidoptera: Tortricidae), em citros utilizando geoestatística. Rev. Bras. Frutic., Jaboticabal - SP, 37(3): 600–609. http://dx.doi.org/10.1590/0100-2945-114/14

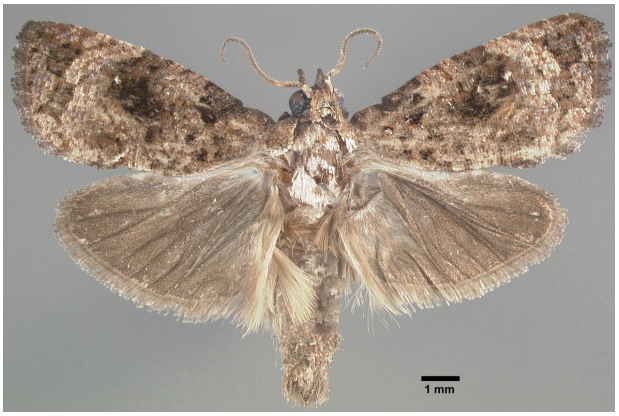

Figure 1. Male *Gymnandrosoma aurantianum*, collected in The Bahamas (MGCL Cat. No. 240514).
Photo by J. Hayden, FDACS-DPI.

Figure 2. Frass and fruit exudate on *Melicoccus bijugatus* (quenepa or Spanish lime).
Reproduced from Cabrera et al. (2013).

Figure 3. Larva in fruit of *M. bijugatus.*
Reproduced from Cabrera et al. (2013).