CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

California Pest Rating Profile

Longistigma liquidambarus (Takahashi): giant sweetgum aphid

Hemiptera: Aphididae

Pest Rating: B

Comment Period: 09/23/2022 – 11/07/2022

Initiating Event:

Longistigma liquidambarus (tentatively identified as that species by Wade Lee, Alameda County Vector Control) was found on a *Liquidambar* sp. tree in Alameda County in May 2022. Later, it was confirmed as this species by Dr. Peter Kerr (CDFA). A second infested tree was found on a *Liquidambar styraciflua* tree in San Francisco. This aphid has not yet been rated. A pest rating proposal is needed.

History & Status:

Background: *Longistigma liquidambarus* is a large (to 7.7 mm long), brown to black aphid that feeds on the bark of sweetgum (*Liquidambar* species). It is likely parthenogenetic; neither males nor eggs have been reported (Aphids on the world's plants; Kawada and Yamashita, 1992). Reported hosts include *Liquidambar formosana* and *L. styraciflua*. Tsumuki et al. (1993) studied the cold tolerance of this aphid and found that the first, second and third nymphal instars could survive (at least 37% survival) -10° C for 24 hours. This aphid congregates in large numbers on host trees. Damage from its feeding has not been reported in the literature. However, leaf discoloration was reported on an infested *L. styraciflua* tree by San Francisco County.

Worldwide Distribution: *Longistigma liquidambarus* is native to Taiwan. It has been introduced to Japan and the United States (California only).

Official Control: *Longistigma liquidambarus* is considered a quarantine pest by the United States Department of Agriculture.

California Distribution: *Longistigma liquidambarus* has been found in Alameda and San Francisco counties (CDFA) (California Department of Food and Agriculture).

California Interceptions: *Longistigma liquidambarus* has not been intercepted in California (California Department of Food and Agriculture).

The risk *Longistigma liquidambarus* poses to California is evaluated below.

Consequences of Introduction:

1) **Climate/Host Interaction:** This aphid is found in temperate areas in Japan. It can survive (as nymphs) temperatures as low as -10° C for 24 hours. One of its known hosts, *L. styraciflua*, is planted widely in California. This aphid could likely establish over much of California except for the mountains. 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:** *Longistigma liquidambarus* is known to feed on two species in one genus of plant. 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:** *Longistigma liquidambarus* could be moved with infested plant material and presumably can fly. It is also likely parthenogenetic. 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:** *Longistigma liquidambarus* is not reported to cause damage to its host plants. *Liquidambar styraciflua* (American sweetgum) is an important forest tree in the eastern United States. *Longistigma liquidambarus* is considered a quarantine pest by the USDA. The presence of this aphid in California and concerns over possible impacts to the environment or street trees may prompt eastern states to restrict trade from California. Therefore, it receives a **Low (1)** in this category.

Economic Impact: C

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: Low

– 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:** *Longistigma liquidambarus* is only known to feed on trees in the genus *Liquidambar*. There are no native California plants in the genus *Liquidambar* (or anything closely related to that genus) (B. Price, pers. comm.; Calflora). It is not known to cause impacts to its hosts. However, it does aggregate in large numbers. These large aphids are reported to fall on people and thus pose a nuisance; infestations may trigger treatments. Therefore, *L. liquidambarus* 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 *Longistigma liquidambarus*: Medium (11)

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:** *Longistigma liquidambarus* is known to be established in Alameda and San Francisco counties. 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 (10)

Uncertainty:

Longistigma liquidambarus may be capable of significantly impacting *L*. *styraciflua*. It was not clear if the reported leaf discoloration of the infested tree in San Francisco was the result of aphid feeding or some other cause. In addition, this aphid may have a broader host range than is reflected in the literature. Its known distribution is quite restricted and it could possibly feed on plants that it has not been exposed to yet.

Conclusion and Rating Justification:

Longistigma liquidambarus is an aphid that is established in the San Francisco Bay area. It is not known to impact its host plants, and it does not appear to threaten any native plants. However, it may be a nuisance on street trees and it could impact trade with eastern states. For these reasons, a "B" rating is justified.

References:

Aphids on the world's plants. Accessed May 12, 2022: http://www.aphidsonworldsplants.info/d_APHIDS_L.htm

Calflora. Accessed May 12, 2022: www.calflora.org

California Department of Food and Agriculture. Pest and damage record database. Accessed May 12, 2022: https://pdr.cdfa.ca.gov/PDR/pdrmainmenu.aspx

Kawada, K. and Yamashita, I. 1992. Discovery of *Longistigmus liquidambarus* (Takahashi) in Japan. Japanese Journal of Applied Entomology and Zoology 36:247-251.

Mito, T. and Uesugi, T. 2004. Invasive alien species in Japan: The status quo and the new regulation for prevention of their adverse effects. Global Development Research 8:171-191.

Tsumuki, H., Kawada, K., and Kanehisa, K. 1993. Low temperature tolerance of *Longistigma liquidambarus* (Takahashi). Applied Entomology and Zoology 28:185-188.

Responsible Party:

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***Comment Period: 09/23/2022 – 11/07/2022**

***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.

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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.

Pest Rating: B