

California Pest Rating Proposal for
***Lachnellula willkommii* (R. Hartig) Dennis 1962**
≡ *Peziza willkommii* Hartig 1874

European larch canker

Current Pest Rating: None

Proposed Pest Rating: A

Comment Period: 03/18/2022 through 05/02/2022

Initiating Event:

This pathogen has not been through the pest rating system. The risk to California from *Lachnellula willkommii* is described herein and a permanent rating is proposed.

History & Status:

Background: *Lachnellula willkommii*, a filamentous ascomycete fungus, is the cause of European larch canker (ELC). It causes one of the most destructive diseases of larch in Europe and it is a regulated plant pathogen of quarantine significance and limited distribution in Canada and the United States. The disease appears to have spread from Asia across Europe beginning in the 19th century, devastating several larch species grown in plantations (Hahn and Ayers, 1943). It was first reported in North America in 1927 in Massachusetts on Japanese and European larch nursery stock imported from Scotland in the early 1900s (Spaulding and Siggers, 1927). Decades of sanitation efforts involving quarantine and the destruction of infected trees and branches have been attempted to try to eradicate the disease from the United States; however, it is still found in coastal areas in Maine, and in the Canadian Maritimes (CABI-ISC, 2022)

Hosts: *Larix* spp. (larch), *L. decidua* (common larch), *L. marchlinsii* (hybrid larch), *L. europaea* (European larch), *L. gmelinii* (Dahurian larch), *L. gmelinii* var. *japonica* (Kurile larch), *L. laricina* (tamarack or American larch), *L. kaempferi* (Japanese larch), *L. occidentalis* (western larch), *L. russica* (Russian larch), *L. sibirica* (Siberian larch), and *Pseudolarix amabilis* (Chinese golden larch) (Farr and Rossman, 2022).

Symptoms: This is a pathogen that attacks the cambium. The result is swellings on twigs and branches and sunken cankers on larger stems. Circular or elliptical depressions often form around dwarfed shoots and resin is exuded from these, and the bark cracks and loosens. The cankers appear shiny and slightly bluish. In addition, during certain periods of the year, fruiting bodies of the fungus appear on or near the cankers. They are white and hairy and resemble small cups with yellow orange centers. A ridge of wood develops around enlarging cankers on stems and trunks as the tree grows. Needles above the canker do not receive water, they shrivel up and die or turn yellow early (before normal end-of-season yellowing and needle fall). If the stem or trunk is girdled, branches, seedlings and young trees will be killed (Sinclair and Lyon, 2005).

Transmission: Airborne ascospores are produced one to several years after infection and are considered to be the primary inoculum that moves the disease between trees (Sinclair and Lyon, 2005). Microconidia are produced but not known to be important in the disease cycle (Sylvestre-Guinot and Delatour, 1983). The main risk of long-distance movement is with infected nursery material. It is not known to be seed borne (CABI-ISC, 2022)

Damage Potential: Young trees infected with this pathogen may be killed or become girdled and permanent cankers on the trunks of older trees cause stem distortion and breakage, with significant impact on natural or planted stands of native larch and on plantations of exotic larch species (Lohwag, 1963).

Worldwide Distribution: Asia: China, Japan. Europe: Belgium, Belarus, Czechia, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Sweden, Switzerland, Ukraine, United Kingdom. North America: Canada, United States (*Maine*) (CABI, 2022; EPPO, 2022: Farr and Rossman, 2022).

Official Control: *Lachnellula willkommii* is on the USDA PCIT's harmful organism list for Canada and Taiwan (USDA, 2022). It is a regulated pest for both Canada and the United States.

The European Larch Canker Quarantine is listed under 7 CFR Part 301.91 of the United States Department of Agriculture, Animal and Plant Health Inspection Service, as published in the Federal Register, and also under Title 12 MRSA, §8305 of the Laws of the State of Maine. This quarantines all parts of larch (*Larix* spp.) including logs, pulpwood, branches, twigs, etc., as regulated articles. It also includes any other product, article, or means of conveyance whatsoever, when it has been determined by an inspector that it presents a risk of spread of the disease. The quarantined area includes parts of Hancock, Knox, Lincoln, Waldo, and Washington counties in Maine.

California Distribution: None

California Interceptions: None

The risk *Lachnellula willkommii* would pose to California is evaluated below.

Consequences of Introduction:

- 1) Climate/Host Interaction:** The hosts are not native to California but are available in the nursery trades for ornamental use. Climatic conditions of humidity and temperature appear to limit natural spread from regions of establishment. The pathogen requires cool, moist forest conditions. In California this would be limited along the coast, where rainfall is high.

Evaluate if the pest would have suitable hosts and climate to establish in California.

Score: 2

- 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 host range is limited to *Larix* and *Pseudolarix*.

Evaluate the host range of the pest.

Score: 1

- **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 Potential:** The pathogen reproduces with ascospores that can be airborne and spread tree to tree in a forest setting (Ostaff, 1985).

Evaluate the natural and artificial dispersal potential of the pest.

Score: 2

- 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:** This pathogen is very damaging to *Larix* and *Pseudolarix*. These trees are not native to California but may be used in landscape situations as specimen trees. It is a federal quarantine pest and under regulation where it occurs.

Evaluate the economic impact of the pest to California using the criteria below.

Economic Impact: A, B, 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.
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- 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: 3

- 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:** Detection of *Lachnellula willkommii* would likely trigger a USDA Emergency Action Notification and require destruction of infected plants. It could significantly impact ornamental plantings.

Evaluate the environmental impact of the pest to California using the criteria below

Environmental Impact: 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: 2

- 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 *Lachnellula willkommii*: Medium

Add up the total score and include it here. **10**

- Low = 5-8 points
- Medium = 9-12 points**
- High = 13-15 points

- 6) **Post Entry Distribution and Survey Information:** Evaluate the known distribution in California. Only official records identified by a taxonomic expert and supported by voucher specimens deposited in natural history collections should be considered. Pest incursions that have been eradicated, are under eradication, or have been delimited with no further detections should not be included.

Evaluation is 'Not established'.

Score: 0

-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.

7) The final score is the consequences of introduction score minus the post entry distribution and survey information score: (Score) 10

Final Score: *Score of Consequences of Introduction – Score of Post Entry Distribution and Survey Information = 10*

Uncertainty:

None

Conclusion and Rating Justification:

As this is a Federal Quarantine Pest, even without a known risk to California native species or forestry, the proposed rating for *Lachnellula willkommii* is A.

References:

CABI Crop Production Compendium 2022. *Lachnellula willkommii* (European larch canker)

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Hahn, G.G. and Ayers, T.T., 1943. Role of *Dasyscypha willkommii* and related fungi in the production of canker and die-back of larches. *Journal of Forestry*, 41(7), pp.483-495.

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Sinclair, W. A., Lyon, H. 2005. *Diseases of Trees and Shrubs*. Second edition. New York, USA: Cornell University Press, 574 pp.

Spaulding, P., and Siggers, P. V. 1927. The European larch canker in America. *Science* 66:480-481.

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USDA Phytosanitary Certificate Issuance and Tracking System, Phytosanitary Export Database (PEXD) Harmful Organisms Database Report. *Lachnellula willkommii*. Accessed 2/22/2022

Responsible Party:

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***Comment Period: 03/18/2022 through 05/02/2022**

*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: A
