EUROPEAN AND MEDITERRANEAN PLANT PROTECTION ORGANIZATION
ORGANISATION EUROPEENNE ET MEDITERRANEENNE
POUR LA PROTECTION DES PLANTES

20-25986 (10-16044 minor editorial modifications were made)

This PRA document was modified in 2021 to clarify the phytosanitary measures recommended

Report of a Pest Risk Analysis for *Saperda candida*

This summary presents the main features of a pest risk analysis which has been conducted on the pest, according to EPPO Decision support scheme for quarantine pests.

Pest: ***Saperda candida***
PRA area: EPPO region
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Date: 2009-11-02/05
The risk management part was reviewed by the Panel on phytosanitary measures on 2010-02-18

STAGE 1: INITIATION

Reason for doing PRA: In summer 2008, the presence of *Saperda candida* was detected for the first time in Europe (Nolte & Krieger, 2008). This wood boring insect was observed on the island of Fehmarn (Germany) on urban trees and eradication measures were taken against it. *S. candida* is considered as a pest of apple trees and other tree species in North America. Considering the risk it may present to fruit trees and ornamental trees in Europe, the EPPO Working Party on Phytosanitary Regulations recommended that a PRA should be performed.

Taxonomic position of pest: Order: Coleoptera, Family: Cerambycidae

STAGE 2: PEST RISK ASSESSMENT

Probability of introduction
Entry

Geographical distribution:

EPPO region: Germany (isolated findings on urban trees, *Sorbus intermedia, Malus* and *Crataegus*, on the island of Fehmarn (Schleswig-Holstein) in the villages of Johannisberg and Mattiasfelde, under eradication (Nolte & Krieger, 2008).

North America:
- Canada: Manitoba, New Brunswick, Nova Scotia, Ontario, Quebec, Saskatchewan. (Linsley & Chemsak, 1995; Arnett, 2000; Bousquet, 1991;

Webster *et al.*, 2009)
- USA: reported to be present in the USA, East of the Rocky Mountains;

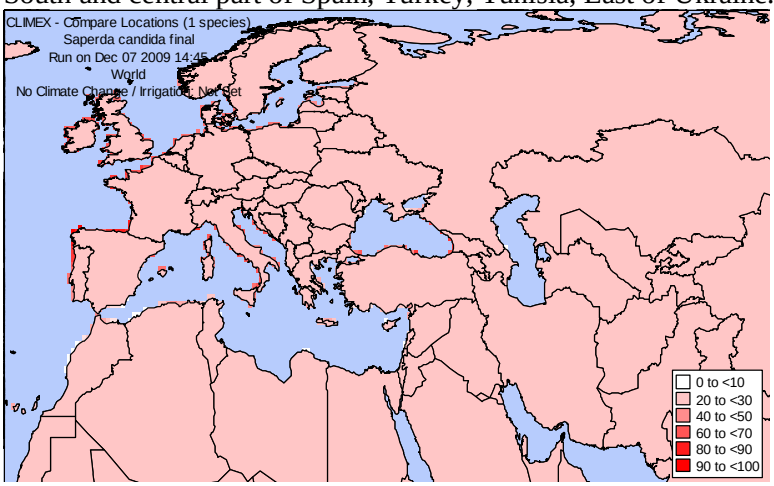
Major host plants or habitats: *Malus* (apple, also wild apple), *Prunus* (cherry, plum, peach), *Pyrus* (pear), *Cydonia* (quince), *Sorbus* (mountain ash, beam-tree, rowan berry), *Crataegus* (hawthorn), *Amelanchier* (serviceberry, shadbush), *Cotoneaster*, *Aronia* (chokeberry or black mountain ash). All known host plants are Rosaceae (Brooks, 1915; Hess, 1940; Johnson & Lyon, 1988; Solomon, 1995).

Which pathway(s) is the pest likely to be introduced on: Plants for planting with roots of host plants
Round wood of host plants with bark

Establishment

Plants at risk in the PRA area: Fruit, ornamental and wild trees and shrubs of Rosaceae (*Amelanchier, Amydalus, Aronia, Cotoneaster, Crataegus, Cydonia, Malus, Prunus, Pyracantha, Pyrus, Sorbus)*

Climatic similarity of present distribution with PRA area (or parts thereof): The climatic conditions in a large part of the EPPO region are comparable to climatic conditions in infested regions of the USA and Canada. This includes all countries west of the Ural mountains. A climatic study was performed using CLIMEX. From this study, the following EPPO countries appear not at risk because of the dry and/or hot stress caused to the pest: Kazakhstan, Kyrgyzstan, and Uzbekistan but this should be considered with care at meteorological data for these countries is scarce. In addition, the following (parts of) countries are not very favourable to the pest: Azerbaijan, South of Algeria, Cyprus, Jordan, Israel, South of Morocco, South and central part of Spain, Turkey, Tunisia, East of Ukraine.



Ecoclimatic index (EI) for *Saperda candida* in the EPPO region (EI>35 is very favourable for establishment)

Characteristics (other than climatic) of the PRA area that would favour establishment: Host plants are present both as crop and in the wild or amenity areas.
Few natural enemies are reported in the area of origin, and they do not occur in the PRA area.
Insecticides which are active against *Saperda candida* in North America are no longer registered in the PRA area.

Which part of the PRA area is the endangered area: The endangered area includes all EPPO countries except those not favourable because of climatic limitations.

POTENTIAL ECONOMIC CONSEQUENCES

How much economic impact does the pest have in its present distribution:

Effect in fruit orchards

Huge damage was recorded in orchards in North America before plant protection products were used (Brooks, 1915; Becker, 1918; Hess, 1940; Campbell *et al.*, 1989). Currently, *Saperda candida* is an incidental pest in orchards as it is managed by plant protection products applied against other more important pests (e.g. codling moth, plum curculio in apple

orchards) (Hill, 1983; Agnello *et al.* 2009). *S. candida* is recorded as a minor pest in apple organic production in USA (Earles *et al.*, 1999) but such production is mainly in Western part of USA where the pest is not present.

Describe damage to potential hosts in PRA area:

Effect in tree nurseries

The insect remains a major pest of several ornamental trees and shrubs, including hawthorn, mountain ash, quince, shadbush, cotoneaster and flowering crabapple Johnson & Lyon (1991).

Solomon, USDA Forest Service, Bugwood.org

Damage is caused by the larvae which attack both healthy and weakened trees of the Rosaceae familly. They bore galleries into the stems and trunks, preferably at the base of the trunk. Feeding damage may girdle the stems, cause dieback and eventually tree mortality (particularly on young trees). Attacked trees are more susceptible to wind breakage.

How much economic impact would the pest have in the PRA area:

With no control measures, situation could be similar to the one in North America in the early 20th century, when the pest was considered as the most serious insect pest of young apple trees (Hess, 1940). It could also be worse because in North America *S. candida* is controlled by natural enemies which are not recorded in the PRA area.

Apple orchards of the EPPO region are treated with insecticides, in particular against codling moth, which could incidentally control *S. candida*. However the timing of these applications is not currently suited to the time of year adults of *S. candida* would be active. In nurseries (both for ornamental and fruit host plants) impact can be very high because the pest can attack young plants and kill them. Galleries bored by larvae may be entry points for pathogens and may therefore increase disease incidence (Hess, 1940).

S. candida is unlikely to be controlled based solely on current usage in managed environments. Production costs will increase due to increased crop protection costs at least for fruit tree cultivation. In addition, host plants are present in the wild and in garden and amenity land where no measures are applied.

CONCLUSIONS OF PEST RISK ASSESSMENT

Summarize the major factors that influence the acceptability of the risk from this pest:

Fruit tree species such as *Malus, Pyrus* and *Prunus* are widely grown across the EPPO region. *Cotoneaster, Crataegus,* and *Sorbus* are widely planted in parks and gardens for ornamental purposes and also occur in the wild as well as wild *Malus, Pyrus* and *Prunus. S. candida* is an incidental pest in nurseries and young plantations. Because of the hidden behaviour of *S. candida,* the pest is likely to be moved undetected inside infested host plants. Control is difficult as the insect spends most of its life cycle

	inside the trees. The economic impact if introduced in the EPPO region is evaluated as medium by the EWG.
Estimate the probability of entry:	*S. candida* is present as low prevalence in North-eastern America. There are moderate chances that the pest is associated with plants for planting but infestation would be at very low level. Trade of plants for planting is minor but if infested plants are traded, they could move undetected and would be planted in suitable environment. Import of host wood is minor, but it is likely that the pest could survive and remain undetected in trade. Probability of entry appears low but the pest did enter in the PRA area.
Estimate the probability of establishment:	Host plants and suitable habitats with suitable climate are widespread in the PRA area. There is no pest management on many host plants (in the wild, in private gardens, amenity and urban areas, along roads). Pest management in young orchards will not prevent establishment of *S. candida* as it is mainly focused against aphids and suitable chemicals are not widely used at appropriate time to kill the adults. The probability of establishment is considered high.
Estimate the potential economic impact:	Economic impact is likely to be high considering the host range and the fact that the pest can attack healthy trees.
Degree of uncertainty	The EWG felt quite confident in the assessment. Uncertainties are on the following elements: – Origin of the German outbreak. – Volume of trade of host plants for planting from North America. – Volume of trade of wood of host plants with bark from North America. – Number of adults needed to begin a population. – Possible increase of host range. – Possibility of survival or remaining undetected during existing management procedures. – Possibility of survival and establishment with existing pest management practices. – Environmental damage in PRA area. – Social damage in PRA area.
OVERALL CONCLUSIONS	The pest is an appropriate candidate for the management stage.

STAGE 3: PEST RISK MANAGEMENT

IDENTIFICATION OF THE PATHWAYS

Pathways studied in the pest risk management	• Plants for planting with roots of host plants • Round wood with bark (including firewood) of host plants
Other pathways identified but not studied	• Wood without bark, sawn wood: after removal of bark or sawing, larvae will be more exposed to desiccation, which they probably cannot survive. • Wood packaging: ISPM No. 15 *Regulation of wood packaging material in international trade* would apply and treatments required in this standard will kill the pest. • Wood chips: the process of wood chipping will destroy the larvae unless the chips are relatively big. • Movement of individuals, shipping of live beetles. This pathway is difficult to regulate as such but will be covered once the pest is regulated. • Natural spread: reports on spread capacity indicate that transcontinental spread is impossible. However, natural spread within

the EPPO region could be possible if the pest establish in the PRA area.

IDENTIFICATION OF POSSIBLE MEASURES
Possible measures for pathways

- **Pathway 1:** Plants for planting with roots of host plants

Measures related to consignments:
No measures identified (the pest is difficult to detect; no practical treatment is available to destroy all possible stages of the pest in plants).

Measures related to the crop or to places of production:
Production of plants for planting in pest-free areas or pest-free places of production with a buffer zone.
Growing the host plants in specified conditions (insect proof facilities). Another less reliable option is to grow plants under fine mesh nets; this should be only done in areas of low pest prevalence.

Other possible measures
None

- **Pathway 2:** Round wood with bark (including firewood) of host plants

Measures related to consignments:
- Treatment (heat treatment, fumigation, irradiation). Such treatments might be applied to quality logs but will be too expensive for a low-value product such as firewood
- Removal of bark combined to visual inspection
- Store the wood in the country of origin for 1 year before export
- For logs only: import under special licence/permit and specified restrictions (import when temperature is below 10°C, and process immediately. Waste should be controlled)

Measures related to the crop or to places of production:
Production of wood in pest-free areas.

Other possible measures
None

EVALUATION OF THE MEASURES IDENTIFIED IN RELATION TO THE RISKS PRESENTED BY THE PATHWAYS
Pest-free area or pest-free place of production are common phytosanitary measures for plants for planting, which are required for other pests of fruit trees. There will be no additional import inspection cost for the importing country as a PC is already required for this pathway.
Wood of host species is not currently submitted to a phytosanitary certificate. Therefore there will be additional costs for inspection in the importing countries. Exporting countries will face additional costs for treatment and inspection of consignments.

These measures are considered cost-effective compared to the measures needed for an eradication of an outbreak or to the measures if the pest enter the PRA area and establish in fruit growing areas.

Degree of uncertainty	Uncertainties in the management part are: Efficacy of acoustic detection system (measure not recommended) Efficiency of insecticide treatments to guarantee pest freedom of the crop (measure not recommended). Minimum distance required for a buffer zone for a Pest-free place of production For wood: - reliability of inspection of wood in routine (therefore this measure was recommended in combination) - efficacy of kiln drying alone to kill the larvae (measure not recommended but this option should be investigated further).

- consequences of removal of bark on quality of the wood

IDENTIFICATION OF POSSIBLE MEASURES

PC= Phytosanitary certificate, RC=Phytosanitary certificate of re-export

Pathway 1: Plants for planting with roots of host plants	PC and, if appropriate, RC • Production in pest-free areas or pest-free places of production with a buffer zone or • Growing the host plants in specified conditions: insect proof facilities, or under fine mesh nets in areas of low pest prevalence.

Pathway 2: Round wood with bark (including firewood) of host plants	PC and, if appropriate, RC • Production in pest-free areas or • Treatment or • Removal of bark combined to visual inspection or • Store the wood in the country of origin for 1 year before export • For logs only: import under special licence/permit and specified restrictions (import when temperature is below 10°C, and process immediately. Waste should be controlled)

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