CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

# California Pest Rating Proposal

## *Leptopilina japonica* Novkovic & Kimura: A parasitoid wasp

## California origin only

## Hymenoptera: Figitidae

## Current Rating: Q

## Proposed Rating: D

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**Comment Period: 8/18/2026 – 10/2/2026**

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### Initiating Event:

There is interest in movement and release of *Leptopilina japonica* for control of spotted wing drosophila (*Drosophila suzukii*). This wasp has not been assessed through the pest rating proposal process. A pest rating proposal is necessary before a release permit can be issued.

### History & Status:

**Background:** *Leptopilina japonica* is a tiny (adults reach 1.9 mm in length) parasitoid wasp. The adult female lays eggs in larvae of flies in the family Drosophilidae that are in fruit. Populations of this wasp are reported to differ in host fly species preference (Rossi-Stacconi et al., 2025).

Although it is considered a potential biological control agent against spotted wing drosophila, parasitism by *L. japonica* is not limited to this fly. However, experimental data reported below suggest it may parasitize spotted wing drosophila and closely-related species of *Drosophila* at a higher rate and more successfully.

In laboratory tests by Daane et al. (2021), this wasp was able to parasitize all 25 species of drosophilid flies tested and it developed on 11 species (10 non-targets and *D. suzukii*). The species

attacked showed no apparent phylogenetic pattern, but *L*. *japonica* mainly attacked species of the melanogaster group (*D*. *melanogaster*, *D*. *simulans*, and *D*. *suzukii*). This indicates that the physiological host range is broad, at least within the family Drosophilidae, though it could perhaps be considered oligophagous based on frequency (Daane et al., 2021). In testing by Girod et al. (2018), *L*. *japonica* parasitized *D*. *suzukii*, *D*. *melanogaster* (at a rate comparable to *D*. *suzukii*), *D*. *subobscura* (at a much lower rate than *D*. *suzukii*), and (one individual) *D*. *immigrans*. *Drosophila hydei*, *D*. *busckii*, *D*. *immigrans*, and *Ceratitis capitata* were not parasitized.

In British Columbia, *L*. *japonica* was found in the field mostly parasitizing *D*. *suzukii*, but also *D*. *melanogaster* and flies in the *Drosophila obscura* species group (Abram et al., 2026).

*Leptopilina japonica* was reared from a variety of fruits collected in Italy, including fig and apple (Fellin et al., 2023). Some of the *L*. *japonica* reported from California were collected from unidentified berries. Together, this indicates that this wasp parasitizes fly larvae in a variety of fruit, though it does not exclude the possibility of fly larvae in other environments being parasitized.

**Worldwide Distribution:** *Leptopilina japonica* is reported from: **Europe:** France, Italy; **North America:** Canada (British Columbia; Ontario); United States (Delaware, Maryland, Michigan, New Jersey, New York, North Carolina, Oregon, Pennsylvania, Washington) (Abram et al., 2020; Beers et al., 2022; Gariepy et al., 2024; Puppato et al., 2020; Van Timmeren et al., 2025; Viciriuc et al., 2026). *Leptopilina japonica* was collected from berry farms near Salinas, Monterey County, California) (K. Daane, per. comm.).

**Official Control:** *Leptopilina japonica* is not known to be under official control.

**California Distribution:** Although it is not represented by any official samples, *Leptopilina japonica* was collected by two researchers in separate events near Salinas, Monterey County, California (K. Daane, pers. comm.).

**California Interceptions:** *Leptopilina japonica* has not been intercepted in California.

The risk *Leptopilina japonica* poses to California is evaluated below.

## Consequences of Introduction:

1) **Climate/Host Interaction:** *Leptopilina japonica* parasitizes and develops in *Drosophila suzukii*, a widespread pest in California, as well as many other *Drosophila* species. This wasp is reported to be present near Salinas, and it is present in Oregon and Washington. It could likely establish widely in California. 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:** *Leptopilina japonica* parasitizes flies in the family Drosophilidae. Therefore, it receives a **Medium (2)** 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:** *Leptopilina japonica* flies. 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:** *Leptopilina japonica* is not reported to have negative economic impacts. It is considered economically beneficial because it parasitizes spotted wing drosophila. 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:** There are native California *Drosophila* species. Some of these may be parasitized by *L. japonica*. Native California *Drosophila* are not known to feed in fresh fruit; this may limit impacts by *L. japonica* if host habitat is an important factor in host-seeking behavior in this wasp. Control of spotted wing drosophila could decrease pesticide usage in California.

**Environmental Impact: A**

**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: Medium**

– 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 *Leptopilina japonica*: Medium (10)

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:** *Leptopilina japonica* is reported to be present near Salinas, Monterey County, California. There are no official records of this species in California, however. 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: Medium (10)

## Uncertainty:

It is implausible that *Leptopilina japonica* is limited in California to the Salinas area. There is a great deal of uncertainty regarding the potential for this wasp to impact native California *Drosophila*.

## Conclusion and Rating Justification:

*Leptopilina japonica* parasitizes flies in the family Drosophilidae. It parasitizes a broad range of flies in this family, but based on relative frequency and success of parasitism, it could perhaps be considered oligophagous. Spotted wing drosophila is a main host species, and this wasp has the potential to provide some level of control of this pest fly in California. Based on potential for negative environmental impacts, reported presence in California, and impracticality of controlling its spread, a "C" rating would likely be proposed for this wasp. Recognizing the potential economic and environmental benefits to its presence and further redistribution in California, a "D" rating is justified for California-origin wasps. Limiting this rating to California-origin wasps will avoid potentially introducing other populations of *L. japonica* or cryptic species identified as *L. japonica* that could have different host ranges (and potentially greater impacts on native *Drosophila*) than the wasps already present in California.

## References:

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Daane, K. M., Wang, X., Hogg, B. N., and Biondi, A. 2021. Potential host ranges of three Asian larval parasitoids of *Drosophila suzukii*. Journal of Pest Science 94:1171-1182.

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Girod, P., Lierhmann, O., Urvois, T., Turlings, T. C. J., Kenis, M., and Haye, T. 2018. Host specificity of Asian parasitoids for potential classical biological control of *Drosophila suzukii*. Journal of Pest Science 91:1241-1250.

Puppato, S., Grassi, A., Pedrazzoli, F., De Cristofaro, A., and Ioriatti, C. 2020. First Report of *Leptopilina japonica* in Europe. Insects doi:10.3390/insects11090611

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the spread of the exotic parasitoid wasp *Leptopilina japonica* tracking the route of its invasive host fly *Drosophila suzukii* in France. Agricultural and Forest Entomology. 28:182–200.

## Responsible Party:

Kyle Beucke, 1220 N Street, Sacramento, CA 95814, 916-698-3034, permits[@]cdfa.ca.gov

***Comment Period: 8/18/2026 – 10/2/2026**

***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.

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## Proposed Pest Rating: D