

California Pest Rating Profile for
***Aphalara itadori* (Shinji): a psyllid**
Hemiptera: Psyllidae
Previous Pest Rating: none
Pest Rating: D as of 01/21/2021

Comment Period: 12/07/2020 - 01/21/2021

Initiating Event:

In November 2020, an application was received for a permit to bring *Aphalara itadori* into California for release to control Japanese knotweed (*Reynoutria (Fallopia) spp.*). In addition, in January 2020, the United States Department of Agriculture issued a *Decision and finding of no significant impact* approving the release of *A. itadori* in the contiguous United States. This psyllid has not previously been permitted for release in California and it has not previously been rated. Therefore, a pest rating proposal is needed.

History & Status:

Background: Adult *Aphalara itadori* are approximately 2 mm long. They are brown with mottled brown and clear wings. The nymphs reach approximately 1.5 mm in length and are pale. One generation is reported to take approximately one month at 22° C, so there are presumably multiple generations per year (Shaw et al., 2009).

Worldwide Distribution: *Aphalara itadori* is native to eastern Asia, including Japan and Korea (USDA, 2018). It has been introduced to and is reportedly established in Canada and the United Kingdom (Grevstad et al., 2020). It has also been released in the United States in Rhode Island, Massachusetts,

West Virginia, North Carolina, Oregon, and Washington (New York Invasive Species Research Institute, 2020).

Official Control: *Aphalara itadori* is not known to be regulated in any country.

California Distribution: *Aphalara itadori* is not known to be present in California (California Department of Food and Agriculture).

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

The risk *Aphalara itadori* poses to California is evaluated below.

Consequences of Introduction:

- 1) **Climate/Host Interaction:** *Aphalara itadori* is established in areas with a temperate climate. It feeds on knotweed species (*Reynoutria* spp.) that are present in the northern half of California (except for the Central Valley) (Calflora). *Aphalara itadori* could likely establish over a large portion of California. Therefore, it receives a **Medium (2)** 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:** *Aphalara itadori* is highly host-specific. In host-specificity experiments, feeding and development primarily occurred on *Reynoutria (Fallopia) sachalinensis*, *R. x bohemica*, and *R. japonica*. Development occurred at very low rates on species of *Fallopia*, *Muehlenbeckia axillaris*, and *Fagopyrum esculentum* (buckwheat), but the number of F1 adults observed on these plants was very low, approximately 5-10 percent of the number seen on *R.*

sachalinensis, *R. x bohémica*, and *R. japonica*, and two individuals were found (out of a total of 12 plants tested) on *Brunnichia ovata*. Egg-laying was strongly focused on the target *Reynoutria* species; 10-20 times as many eggs were laid on these plants than on non-targets, such as *Muehlenbeckia* and *Fagopyrum*. Some eggs were laid on buckwheat (*Fagopyrum esculentum*), which is a crop, but only 1/20th as many as were laid on target *Reynoutria* and the majority of these individuals were dead within a few weeks. In addition, it should be noted that buckwheat is grown in Japan in areas with knotweed and presumably *A. itadori*, but *A. itadori* is not reported to be a pest of this crop (USDA, 2018). In addition, this psyllid was never seen on *Polygonum*, *Persicaria*, or *Rumex* species in Japan by Shaw et al. (2009). 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:** *Aphalara itadori* is presumed to be capable of flight. Therefore, it receives a **Medium (2)** 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.** *Aphalara itadori* is not known to cause significant damage to plants besides knotweeds (*Reynoutria* species). As described above, there is good evidence it is not a pest of buckwheat. Therefore, it receives a **Low (1)** in this category.

Economic Impact:

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.** The evidence suggests that *A. itadori* is unlikely to significantly impact crop, ornamental, or native plants in California. Therefore, *A. itadori* receives a **Low (1)** in this category.

Environmental Impact:

- 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: Low (1)

– **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 *Aphalera itadori*: Low (7)

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:** *Aphalera itadori* is not known to be present in California. It receives a **Not established (0)** 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: Low (7)

Uncertainty:

It is possible that *A. itadori* may be capable of causing damage to a native, ornamental, or crop plant that was not used during host specificity testing, although this seems very unlikely. CABI (2015) suggested that *A. itadori* may play a role in the spread of the fungal pathogens *Puccinia polygoni-amphibii* var. *tovariae* and *Mycosphaerella polygoni-cuspidati*. *Puccinia polygoni-amphibii* var.

tovariae is reported to be present in the eastern United States on a variety of plants (United States Department of Agriculture-Agricultural Research Service). It is possible that *A. itadori* could spread this fungus to ornamental plants in the family Polygonaceae if such fungi were present in the state. Regarding *M. polygona-cuspidati*, field observations did not reveal this fungus on plants other than *R. japonica*, and host specificity testing on 50 species of plants was reported to “confirm the extremely narrow host range shown in the field;” specific data were not presented (Djeddour et al., 2008).

Conclusion and Rating Justification:

Aphalera itadori is a psyllid that is being used for biological control of knotweed in the United States, although it has not previously been approved for release in California. There is strong evidence that it is highly unlikely to significantly impact crop, ornamental, or native plants in California. For these reasons, a “D” rating is justified.

References:

- CABI. 2015. A pest risk analysis for *Aphalara itadori* for the European Union (EU) member states in north western Europe. CABI, Surrey, United Kingdom.
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- Djeddour, D. H., Shaw, R. H., Evans, H. C., Tanner, R. A., Kurose, D., Takahashi, N., and Seier, M. 2008. Could *Fallopia japonica* be the first target for classical weed biocontrol in Europe? pp. 463-469 in Julien, M. H., Sforza, R., Bon, M. C., Evans, H. C., Hatcher, P. E., Hinz, H. L., Rector, B. G., eds., XII International Symposium on Biological Control of Weeds. La Grande Motte, France.
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- New York Invasive Species Research Institute. 2020. Knotweed biocontrol released in NYS. Accessed November 20, 2020:
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United States Department of Agriculture. 2018. Field Release of the Knotweed *Psyllid Aphalara itadori* (Hemiptera: Psyllidae) for Classical Biological Control of Japanese, Giant, and Bohemian Knotweeds, *Fallopia japonica*, *F. sachalinensis*, and *F. x bohemica* (Polygonaceae), in the Contiguous United States. Environmental Assessment, April 2018.

United States Department of Agriculture-Agriculture Research Service. U.S. national fungus collection. Accessed November 23, 2020:
<https://nt.ars-grin.gov/fungalDATABASES/>

Responsible Party:

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***Comment Period: 12/07/2020 - 01/21/2021**

***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.

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: D