

California Pest Rating Proposal

Silba adipata McAlpine: black fig fly

Diptera: Lonchaeidae

Current Rating: Q

Proposed Rating: A

Comment Period: **7/13/2021 – 8/27/2021**

Initiating Event:

On June 10, 2021, a resident in Pasadena (Los Angeles County) submitted a fig with pupae to county agricultural personnel. The pupae were confirmed as *Silba adipata* with molecular techniques.

On June 21, 2021, a resident in Goleta (Santa Barbara County) submitted figs with larvae to county agricultural personnel. These were also confirmed as *S. adipata* with molecular techniques. On June 24, 2021, a larva from a fig at the Goleta residence was collected by state (CDFA) personnel and this was confirmed as *S. adipata* with molecular techniques. On June 29, 2021, an adult male was confirmed as *S. adipata* via morphology of the genitalia. Further finds of *S. adipata* were made in Orange and Ventura counties. *Silba adipata* was not previously known to be established in the New World and it has not been rated. Therefore, a pest rating proposal is needed.

History & Status:

Background: Adult *Silba adipata* are black shining flies 3.5-4.5 mm in length. Adults feed on exudates of figs and fig tree sap and possibly in flowers of other plants. Edible fig (*Ficus carica*) is the only known larval host, and both figs and caprifigs are attacked. Female flies oviposit groups of eggs under the scales of the ostiole of the fruit, and unripe fruits are reported to be preferred for oviposition. Oviposition is reported to primarily occur on figs that are in a shaded position. Adult activity is reported to be greatest early in the morning and late in the afternoon, when temperatures

are lower. Larvae feed inside the fruit, and this often results in premature fruit drop. Larvae can complete development in dropped fruit, and they emerge from emergence holes approximately 1 mm in diameter to pupate in the soil (Abbes et al., 2021; Katsoyannos, 1983; M. Hauser, pers. comm.). There are reportedly 4-6 generations per year (Katsoyannos and Guerin, 1984). Adults are active in Turkey from May to November (Tutmuş, 2013).

Infestations by *S. adipata* caused fruit drop in Slovenia, but impact varied by location and fig variety (Rote et al., 2017). In Tunisia, it caused “massive” fruit drop and infestation rates (% of fruits infested) exceeded 80% in some cases. All varieties of figs there were reported to be susceptible (Abbes et al., 2021).

Hexanol and ammonium sulfate (use together gives three-fold increase over either alone) are attractive when used in McPhail traps (Katsoyannos and Guerin, 1984). Tutmuş (2013) reported attraction of these lures to be increased greatly by the addition of fig “milk” (presumably sap). Regarding control, Abbes et al. (2021) suggested bait sprays, mass trapping, netting the fruits, and burying dropped fruit to limit development of larvae as potential control techniques. The pesticide Delegate™250 WG is labeled for control of *S. adipata* on figs in South Africa (Corteva).

Worldwide Distribution: *Silba adipata* is reported to be native to the Mediterranean region and the Middle East. Its distribution includes: **Africa:** Egypt, South Africa (introduced), Tunisia; **Asia:** Israel, Syria, Turkey; **Europe:** Italy, Malta, Slovenia (introduced); **North America:** United States (California) (Abbes et al., 2021; D’Antonio and Fimiani, 1988; Giliomee, 2011; MacGowan and Freidberg, 2008; Mifsud et al., 2012; Rot et al., 2017; Tutmuş, 2013). It was found in Morelos, Mexico in March 2020, but the status of this eradication is not known (United States Department of Agriculture).

Official Control: *Silba adipata* is presumably considered reportable by the USDA. It does not appear to be a listed quarantine pest in other countries.

California Distribution: *Silba adipata* was found infesting figs in Goleta (Santa Barbara County), Los Angeles (Los Angeles County), Fullerton (Orange County), and Ventura (Ventura County) in June and July 2021 (California Department of Food and Agriculture).

California Interceptions: *Silba adipata* has not been intercepted in California.

The risk *Silba adipata* poses to California is evaluated below.

Consequences of Introduction:

- 1) **Climate/Host Interaction:** *Silba adipata* occurs widely in Mediterranean regions and the climate of much of California is likely suitable. The only known host, fig, is grown widely in the state. Therefore, it receives a **High (3)** in this category.
 - Low (1) Not likely to establish in California; or likely to establish in very limited areas.
 - Medium (2) may be able to establish in a larger but limited part of California.
 - **High (3) likely to establish a widespread distribution in California.**
- 2) **Known Pest Host Range:** *Silba adipata* is only known to feed on one host, fig. Therefore, it receives a **Low (1)** in this category.
 - **Low (1) has a very limited host range.**
 - Medium (2) has a moderate host range.
 - High (3) has a wide host range.
- 3) **Pest Reproductive and Dispersal Potential:** *Silba adipata* could be moved on infested fruit, and it can fly. It reportedly can have 4-6 generations per year. Therefore, it receives a **High (3)** in this category.

- Low (1) does not have high reproductive or dispersal potential.
- Medium (2) has either high reproductive or dispersal potential.
- **High (3) has both high reproduction and dispersal potential.**

4) **Economic Impact.** *Silba adipata* causes major fruit drop which would have a heavy impact on California fig yield. Production costs could increase due to control measures, and fruit bagging could be implemented. Therefore, it receives a **High (3)** in this category.

Economic Impact: A, B, D

- A. The pest could lower crop yield.**
- B. The pest could lower crop value (includes increasing crop production costs).**
- C. The pest could trigger the loss of markets (includes quarantines).
- D. The pest could negatively change normal cultural practices.**
- E. The pest can vector, or is vectored, by another pestiferous organism.
- F. The organism is injurious or poisonous to agriculturally important animals.
- G. The organism can interfere with the delivery or supply of water for agricultural uses.

Economic Impact Score: High

- Low (1) causes 0 or 1 of these impacts.
- Medium (2) causes 2 of these impacts.
- **High (3) causes 3 or more of these impacts.**

5) **Environmental Impact.** Infestations of *Silba adipata* could affect figs in both commercial production as well as residential settings, and treatments could be triggered in both. Therefore, *S. adipata* receives a **High (3)** in this category.

Environmental Impact: D, E

- A. The pest could have a significant environmental impact such as lowering biodiversity, disrupting natural communities, or changing ecosystem processes.
- B. The pest could directly affect threatened or endangered species.
- C. The pest could impact threatened or endangered species by disrupting critical habitats.
- D. The pest could trigger additional official or private treatment programs.**
- E. The pest significantly impacts cultural practices, home/urban gardening or ornamental plantings.**

Environmental Impact Score: High (3)

- Low (1) causes none of the above to occur.
- Medium (2) causes one of the above to occur.
- **High (3) causes two or more of the above to occur.**

Consequences of Introduction to California for *Silba adipata*: High (13)

Add up the total score and include it here.

- Low = 5-8 points
- Medium = 9-12 points
- High = 13-15 points**

6) Post Entry Distribution and Survey Information: *Silba adipata* is established in coastal southern California. It receives a **Low (-1)** in this category.

- Not established (0) Pest never detected in California, or known only from incursions.
- Low (-1) Pest has a localized distribution in California, or is established in one suitable climate/host area (region).**
- Medium (-2) Pest is widespread in California but not fully established in the endangered area, or pest established in two contiguous suitable climate/host areas.

–High (-3) Pest has fully established in the endangered area, or pest is reported in more than two contiguous or non-contiguous suitable climate/host areas.

Final Score:

7) The final score is the consequences of introduction score minus the post entry distribution and survey information score: Medium (12)

Uncertainty:

This fly may be more widely established in California. Although it is possible that the adults would be attracted to some of the fruit fly detection traps used in the state, they may have been overlooked because they are not target fruit flies. There may be natural enemies or conditions (natural or artificial) in California that could limit the impact of this pest here.

Conclusion and Rating Justification:

Silba adipata is a monophagous pest of figs, which are an important crop in California. This fly is known to cause large-scale fruit drop and it could have a major economic impact in the state. It is established in coastal southern California, but the state is currently investigating what course of action to take regarding this pest. For these reasons, an “A” rating is justified.

References:

Abbes, K., Hafsi, A., Harbi, A., Mars, M., and Chermiti, B. 2021. The black fig fly *Silba adipata* (Diptera: Lonchaeidae) as an emerging pest in Tunisia: preliminary data on geographic distribution, bioecology and damage. *Phytoparasitica*. <https://doi.org/10.1007/s12600-020-00871-y>

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D’Antonio, C. and Fimiani, P. 1988. Approccio ad un inventario entomofaunistico Dell’Isola di Vivara (NA). Noto preliminare. (1° contributo). *Annuario del Museo Zoologico della Università di Napoli* 26:155-170.

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Katsoyannos, B. I. and Guerin, P. M. 1984. Hexanol: a potent attractant for the black fly, *Silba adipata*. *Entomologia Experimentalis et Applicata* 35:71-74.

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United States Department of Agriculture. APHIS Amends Import Requirements for Fresh Fig (*Ficus carica*) Fruit from Mexico. Accessed June 29, 2021: https://www.aphis.usda.gov/import_export/plants/plant_imports/federal_order/downloads/2020/DA-2020-19.pdf

Responsible Party:

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***Comment Period: 7/13/2021 – 8/27/2021**

***NOTE:**

You must be registered and logged in to post a comment. If you have registered and have not received the registration confirmation, please contact us at [permits\[@\]cdfa.ca.gov](mailto:permits[@]cdfa.ca.gov).

Comment Format:

- ❖ Comments should refer to the appropriate California Pest Rating Proposal Form subsection(s) being commented on, as shown below.

Example Comment:

Consequences of Introduction: 1. Climate/Host Interaction: [Your comment that relates to “Climate/Host Interaction” here.]

- ❖ Posted comments will not be able to be viewed immediately.

- ❖ Comments may not be posted if they:

Contain inappropriate language which is not germane to the pest rating proposal;

Contains defamatory, false, inaccurate, abusive, obscene, pornographic, sexually oriented, threatening, racially offensive, discriminatory or illegal material;

Violates agency regulations prohibiting sexual harassment or other forms of discrimination;

Violates agency regulations prohibiting workplace violence, including threats.

- ❖ Comments may be edited prior to posting to ensure they are entirely germane.
- ❖ Posted comments shall be those which have been approved in content and posted to the website to be viewed, not just submitted.

Proposed Pest Rating: A