



# **Invasive forest pests: Pathways, risk and management**

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Dying ash trees in Europe (right) and North America (below) - two different causal agents, both invasive and devastating

*Agrilus planipennis*  
(Emerald ash borer)

*Hymenoscyphus fraxineus*  
(Chalara ash dieback)



Photo: Connell, BFW



Photo: Kirisits, BOKU

# Pathways

Plants for planting

Seeds

Soils

Wood and wood products

Wood packaging material

Hitchhiking pests

Etc.

# Pathway wood packaging material

LEWIS  
TRADING



Number of consignments with non compliances detected in WPM from China, in the period 1. 4. 2013 till 30.06.2016 by inspectors of the Austrian Plant Protection Service

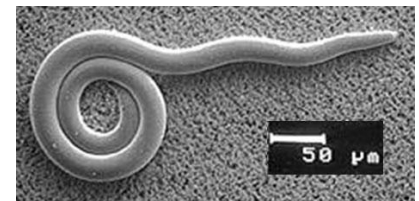
<b>Period</b>	<b>4-12 2013</b>	<b>1-12 2014</b>	<b>1-12 2015</b>	<b>1-6 2016</b>
Inspected consignments	345	356	382	222
Percentage of incoming consignments	30,8	26,5	41,4	44,9
inspected containers	-	1082	1022	667
Percentage of incoming containers	-	25,8	38,9	44,1
<b>Notification because of presence of harmful org.</b>	<b>29</b>	<b>18</b>	<b>39</b>	<b>42</b>
Percentage of inspected consignments	8,4	5,1	10,2	<b>18,9</b>
Notification because of missing or wrong marking	9	8	6	3

Slide from: H. Krehan, BTSF Training, 2016

## Our two examples

Asian longhorned beetle (ALB)

Pine wood nematode (PWN)



# Asian Loghorned Beetle (ALB)

*Anoplophora glabripennis*



Photo: Connell, BFW

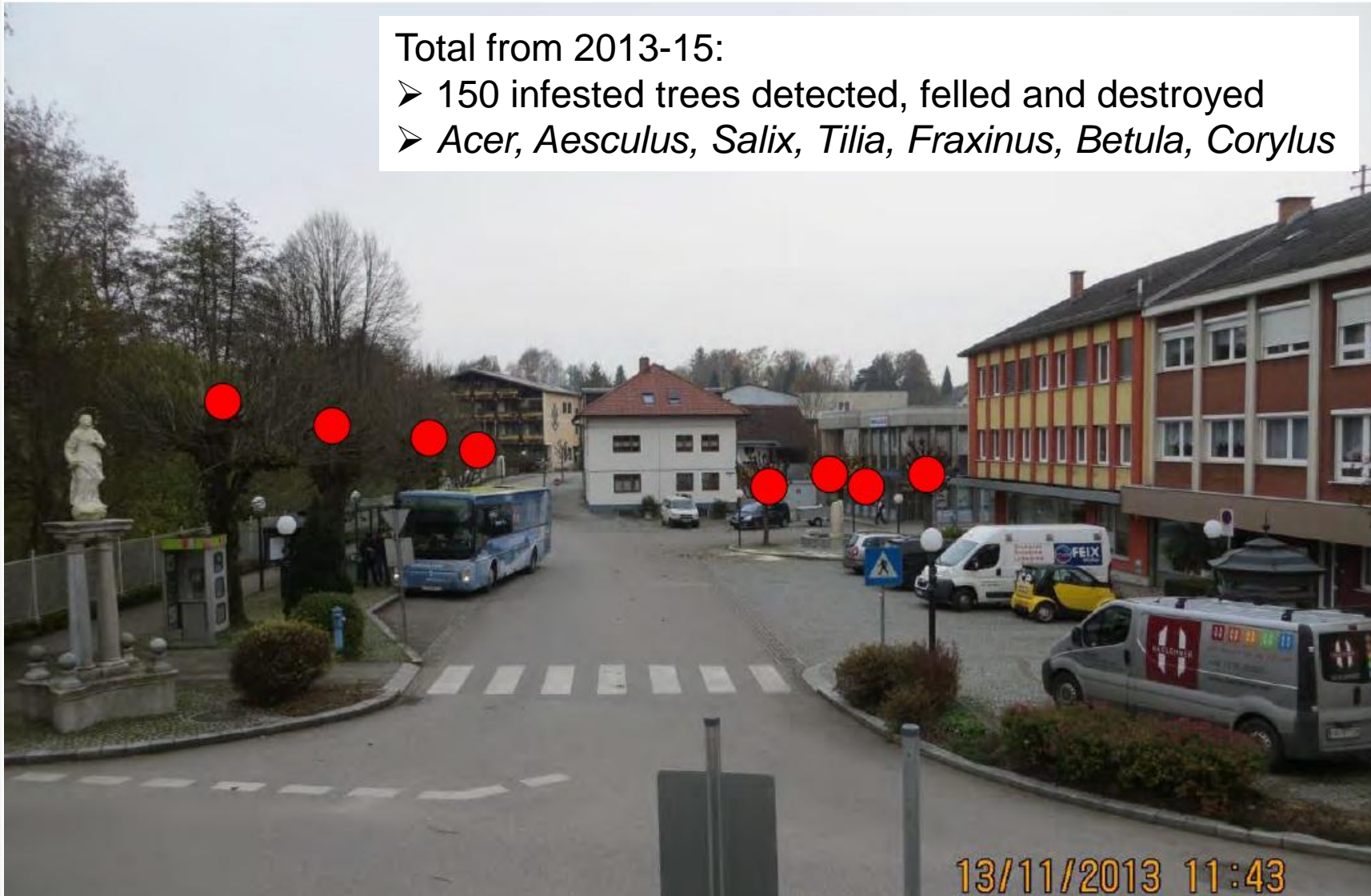




# New ALB Outbreak in Austria Gallspach (detected in Nov. 2013)

Total from 2013-15:

- 150 infested trees detected, felled and destroyed
- *Acer, Aesculus, Salix, Tilia, Fraxinus, Betula, Corylus*



13/11/2013 11:43

**COMMISSION IMPLEMENTING DECISION (EU) 2015/893****of 9 June 2015****as regards measures to prevent the introduction into and the spread within the Union of  
*Anoplophora glabripennis* (Motschulsky)***(notified under document C(2015) 3772)*

Import inspection of host plants and timber

Establishment of demarcated area

- infested zone (100 m radius around infested trees)
- buffer zone (2000 m)

Controls on internal movement (plant passport system)

Survey program in every member state

## Monitoring by tree climbers



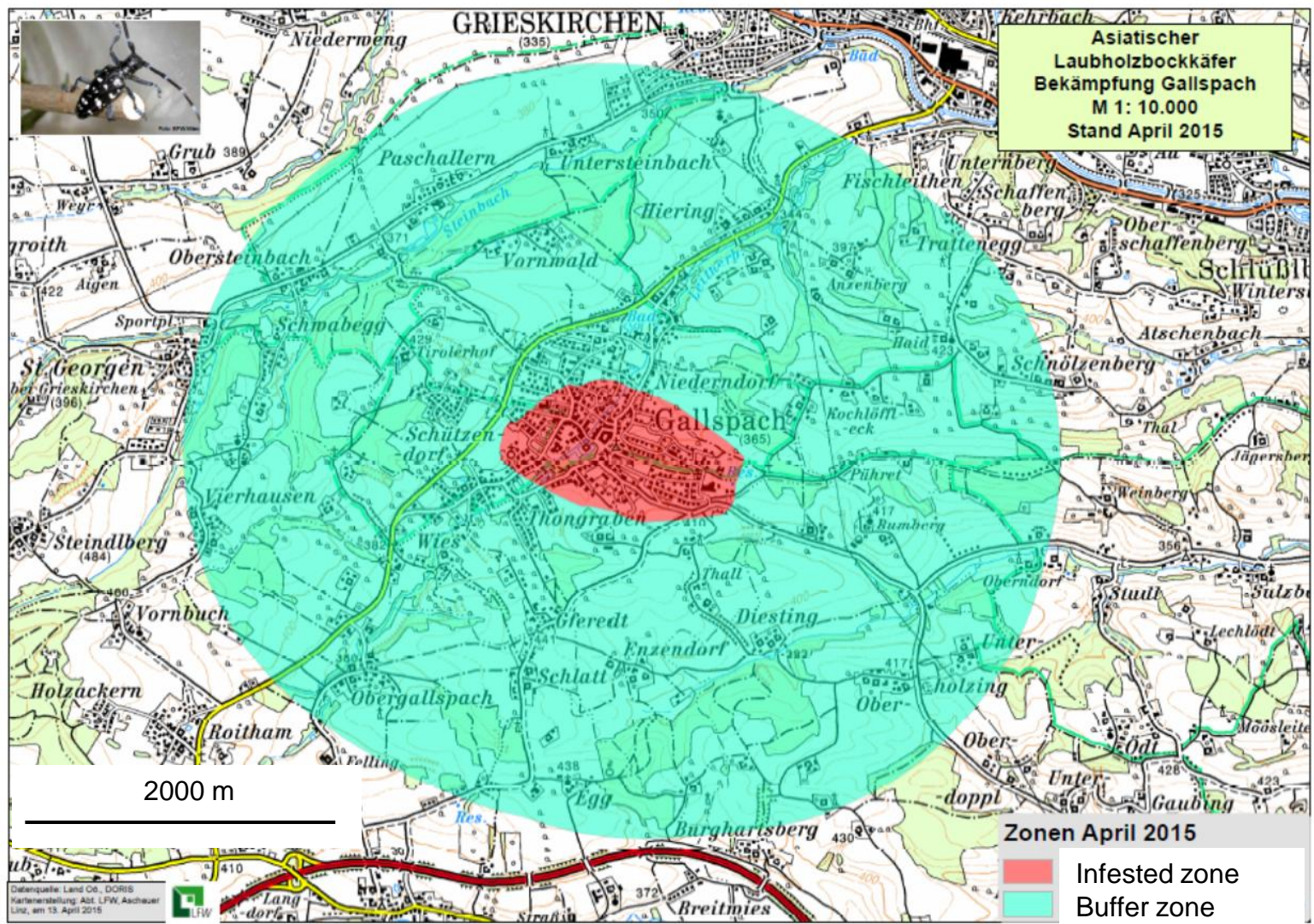
© Clemens Hofbauer, Pichl bei Wels

## Monitoring by detection dogs and pheromone traps





Asiatischer  
Laubholzbockkäfer  
Bekämpfung Gallspach  
M 1: 10.000  
Stand April 2015

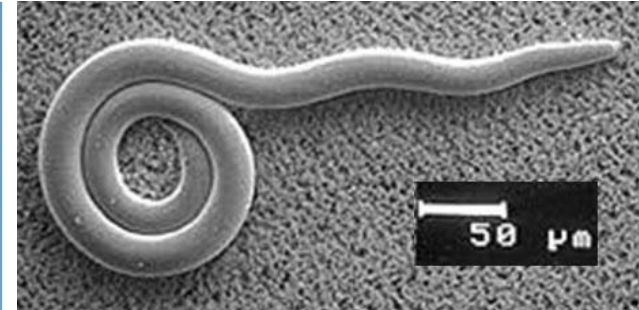


April 2015: Demarcated area  
Johann Reisenberger (State Gov. OÖ)



# Pine Wilt Disease

Pine wood nematode *Bursaphelenchus xylophilus*



Infested areas in EU:

Portugal (since 1999,  
widespread)

Spain (localized infestations –  
intensive eradication effort)

→ EU member states must  
prepare contingency plans



Infested zone Sancti-Spiritus (Spain) →  
Sanitation clear cut of 500 m radius

→ Rigorouse measures necessary to prevent spreading of PWN in Europe



Post pine wilt disease forest in Portugal  
→ Eucalyptus



# (Potential) Vectors in Europa

12-25 mm



*Monochamus galloprovincialis*

15-25 mm



*Monochamus sutor*

19-35 mm



*Monochamus sartor*

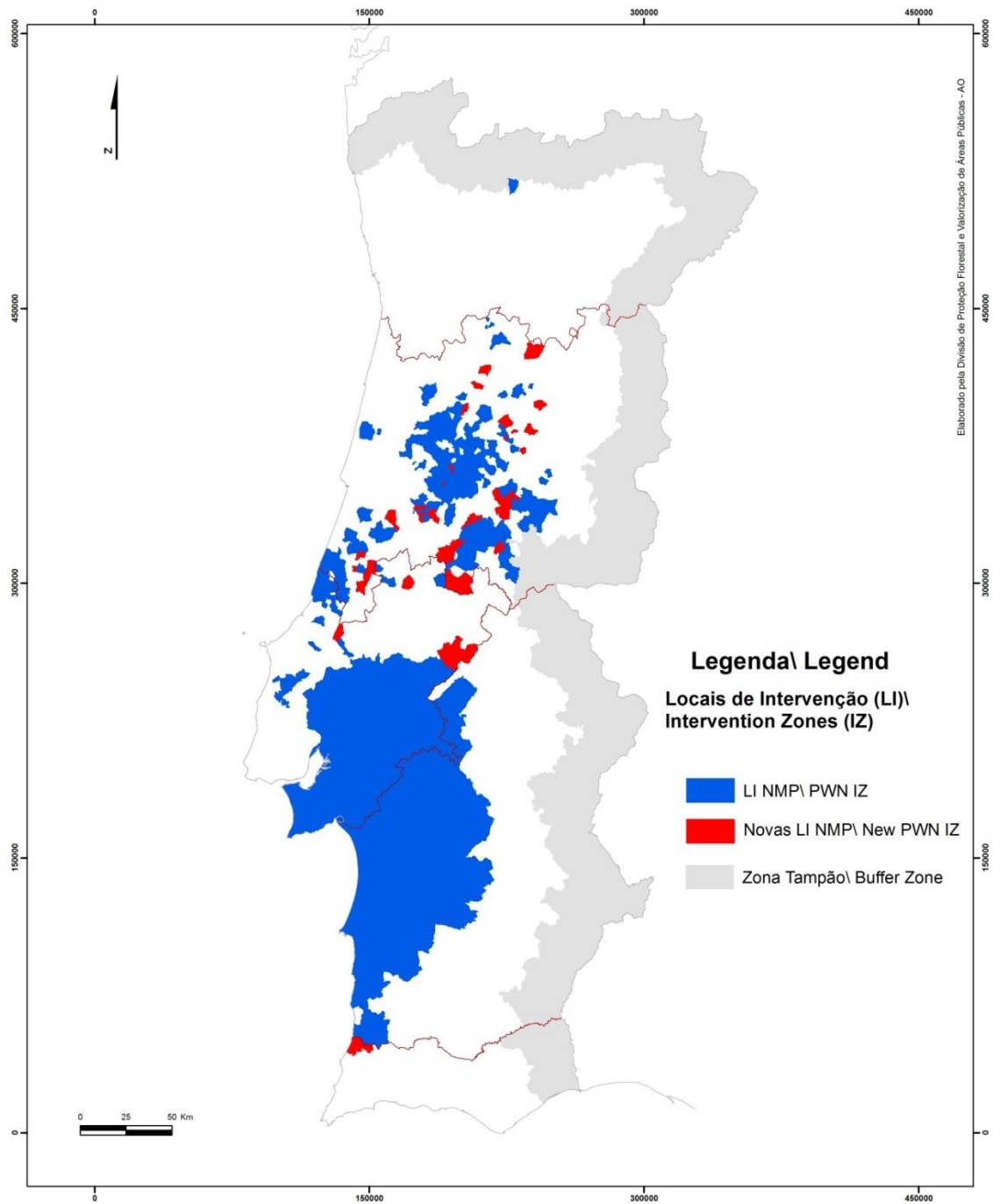
11-20 mm



*Monochamus saltuarius*



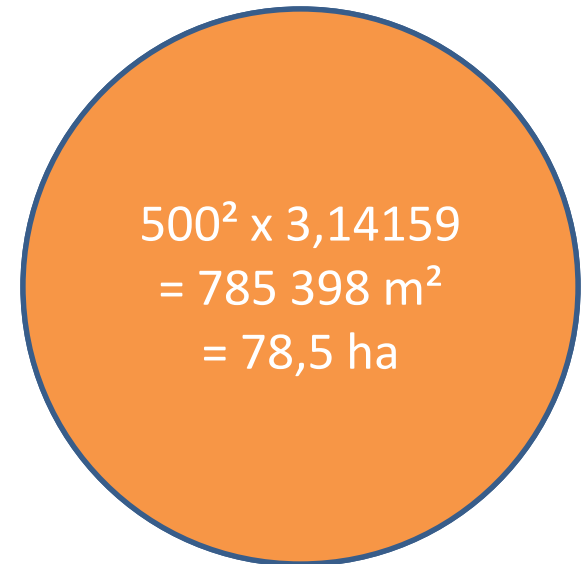
**Efficient traps and lures available for vector monitoring  
(and mass trapping?)**



# Portugal

## PWN infested areas

blue: before 2012  
 red: new 2012



Map: ICNF – Institute for  
 Nature Conservation  
 and Forests (2013)

## Risk maps for future climate

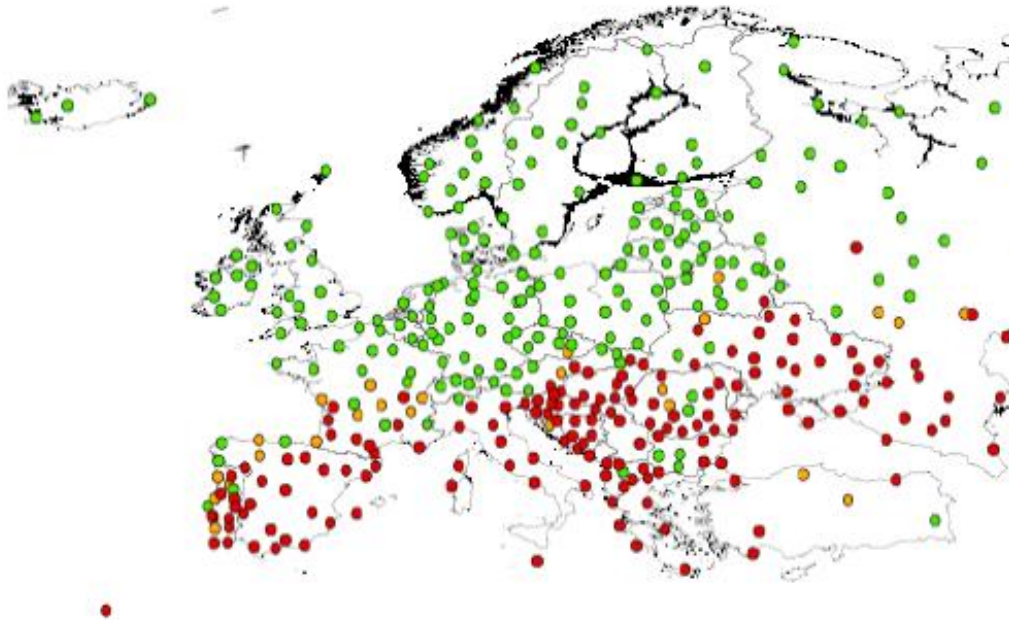


Figure 7.19 PWD risk map for Europe - average MST over 2009-2011

Evapotranspiration model  
(mid summer temperature, mid  
annual temperature, time of  
infection)

[www.rephrame.eu](http://www.rephrame.eu)

## PWN and climate change

Risk of wilt expression  
increases with  
increasing temperature

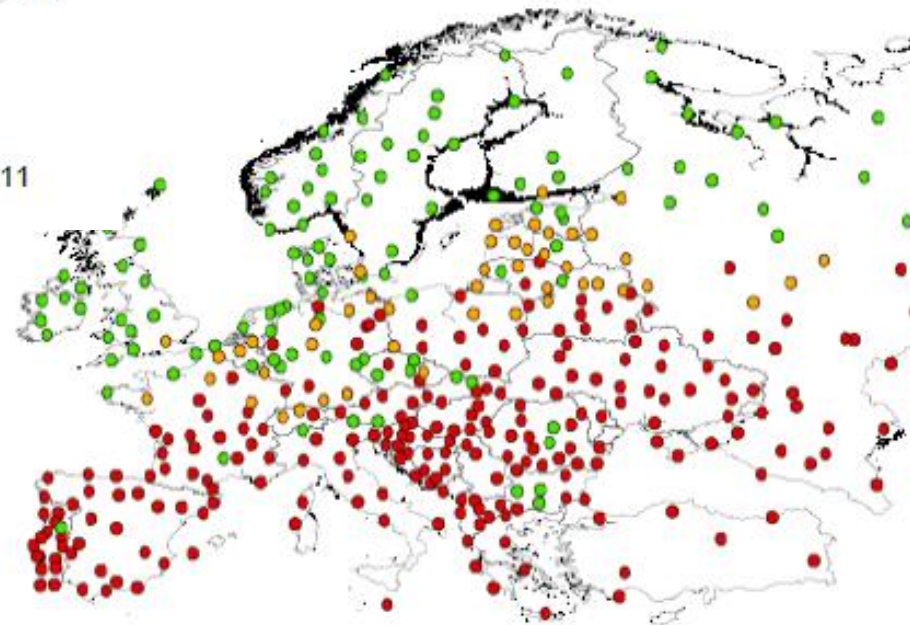


Figure 7.21 PWD risk map for Europe - average MST (over 2009-2011) +2°C

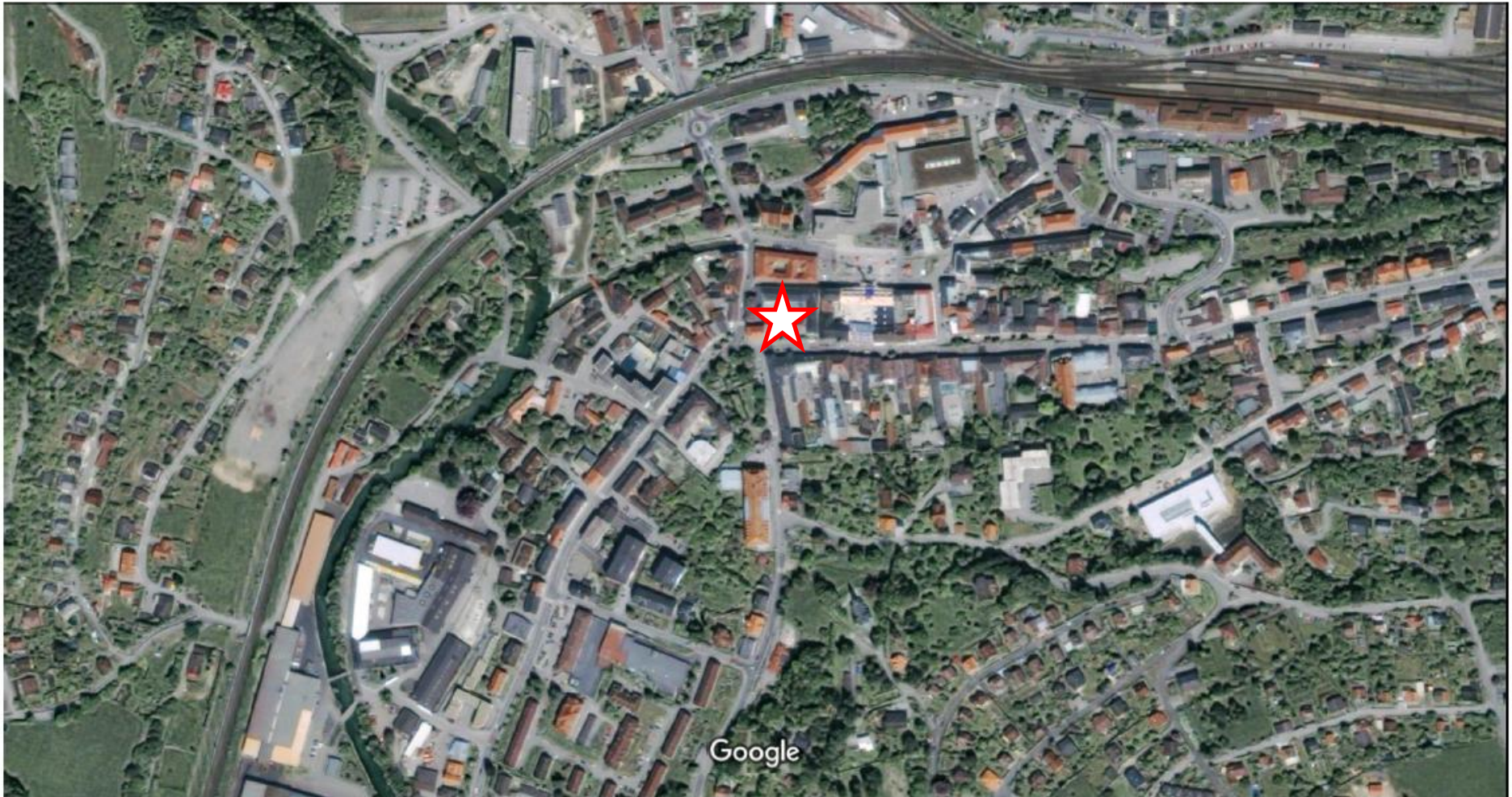
## Group exercise

### **Outbreaks of ALB and PWN detected!**

Exercise 1: Plan the first steps to demarcate the area and for eradication of the pest.

Exercise 2: Plan measures for eradication and for prevention of movement of the pest.

**ALB outbreak in small town** in Austria. In September, a beetle is found by a community gardener during pruning work on the shade trees in the town centre. The specimen was confirmed to be ALB.



**PWN outbreak in an Austrian pine forest near a mid size town.** In August, a group of *P. nigra* trees showing wilt symptoms is recognized by a forester. Wood samples are taken from one tree and the presence of PWN is confirmed.

