Import of deciduous wood chips from eastern North America - pathway-initiated risk characterization of relevant plant pests

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Figure 1. Pellet production from imported deciduous wood chips, which are stored outdoors. Kristiansund Norway.

Abstract

In Europe, the volume of imported wood chips is expected to increase to satisfy demand for energy production. Several companies have initiated import of deciduous wood chips from North America. The Panel of Plant Health of the Norwegian Scientific Committee for Food Safety has conducted a risk characterization of potential insect pests and pathogenic fungi which may be harmful to Norwegian forests. The selection is made primarily for the pathway wood chips. Ten insect species and four pathogenic fungi were ranked. The ranking is based on the likelihood of arriving with the pathway wood chips, the presence of susceptible hosts in Norway, the climate similarity between Norway and the area of origin, and the severity of damage they may cause in Norwegian forests. The ranking indicates in which order the species should undergo full risk assessment. *Agrilus anxius* has already been risk assessed for Norway. The commodity wood chips across tree species should be assessed due to the methods of harvesting and the high diversity of tree species in the area of origin.

Figure 2. Bronze birch borer - *Agrilus anxius*.
Photo: Left, Kent Loeffer, Cornell University, Right: David G. Nielsen, The Ohio State University

Background

Europe will need to import biomass for bioenergy production to satisfy its energy needs. A Norwegian company started in 2010 import of deciduous wood chips from Canada for pellet production. The Norwegian Plant Health Regulations of 1. Dec. 2000 prohibits import of coniferous wood chips. The Norwegian Food Safety Authority sampled the outdoor storage, and the chips were analyzed at the Norwegian Forest and Landscape Institute. Living quarantine pests were not detected, but the chips contained traces possibly caused by *Agrilus* spp. and chips of coniferous wood (*Pinus* spp.). EPPO lists Agrilus anxius on its A1 list and *A. planipennis* on its A2 list. A Norwegian Pest Risk Assessment of *A. anxius* was published in 5.07.2012. www.vkm.no

The Plant Health Panel of the Norwegian Scientific Committee for Food Safety (VKM) initiated a Pathway initiated a Risk Characterization of Relevant Plant Pests in imported deciduous wood chips from eastern North America. A characterization of potential pests with prioritized lists of insect pests and fungal pathogens was published 29.05.2013. www.vkm.no

The pest risk characterizations were made according to the EPPO Standard PM 5/3(5) Decision-support scheme for quarantine pests by using the computer programme CAPRA (downloaded from: http://capra.eppo.org/index.php) (EPPO 2011).

Figure 3. Canker rot - *Phellinus everhartii on* black oak *Quercus velutina.* Photo: Robert Anderson, Bugwood.org

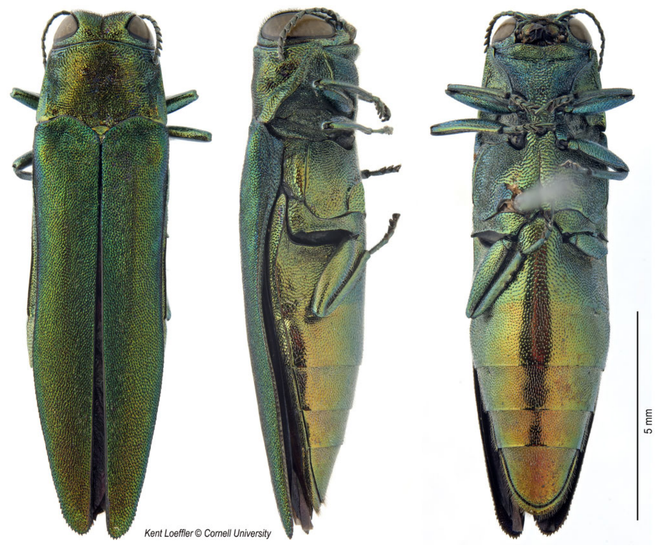

Figure 3. Emerald ash borer - *Agrilus planipennis*.
Photo: Kent Loeffer, Cornell University.

Selection of ten wood borers

We first listed all deciduous tree genera that are common to eastern North America and Norway. Then we selected wood borers attacking trees within these genera, excluding borers present in Norway. Only species introduced to eastern North America from other areas than Europe and species endemic to North America were included. Information on 29 wood borer species with a northern distribution was compiled from literature. Abilities to kill deciduous trees and to develop under environmental conditions similar to Norway were emphasized. We concluded on a list of ten prioritized wood borer species (Table 1.)

Selection of fungal pathogens

A similar procedure as for the wood borers was used for selection of a list of four fungal species. Fungi potentially surviving in wood chips were chosen among fungi found in both bark and wood in living trees. We concluded on a list of four prioritized fungal species (Table 2.).

Concluding remarks

This report is a first step towards a pest risk assessment of the commodity deciduous wood chips. The document is a risk characterization of 14 forest pests that are potentially harmful to Norwegian forests and environment. The geographic area has been limited to the eastern parts of North America. Presently there are no regulations on import of deciduous wood chips from North America to Europe.

The whole commodity of transatlantic wood chips should be considered. The high diversity of species in North America and the harvesting method for production of wood chips implies a high probability of importing wood of regulated tree species in a commodity that is declared as deciduous wood.

Table 1. Ranking of ten wood borers

Pest	Range	PRA area	Host plants	Host plants in PRA area
Agrilus anxius	N-America	Absent	*Betula* spp.	*Betula* spp. are 41% of the trees
Agrilus planipennis	Asia, N-America	Absent	*Fraxinus* spp.	*F. excelsior*, other *Fraxinus* spp.
A. bilineatus	N-America	Absent	*Quercus* spp.	*Q. rubra* and other *Quercus* spp.
Chrysobothris femorata	N-America	Absent	*Acer, Malus, Populus* spp.	*Acer, Malus, Populus, Prunus*
A. horni	N-America	Absent	*Populus* spp.	*P. tremula,* other *Populous* spp.
A. granulatus liragus	N-America	Absent	*Populus* spp.	P. balsamifera
A. granulatus granulatus	N-America	Absent	*Populus* spp.	P. nigra, other Populus spp.
Hylurgopinus rufipes	N-America	Absent	*Ulmus* spp., *Fraxinus* spp.	U. glabra and F. excelsior
Agrilus politus	N-America	Absent	*Acer* spp. and *Salix* spp.	Acer spp. and Salix spp.
Scolytus schevyrewi	Asia, N-America	Absent	*Ulmus , Prunus, Salix* spp.	Ulmus , Prunus, Salix spp.

Table 2. Ranking of four fungal species

Pest	Range	PRA area	Host plants	Host plants in PRA area
Ceratocystis fagacearum	USA	Absent	*Quercus* spp.	*Quercus* spp.
Davidiella populorum	N. America	Absent	*Populus* spp.	*P. tremula*
Phellinus spiculosus	N. America	Absent	*Quercus* spp., *Betula* spp.	*Q. rubra, Betula* spp.
Phellinus everahartii	N-America	Absent	*Quercus*, other hardwoods	*Quercus*, other hardwoods

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