

California Pest Rating Proposal

Hoplocallis picta (Ferrari): an aphid

Hemiptera: Aphididae

Current Rating: A

Proposed Rating: B

Comment Period: **04/12/2022 – 05/27/2022**

Initiating Event:

Hoplocallis picta was found infesting container-grown *Quercus ilex* at a nursery in Orange County in February 2021 during a regulatory inspection. This aphid was not known at that time to be established in California. The nursery find prompted a pest rating proposal, which led to an A-rating for this species. In February and March 2022, this aphid was found in the environment on oak trees in Mendocino and San Diego counties. It is apparent this pest is established in California and a new pest rating proposal is needed.

History & Status:

Background: The aphid *Hoplocallis picta* is reported to feed only on oak trees (*Quercus* species), including *Q. canariensis*, *Q. cerris*, *Q. faginea*, *Q. ilex*, *Q. pyrenaica*, *Q. rotundifolia*, *Q. suber*, and *Q. lusitanica* (Ferrer-Suay et al., 2016; Fierro et al., 2012; iNaturalist; Melia et al., 1993; Rakhshani et al., 2015; Wojciechowski et al., 2016). A report on iNaturalist suggests *Q. virginiana* may also be a host (iNaturalist). *Hoplocallis picta* alternates between a parthenogenetic and sexual form (Melia et al., 1993). It is reported to produce honeydew that covers the leaves, resulting in sooty mold and defoliation (Matt Daugherty, pers. comm.; Melia et al., 1993).

Worldwide Distribution: *Hoplocallis picta* is reported from: **Asia** (India); **Europe** (including the Azores, France, Greece, Italy, Malta, Slovakia, and Spain); **North America:** United States (Arizona, California, and Washington) (Aguiar et al., 2013; Barbagallo and Cocuzza, 2014; California Department of Food and Agriculture; Chakrabarti, 1988; Goffová and Wojciechowski, 2013; Pérez Hidalgo et al., 2009; Rakhshani et al., 2015; Schoeny and Gognalons, 2020; Symbiota Collections of Arthropods Network; Tsitsipis et al., 2007).

Official Control: *Hoplocallis picta* is not known to be a regulated pest anywhere in the world.

California Distribution: *Hoplocallis picta* was found on *Quercus ilex* and *Q. suber* trees in Willits and Ukiah (Mendocino County). At least in the case of the trees in Ukiah, these are well-established trees in the ground and there is no apparent connection between them. In March 2022, *H. picta* was found on an oak in Fallbrook (San Diego County) (California Department of Food and Agriculture). Reports on iNaturalist suggest that *H. picta* may also be present in Orange County (iNaturalist). It appears highly likely that this aphid is more widely distributed in California than these disjunct records suggest.

California Interceptions: *Hoplocallis picta* was found in February 2021 during a regulatory inspection of container-grown *Quercus ilex* at a nursery in Orange County (California Department of Food and Agriculture).

The risk *Hoplocallis picta* poses to California is evaluated below.

Consequences of Introduction:

- 1) **Climate/Host Interaction:** The known distribution of *H. picta* is evidence that the Mediterranean climate is suitable for this species. The known hosts of this aphid (including the California records) do not include oak species native to California. However, the known oak hosts are relatively

diverse. This aphid is already established in California in Mendocino and San Diego counties and apparently in Orange County as well. It appears likely that this aphid could establish over much of 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:** *Hoplocallis picta* is reported to feed on eight (possibly nine) species of oak. It is not known to feed on any plants outside of this genus. 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:** *Hoplocallis picta* is parthenogenetic at some times of the year. The winged adults can fly and dispersal could also be aided by wind. 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:** *Hoplocallis picta* is reported to produce honeydew, resulting in sooty mold and defoliation. This could increase production costs in nurseries growing oaks. Therefore, it receives a **Low (1)** in this category.

Economic Impact: B

- 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:** Oaks are an important part of California’s ecosystems. There are native oak species, including some rare ones, in the same section (*Quercus*) as some of the reported hosts, suggesting native California oaks may be vulnerable. *Hoplocallis picta* is reported to produce honeydew when feeding, leading to sooty mold and defoliation. It is possible that this could have an impact on rare native California oaks. Ornamental oaks could also be impacted and this could trigger treatments. Therefore, *H. picta* receives a **High (3)** in this category.

Environmental Impact: B, 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 *Hoplocallis picta*: 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: *Hoplocallis picta* is established in Mendocino County and apparently elsewhere (including Orange and San Diego counties) in California. It receives a **Medium (-2)** 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 (9)

Uncertainty:

It is not yet known if *H. picta* will be able to feed on native California oak species. It appears likely that it will be able to because some of the known hosts are in the same oak section (*Quercus*) as some oak species in California. If native California oaks are not suitable hosts, then the potential impacts have been overestimated in this proposal and will be limited to nurseries and ornamental and street plantings, which could still be significant. Although honeydew, sooty mold, and defoliation are reported, the potential impact of this aphid on tree health (apart from aesthetics) is not known. Reports of tree mortality were not found. This aphid may be under the control of natural enemies in Europe and could have a greater impact in California, where many or all of these enemies presumably do not occur. Lastly, it is possible that *H. picta* is significantly more widespread in California than the current records suggest.

Conclusion and Rating Justification:

Hoplocallis picta is an aphid that is restricted to oak trees. Oaks are an important part of California's natural and urban landscapes. This insect therefore poses a risk to agriculture and environment in California. However, *H. picta* is already established in Mendocino and San Diego counties. Based on collection and iNaturalist records, it appears likely it is even more widespread in California. Eradication does not appear to be practical. For these reasons, a "B" rating is justified.

References:

Aguiar, A. M. F., Ilharco, F. A., Khadem, M., and Moreira, M. 2013. New records of aphids (Hemiptera: Aphidoidea) from Madeira and Azores Archipelagos. *Entomologist's Monthly Magazine* 235-254.

Barbagallo, S. and Cocuzza, G. E. M. 2014. A survey of the aphid fauna in the Italian regions of Latium and Campania. *Redia* 97:19-47.

California Department of Food and Agriculture. Pest and damage record database. Accessed March 17, 2021:

<https://pdr.cdfa.ca.gov/PDR/pdrmainmenu.aspx>

Chakrabarti, S. 1988. Revision of the Drepanosiphinae (Homoptera: Aphididae) from the Indian subregion. *Oriental Insects* 22:1-86.

Ferrer-Suay, M., Selfa, J., Barbotin, F., and Pujade-Villar, J. 2016. Revision of the Barbotin's Charipinae collection with description of a new *Alloxysta* species (Hymenoptera: Cynipoidea: Figitidae). *Butlletí de la Institució Catalana d'Història Natural* 80:29-46.

Fierro, A. S., Hidalgo, N. P., and Nafriá, J. M. N. 2012. Los pulgones (Hemiptera, Sternorrhyncha: Aphididae). pp. 157-171 in Ruano, F., Tierno de Figueroa, M., and Tinaut, A. (eds.), *Los insectos de Sierra Nevada. 200 años de historia*. Asociación Española de Entomología, Málaga, Spain.

Goffová, K. and Wojciechowski, W. 2013. Checklist of Aphidomorpha (Hemiptera: Sternorrhyncha) known from Slovakia. *Folia faunistica Slovaca* 18:275-300.

iNaturalist. Accessed March 18, 2022:

https://www.inaturalist.org/observations?locale=en-US&subview=table&taxon_id=1025363

Melia, A., Cabezuelo, P., and De Córdoba, J. F. 1993. Incidencia de pугones (Homoptera, Aphididae) en encinares de Córdoba. *Boletín de sanidad vegetal. Plagas* 19:355-360.

Nafriá, J. M. N., Fuentes-Contreras, E., Colmenero, M. C., Piera, M. A., Ortego, J., and Durante, P. M. 2016. Catálogo de los áfidos (Hemiptera, Aphididae) de Chile, con planta hospederos y distribuciones regional y provincial. *Graellsia* 72:1-35.

Pérez Hidalgo, N., Umaran, Á., Mier Durante, M. P., and Nieto Nafriá, J. M. 2009. Aportaciones a la afidofauna Íbero-Balear (Hemiptera, Aphididae) a partir de las fotografías (y de sus metadatos) depositadas en el "banco taxonómico faunístico digital de los invertebrados Ibéricos" (B.T.F.D.I.I.). *Graellsia* 65:171-181.

Schoeny, A. and Gognalons, P. 2020. Data on winged insect dynamics in melon crops in southeastern France. *Data in brief* 29:1-10.

Rakhshani, E., Starý, P., Tomanović, Ž., and Mifsud, D. 2015. Aphidiinae (Hymenoptera, Braconidae) aphid parasitoids of Malta: review and key to species. *Bulletin of the Entomological Society of Malta* 7:121-137.

Symbiota Collections of Arthropods Network. Accessed March 18, 2022:

<https://scan-bugs.org/portal/index.php>

Tsitsipis, J. A., Katis, N. I., Margaritopoulos, J. T., Lykouressis, D. P., Avgelis, A. D., Gargalianou, I., Zarpas, K. D., Perdikis, D. C., and Papapanayotou, A. 2007. A contribution to the aphid fauna of Greece. *Bulletin of Insectology* 60:31-38.

Wojciechowski, W., Depa, L., Halgoš, J., Matečný, I., Lukáš, J., and Kanturski, M. 2016. Aphids of Slovakia. Comenius University, Bratislava, Slovakia.

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***Comment Period: 04/12/2022 – 05/27/2022**

***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](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: B