CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

California Pest Rating Profile for

***Xyleborus pfeilii* (Ratzeburg): an ambrosia beetle**

Curculionidae: Scolytinae

Previous Pest Rating: A

Pest Rating: C as of 11/14/2021

Comment Period: 09/30/2021 – 11/14/2021

Initiating Event:

Xyleborus pfeilii has been trapped several times in three counties in California. At the time of this proposal, it was rated A. It appears this beetle is established in California. Therefore, a pest rating proposal is needed.

History & Status:

Background: *Xyleborus pfeilii* is a moderate-sized ambrosia beetle. Females are 3-3.6 mm in length; males are smaller, but rare (Vandenberg et al., 2010). Reported host trees include alder, beech, elm, maple, oak, pawpaw *(Asimina triloba*), poplar, and some conifers (Vandenberg et al., 2010; Wood and Bright, 1992). A broad range of hosts is characteristic of ambrosia beetles, in contrast to phloeophagous (phloem-feeding) scolytines. As in other ambrosia beetles, the larvae feed on fungus in galleries excavated by adult beetles. Females mate with males prior to dispersing (Kirkendall and Faccoli, 2010). Little information is available on the biology of this species, but there is nothing in the literature suggesting that it has a significant economic or environmental impact, even though it is widespread in Europe, where it was apparently introduced almost 200 years ago (Kirkendall and Faccoli, 2010). It appears likely that this species breeds primarily in dead trees.

Worldwide Distribution: *Xyleborus pfeilii* has a wide distribution and is reported from Africa, Asia, Europe, North America, and New Zealand (Wood and Bright, 1992). Historically, this species was considered to be native to Europe, Asia, and northern Africa. Recent work suggests that it is native to Asia but was introduced to Europe at an early date (before 1837) (Kirkendall and Faccoli, 2010). The species has also been introduced to Canada and the United States, where it is now known to occur in Georgia, Maryland, New Jersey, and Oregon (Humble, 2001; Mudge et al., 2001; Vandenberg et al., 2000)).

Official Control: *Xyleborus pfeilii* is apparently not under official control by any government.

California Distribution: *Xyleborus pfeilii* was trapped in Napa County in June 2020, Placer County in May and July 2003, and Sacramento County in 2005 (A. Tishechkin, pers. comm.; California Department of Food and Agriculture; C. Ewing, pers. comm.).

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

The risk *Xyleborus pfeilii* poses to California is evaluated below.

Consequences of Introduction:

1) **Climate/Host Interaction:** *Xyleborus pfeilii* occurs in areas with temperate and Mediterranean climates (Kirkendall and Faccoli, 2010). The beetle is probably capable of becoming established in much of California. This species has been reported to feed on many tree genera; members of these genera are distributed across 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:** The reported hosts of *Xyleborus pfeilii* include multiple genera of broadleaf as well as coniferous trees. A broad host range is typical of ambrosia beetles. Therefore, it receives a **High (3)** 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:** An adult female *X. pfeilii* can mate with her brothers prior to dispersal. In addition, the female can produce sons from unfertilized eggs and mate with them. Movement of infested firewood would achieve rapid, long-distance dispersal. In addition, *X. pfeilii* flies (specimens have been caught with funnel traps) (Humble,2001; Mudge et al., 2001). 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**. *Xyleborus pfeilii* does not appear to have any recognized economic impact, even though it was introduced to much of Europe and has been present there for almost 200 years. 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**. *Xyleborus pfeilii* is not reported to have had any environmental impacts. Therefore, *X. pfeilii* 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

– 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 *Xyleborus pfeilii*: 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:** *Xyleborus pfeilii* has been found in Napa, Placer, and Sacramento counties, representing the Coast Range and Central Valley. 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 possible that *X. pfeilii* is more widespread in California than currently known. There do not appear to be large-scale ambrosia beetle surveys in progress or in recent history in northern California. It is possible that this species could behave differently in California and attack healthy trees of species it has not been exposed to in the Old World. Therefore, the environmental and agricultural impacts could be underestimated in this proposal.

Conclusion and Rating Justification:

Xyleborus pfeilii is an ambrosia beetle that is not known to have any negative economic or environmental impacts. It is already established in California in three counties. For these reasons, a "C" rating is justified.

References:

California Department of Food and Agriculture. Pest and damage record database. Accessed August 31, 2021: https://pdr.cdfa.ca.gov/PDR/pdrmainmenu.aspx

Humble, L. M. 2001. Invasive bark and wood-boring beetles in British Columbia, Canada. pp. 69-77 *in* Alfaro, R. I., Day, K. R., Salom, S. M., Nair, K. S. S., Evans, H. F., Liebhold, A. M., Lieutier, F., Wagner, M., Futai, K., and Suzuki, K. (eds), Protection of World Forests: Advances in Research, Proceedings: XXI IUFRO WorldCongress. August 7-12, 2001, Kuala Lumpur, Malaysia. IUFRO Secretariat, Vienna.

Kirkendall, L. R. and Faccoli, M. 2010. Bark beetles and pinhole borers (Curculionidae, Scolytinae, Platypodinae) alien to Europe. Zoo Keys 56:227-251.

Mudge, A. D., LaBonte, J. R., Johnson, K. J. R., and LaGasa, E. H. 2001. Exotic woodboring Coleoptera (Micromalthidae, Scolytidae) and Hymenoptera (Xiphyriidae) new to Oregon and Washington. Proceedings of the Entomological Society of Washington 103:1011-1019.

Vandenberg, N. J., Rabaglia, R. J., and Bright, D. E. 2000. New records of two *Xyleborus* (Coleoptera: Scolytidae) in North America. Proceedings of the Entomological Society of Washington 102:62-68.

Wood, S. L. and Bright, D. E. 1992. A catalog of Scolytidae and Platypodidae (Coleoptera), Part 2: Taxonomic index. Great Basin Naturalist Memoirs 13:1-1553.

Responsible Party:

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*Comment Period: 09/30/2021 – 11/14/2021

*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.

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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: C