ALB Monitoring and Eradication in Austria

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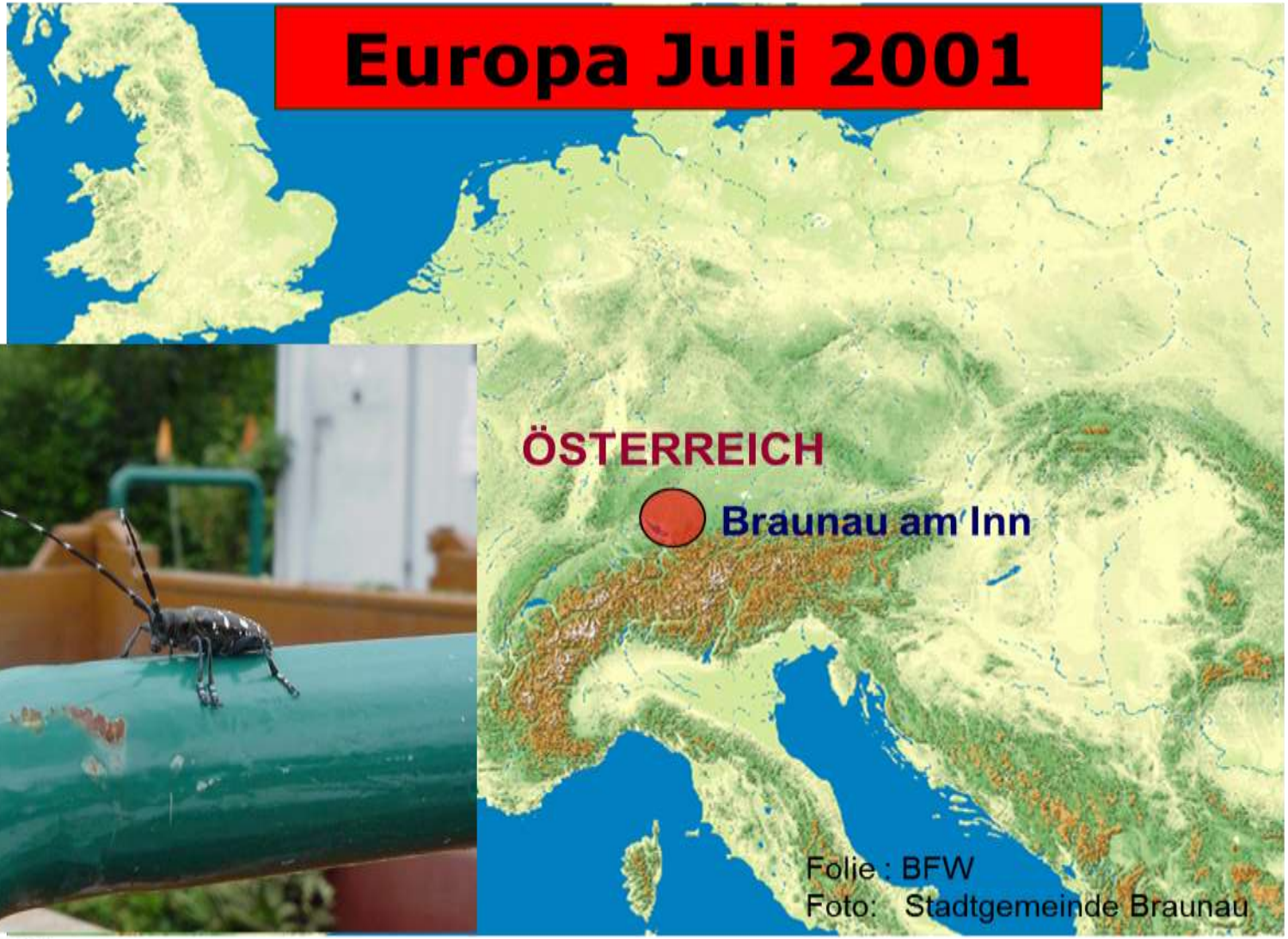
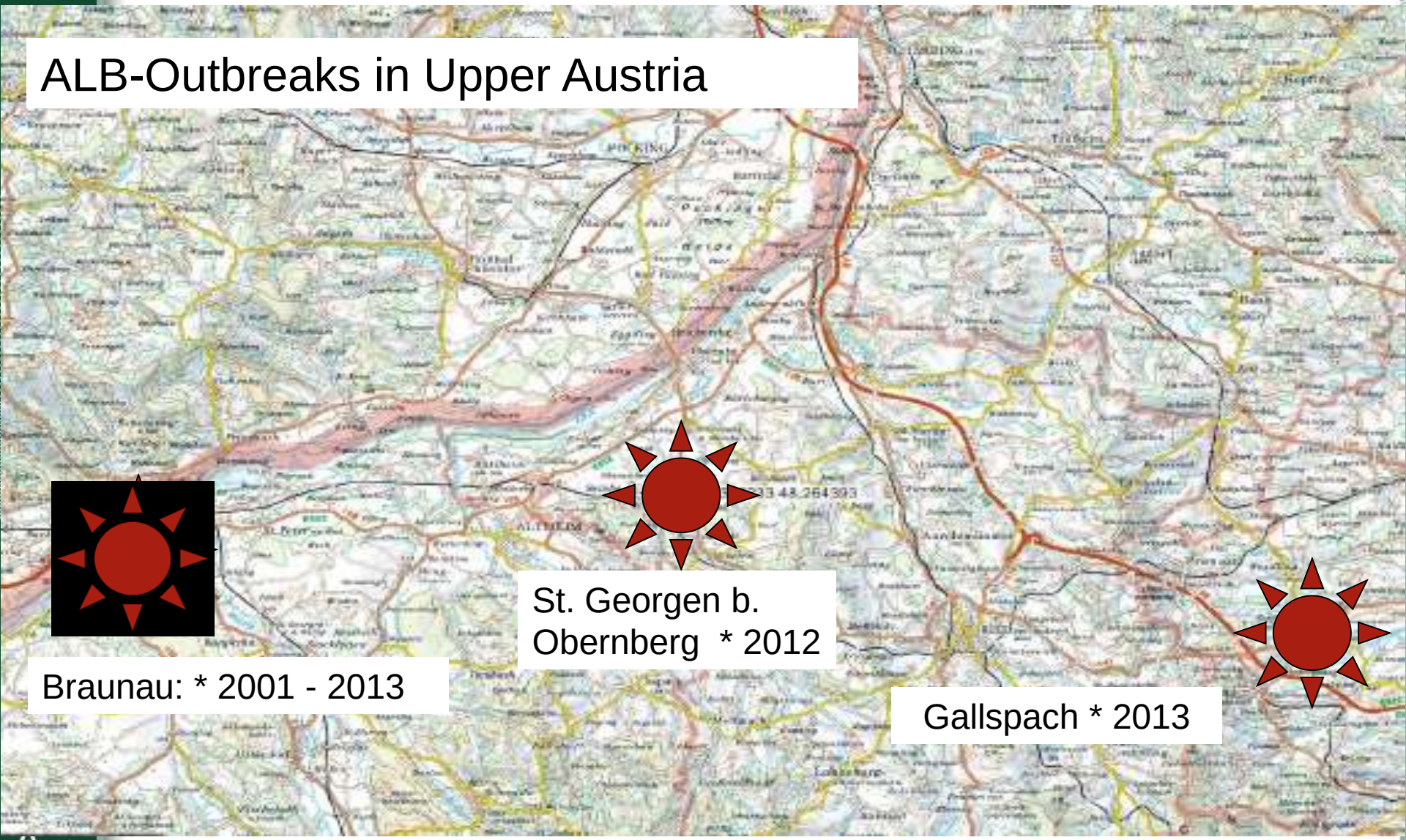
First official notification of *Anoplophora glabripennis* in EU



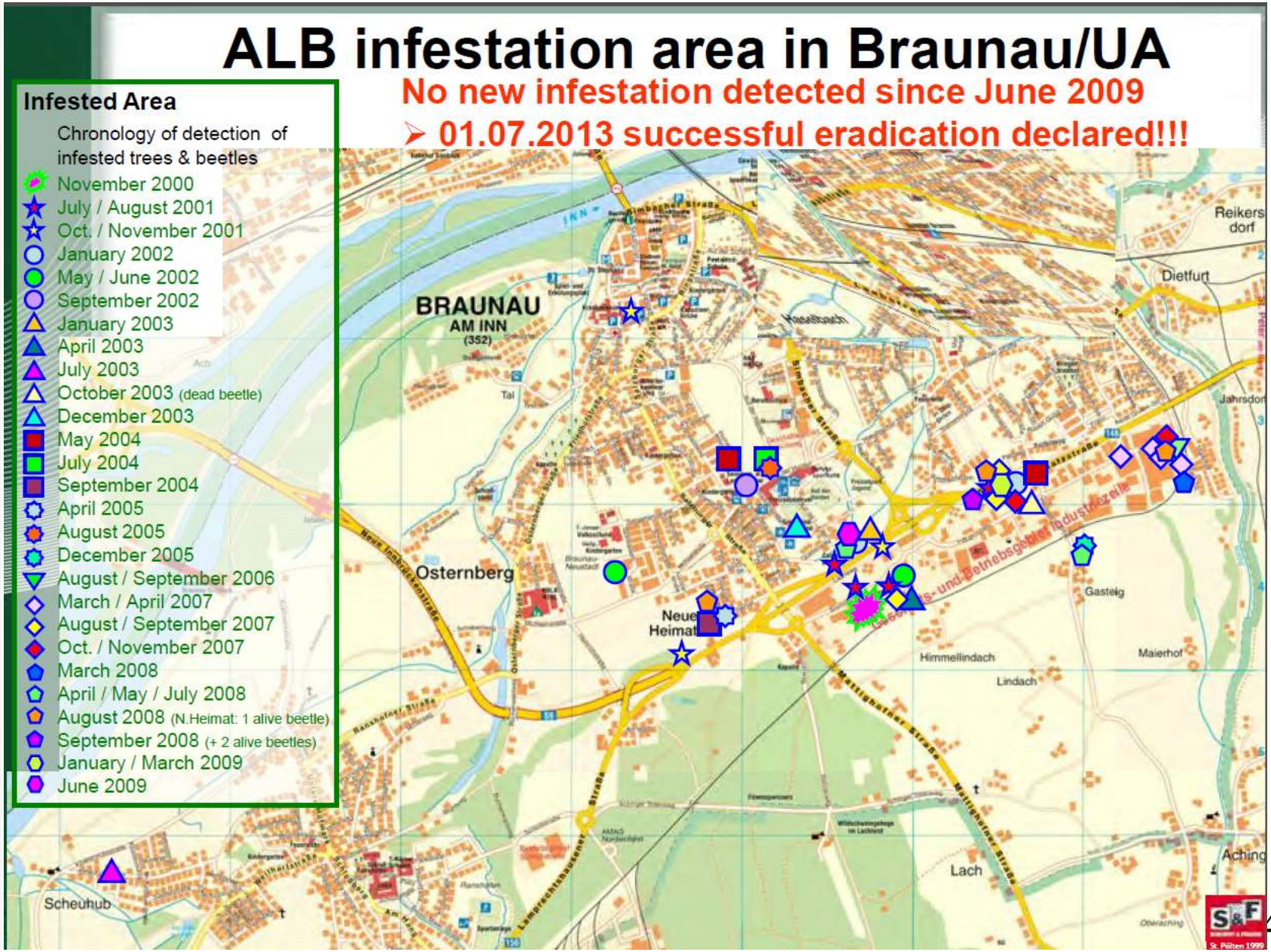
ALB-Outbreaks in Upper Austria



ALB infestation area in Braunau/UA

No new infestation detected since June 2009

➢ **01.07.2013 successful eradication declared!!!**



ALB infestation in Braunau Control period 2001 – 06/2008

- First ALB infestation in Europe
- No experiences about eradication measures in European countries available
- Inspectors had to learn biology and symptoms of ALB
- Monitoring was done by the staff of BFW mainly from the ground with binoculars or with ladders, only short time with lifting platforms
- Felling, chipping and burning of infested trees
- Preventive felling of dense growing forest(-like) stands near to infestation spots

Control period 2001 – 06/2008

Monitoring methods

Investigation with ladders

Control period 2001 – 06/2008

Monitoring methods

Investigation with lifting platforms

Disadvantages:

- Not everywhere around a tree placeable
- Damage of the crown by the basket

Preventive felling actions 2001-2007

Small city forest east of industry zone 2007

Clearing except single *Prunus*!

Preventive felling actions 2001-2007

Northern green stripe of the main road 2007

Eradication Project 07/2008 – 06/2013

- Activities and measures:
  - construction of a tree cadastre of all public and private deciduous trees and marking with number plates:
    - 13.500 number plates (including groups, hedges)
    - ~15.000 trees mapped
  - intensive grid monitoring in the whole area of the city by special trained inspectors
  - monitoring by special trained tree climbers
  - monitoring by special trained detection dogs

  optimal monitoring
  - monitoring during and out of the vegetation period
  - monitoring of trees in nurseries by detection dogs
  - complete destruction of all ALB infested trees like before (felling, chipping, burning)
  - preventive felling of forest-like stands in the vicinity of infestation spots

Mapping of tree cadastre: Braunau

mapped trees mapped hedges XXX Preventive cuttings

BFW.

Host trees of ALB in Braunau

Species	
Maple	*Acer* spp.
Silver maple	*Acer saccharinum*
Sugar maple	*Acer saccharum*
Norway maple	*Acer platanoides*
Sycamore maple	*Acer pseudoplatanus*
Field maple	*Acer campestre*
Plane	*Platanus* sp.
Copper beech	*Fagus sylvatica "atropunicea"*
Beech (Geschlitztbl. Buche)	*Fagus sylvatica "asplenifolia"*
Birch	*Betula* sp.
Horse chestnut	*Aesculus hippocastanum*
Poplar	*Populus* sp.
Willow	*Salix* sp.
Ash	*Fraxinus* sp.
Alder	*Alnus* sp.

Top 5 host genera for ALB: *Acer*, *Betula*, *Salix*, *Aesculus* / *Fagus*, *Fraxinus* / *Alnus* in decreasing order.

Eradication Project 07/2008 – 06/2013

Monitoring methods

Inspection from +/- the ground by trained inspectors

Eradication Project 07/2008 – 06/2013
Monitoring methods
Investigation by trained tree climbers

Checking of the stem during climbing up and coming down

Investigation also of the periphery of the crown

Eradication Project 07/2008 – 06/2013

Monitoring methods

Investigation by detection dogs

since spring 2009

Results of ALB-Monitoring in Braunau/Inn

Results of Monitoring in Braunau/Inn	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010 2011	2012 until 06/ 2013	Total
Infested trees with living stages of larvae or eggs (cut, chipped and burnt)	38	22	8	27	4	7	76	10	9	0	0	**201**
Infested trees with exit holes	?	0	3	4	0	4	8[1), 2)]	1	1	0	0	**21 + ?**
Adult beetles emerged outdoor in Braunau (number of detected exit holes)*	89 + ?	0	42	19	30	29	50	3	1	0	0	**263 + ?**
Number of escaped beetles in Braunau	?	?	17	15	30	28	39	1	0	0	0	**130 + ?**
Adult beetles collected in Braunau	89	0	25	4	0	1	11	3	0	0	0	**133**
Adult beetles emerged from infested logs from Braunau or out of artificial diet in quarantine lab	-	5	14	10	4	2	50	23	0	0	0	**108**

* year of detection of exit holes must not be identical with year of beetle emergence

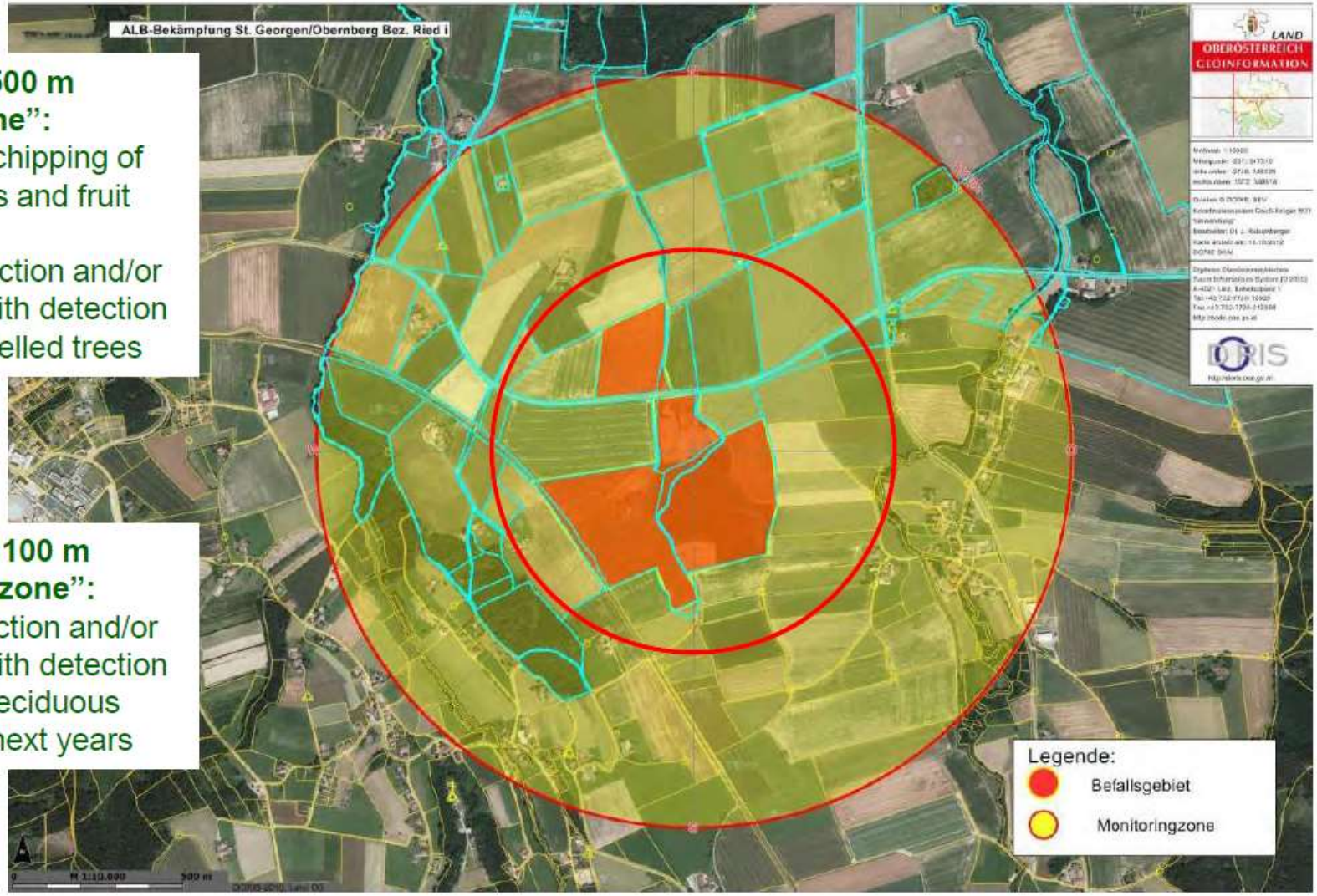
[1)] 1 Maple with 36 exit holes of the years 2006 + 2005
[2)] 1 Willow with 51 exit holes of the years 2007 (39) + 2006 + 2005

ALB infestation area St. Georgen (UA)

ALB regulation of the local authority BH Ried im Innkreis at 01.08.2012 analogue to that of Braunau

1. radius of 500 m "infested zone":
- Felling and chipping of all deciduous and fruit trees
- Visual inspection and/or inspection with detection dogs of the felled trees

2. radius of 1100 m "monitoring zone":
- Visual inspection and/or inspection with detection dogs of all deciduous trees in the next years



ALB infestation area St. Georgen (UA)

Position of *Fagus sylvatica*:

ALB infestation area St. Georgen (UA)

The neighbouring small mixed forest with deciduous trees at the edge to the stone storage place and within the forest

All deciduous trees were felled, investigated and destroyed.

ALB infestation area St. Georgen (UA)

Preventive cuttings

changed the structure
of this property

ALB infestation area St. Georgen (UA)

Preventive cuttings followed by inspection with detection dogs

ALB infestation area St. Georgen (UA)

Preventive (?) cutting of a 113 years old Horse chestnut tree:

- Indication of the dogs
- Verification:
  1 exit hole, 3 larvae in pupa chambers

ALB infestation area St. Georgen (UA)

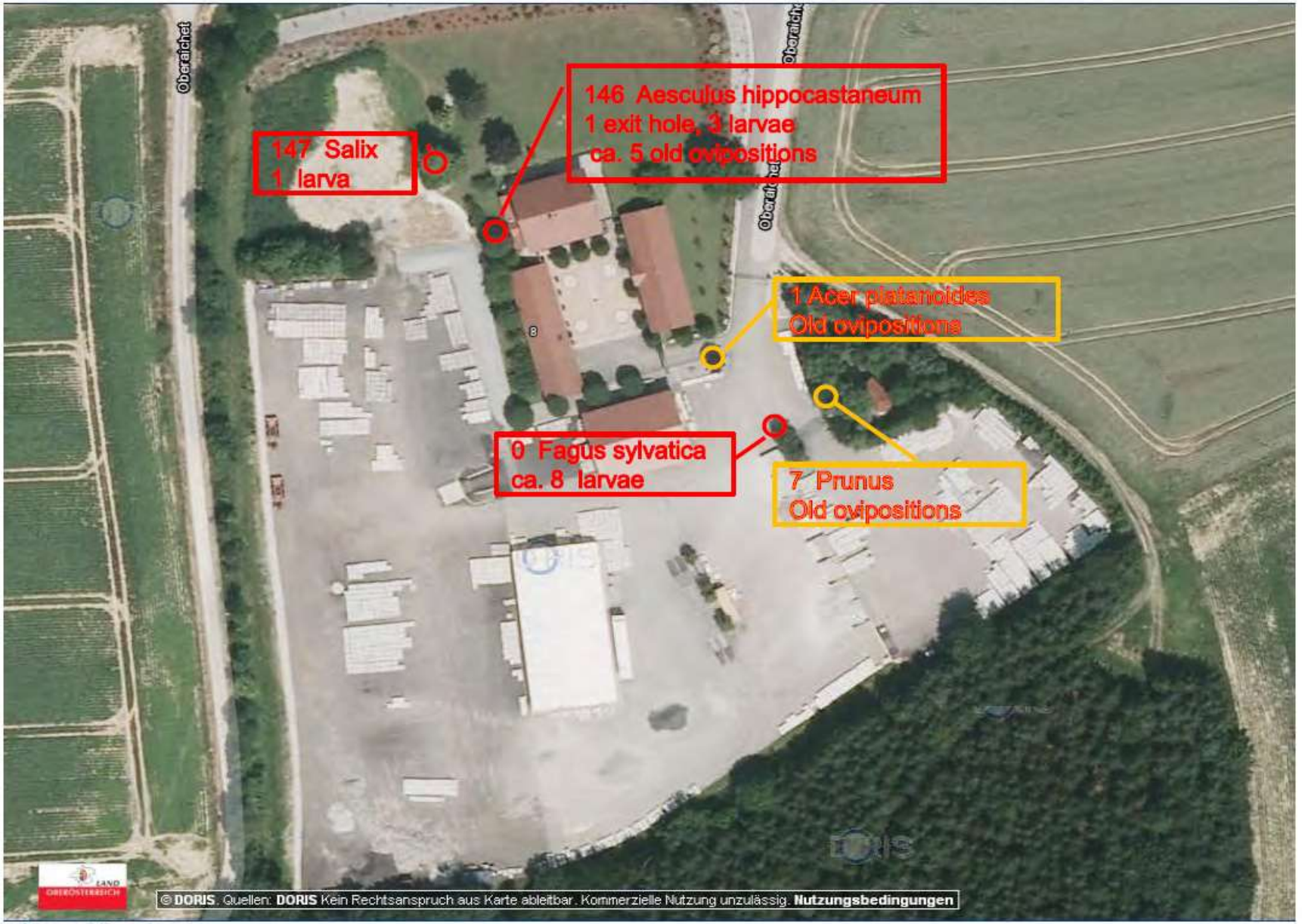
Horse chestnut tree with ALB-exit hole and larval damage

ALB larva in pupa chamber in horse chestnut tree

ALB infestation area St. Georgen (UA)

Infested felled trees were covered with Storanet until chipping few days later to avoid spreading of possibly emerging beetles

ALB infestation area St. Georgen (UA)



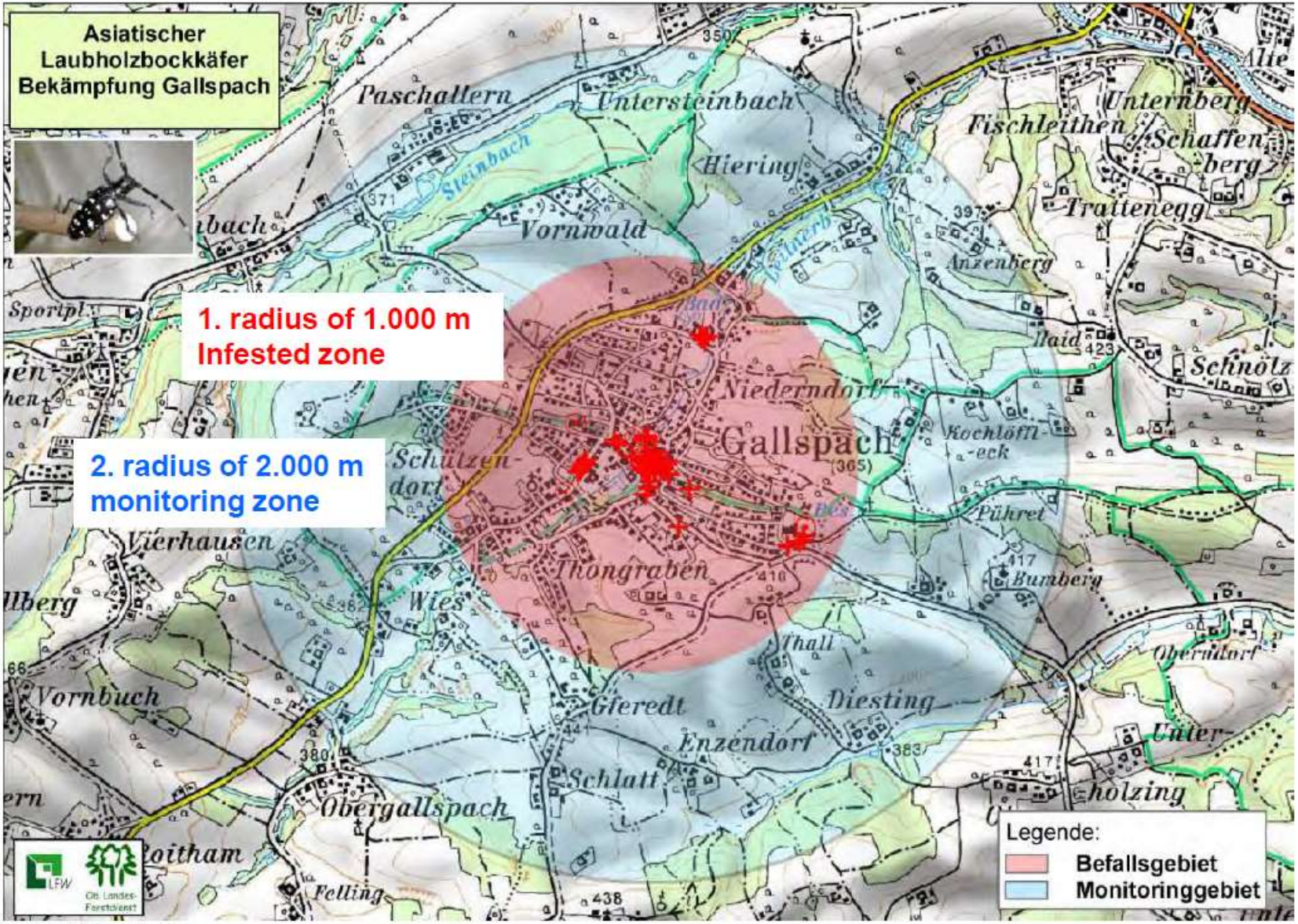
ALB infestation area St. Georgen (UA)

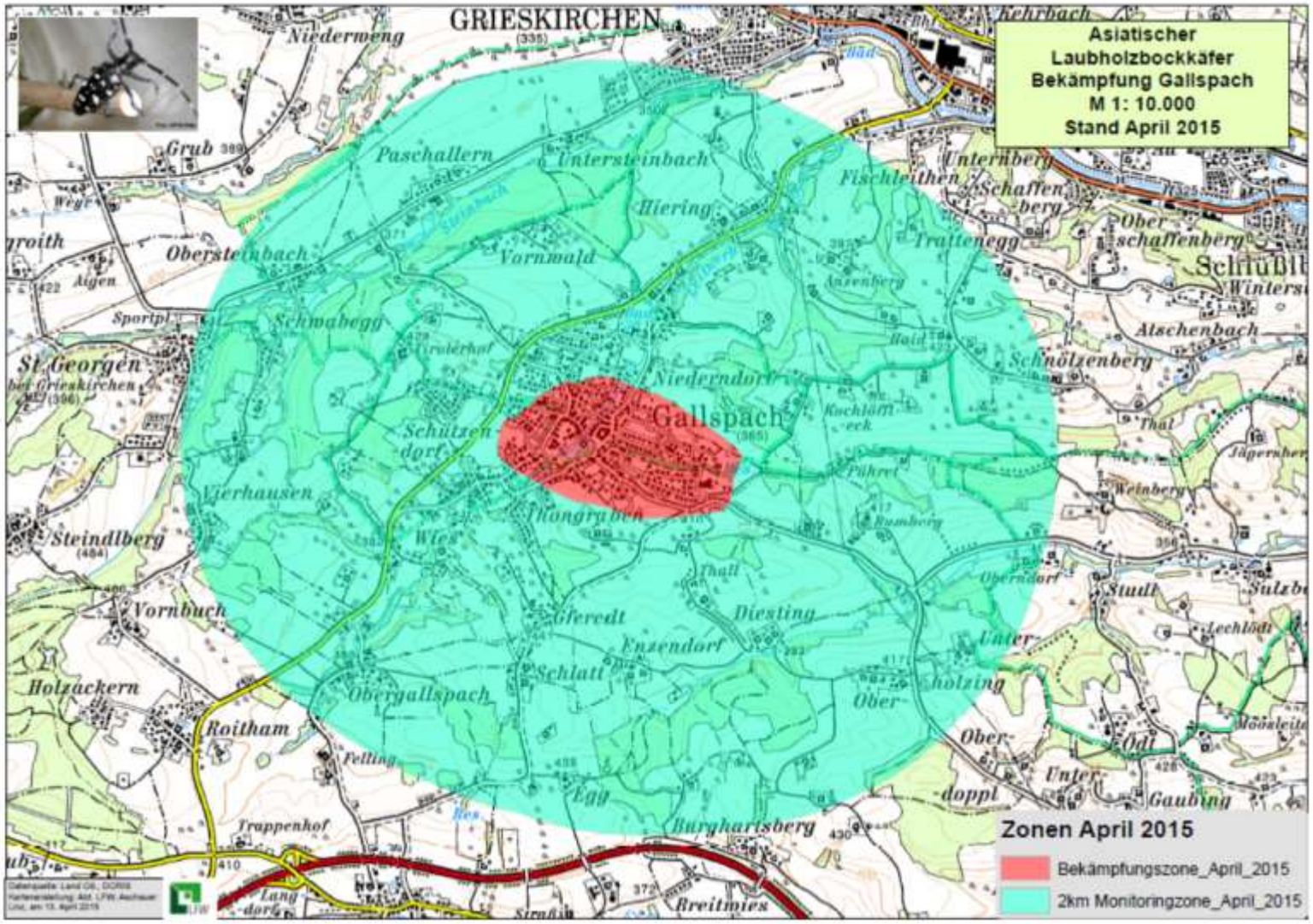
Results 2012

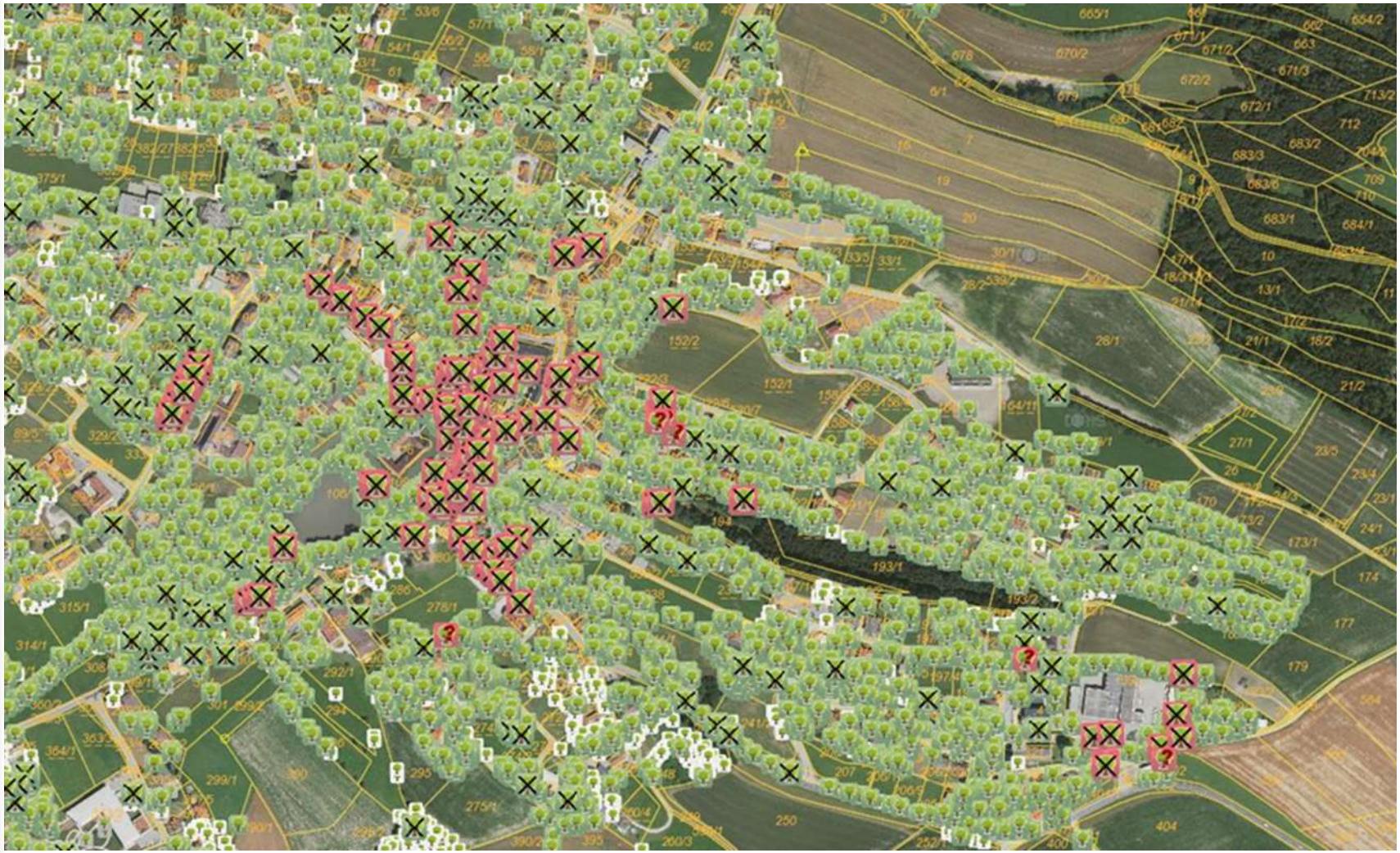
- 49 trees on the property of the stone importer felled:
  - 5 trees with ALB infestation, 1 exit hole, 12 larvae
- 52 trees on the neighbouring properties felled:
  - no ALB infestation could be found
- ~ 500 additional trees within 500 m radius felled:
  - no ALB infestation could be found

ALB infestation area Gallspach (UA)

ALB regulation of the local authority BH Grieskirchen at 21.11.2013 analogue to that of Braunau




Asiatischer
Laubholzbockkäfer
Bekämpfung Gallspach
M 1: 10.000
Stand April 2015
GRIESKIRCHEN
Gallspach
Zonen April 2015
Bekämpfungszone_April_2015
2km Monitoringzone_April_2015

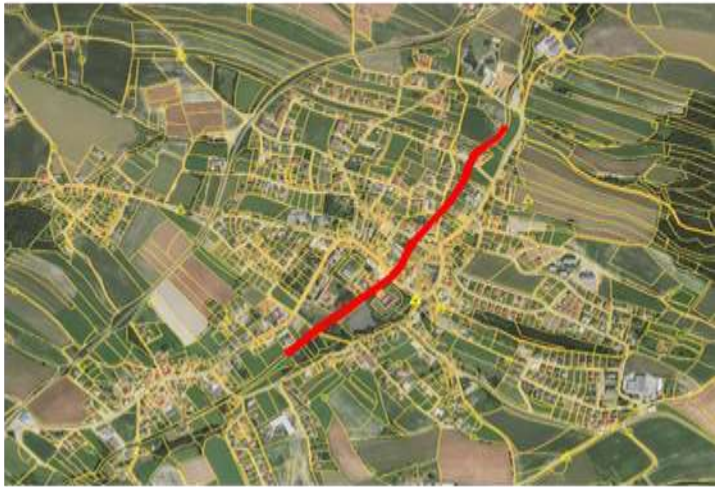


ALB infestation area Gallspach

- Infestation ca. 4 years old
- heavy infestation in the centre of the village: up to 150 exit holes, 40 larvae and more than 200 ovipositions per tree on *Acer platanoides and Aesculus hippocastaneum*
- monitoring with inspectors from the ground (since 11/2013), with detection dogs (11/2013) and tree climbers (12/2013)
- so far 140 infested trees detected, felled and destroyed
- infested tree species so far: *Acer, Aesculus, Salix, Tilia, Fraxinus, Betula, Corylus*
- installing of a tree register map: > 10.000 trees mapped
- living beetles until end of November 2013, also after several nights with temperatures of -5° C

Präventivfällungen:

2014



2015

ALB infestation area Gallspach Monitoring

2013 and 2014:

about 8.000 trees investigated, 2.500 of them with tree climber

2015/2016:

- Monitoring of about 10.000 trees
  - All host trees in infested area
  - Risk based monitoring on main species (Maple, Poplar, Horse chestnut, Willow, Birch) in 2km monitoring zone (including forest trees)

ALB

tree monitoring data sheet

developed by
BFW Forest Protection,
for Gallspach adapted by
Upper Austria Forest Service

ALB-Monitoring und Bekämpfung Gallspach

Baumnummer: | **Baumart:**

Kontrolle am: ..... **durch:** .....

Parz. Nr./Grundstückseigentümer/Bewohner/Ansprechperson:

Telefonnummer:

Befunderhebung: ☐ okular Boden ☐ Baumsteiger ☐ Spürhund

Befallssymptome:	**ja**	**okular**		**nein**	
		Spürhund		..... ggf. Name d. Spürhundes:	
		einzeln	**viele**	**Äste**	**Stamm**	**Kommentar**
	Eiablagen					
	Larvengänge					
	Bohrspäne					
	Bohrmehl					
	Rindenschäden					
	Ausbohrlöcher					
	Reifungsfraß					

Entwicklungsstadium	**Anzahl lebend**	**Anzahl tot**	**Kommentar**
Ei			
Larve			
Puppe			
Käfer/adultes Insekt			
Foto	**Nein**	**Ja/Datum/Bilddatei**	
Probenahme	**Nein**	**Ja/was**	

ALB-Befall	**Nein**	**ALB-Befall**	**Ja**
Großer Pappelbock		**ALB-Verdacht**	**Ja**
Kleiner Pappelbock		**Anmerkungen: Maßnahmen/Fristen**	
Moschusbock			
Weidenbohrer			
Blausieb			
andere:.....			
Erscheinungsbild: (Vital/Totäste/Fäule/einziehende Krone)		**BHD/fm geschätzt:** ☐ **Zustimmungserklärung liegt vor**	

Status/Gutachten:	**untersucht ALB-frei**	**untersucht ALB-Verdacht**	**untersucht ALB-Befall**	**entfernt**

Datum u. Unterschrift:	

ALB infestation area Gallspach (UA)

Central place of Gallspach with heavy infested trees

ALB infestation area Gallspach (UA)

Acer platanoides from the central place of Gallspach

4 large ALB larvae within this part of the infested tree

ALB infestation area Gallspach (UA)

Aesculus hippocastaneum in private garden

oviposition scares

ALB infestation area Gallspach (UA)

Monitoring by tree climbers

ALB infestation area Gallspach (UA)

Monitoring by tree climbers

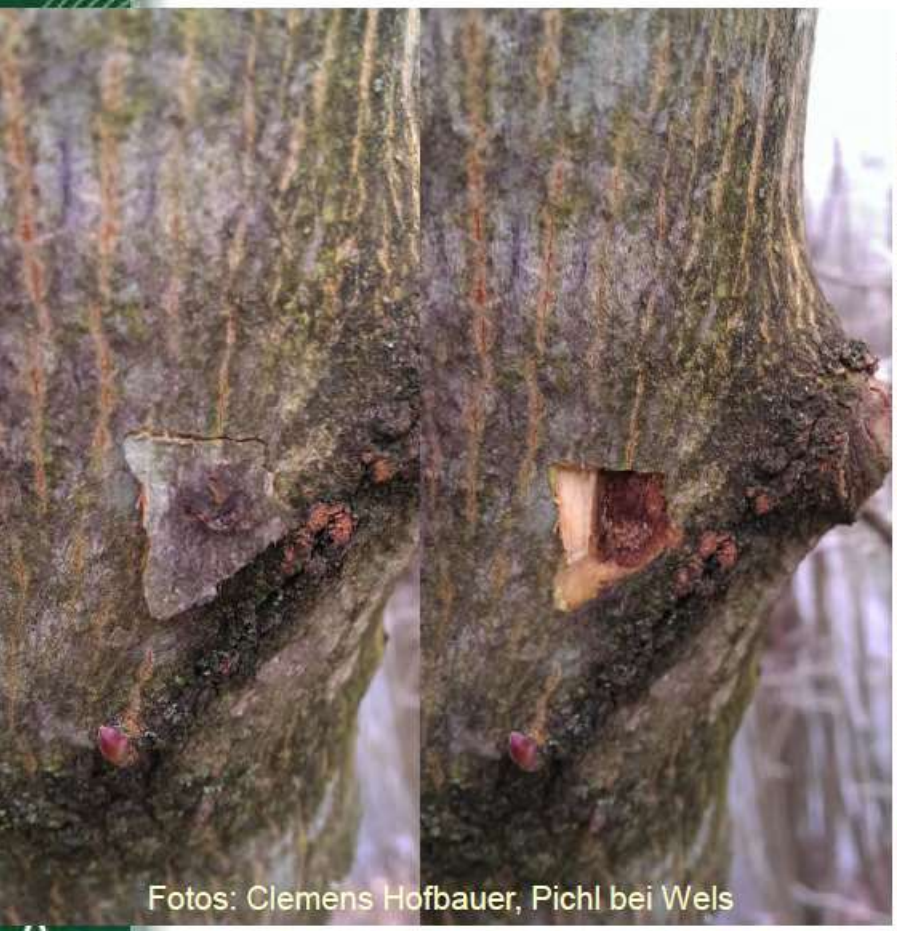
During winter sometimes the weather surprised with hoarfrost within short time during the monitoring.

ALB infestation area Gallspach (UA)

Monitoring by tree climbers

oviposition sites

Acer, 12/2013



Fotos: Clemens Hofbauer, Pichl bei Wels

Aesculus hippoc., 12/2013

Fotos: Clemens Hofbauer, Pichl bei Wels

ALB infestation area Gallspach (UA)

Monitoring by tree climbers

oviposition sites on *Acer*, 03/2014

Host trees of ALB in Europe

SPECIES		Braunau Oberaichet Gallspach (AT)	Neu-kirchen (DE)	Born-heim (DE)	Weil/ Rhein (DE)	Feld-kirchen Forst (DE)	Gien (FR)	Ste Anne/ Brivet (FR)	Furiani/ Korsika (FR)	Cornuda + Maser (IT)	Brünisried Winterthur (CH)	Paddock Wood/ Kent (UK)
Ahorn	*Acer* spp.	✓✓✓	✓	✓	✓	✓✓	✓	✓	✓	✓	✓	
Eschenahorn	*Acer negundo*						✓	✓				✓
Silberahorn	*Acer saccharinum*	✓					✓	✓				
Zuckerahorn	*Acer saccharum*	✓				✓						
Spitzahorn	*Acer platanoides*	✓✓✓		✓		✓	✓	✓			✓	
Bergahorn	*Acer pseudoplatanus*	✓✓				✓					✓	✓
Feldahorn	*Acer campestre*	✓				✓					✓	✓
Rosskastanie	*Aesculus hippocastanum*	✓✓✓	✓			? ✓	✓	✓	✓	✓		✓
Erle	*Alnus* sp.	✓				✓						
Birke	*Betula* sp.	✓✓	✓			? ✓	✓	✓		✓	✓	✓
Sommerflieder	*Buddleja sp.*										✓?	
Hainbuche	*Carpinus betulus*					✓		✓				✓
Kuchenbaum	*Cercidiphyllum sp.*									✓		
Hasel	*Corylus* sp.	✓				✓						
Ölweide	*Elaeagnus sp.*								✓			
Rotbuche	*Fagus sylvatica*	✓				✓✓						
Blutbuche	*Fagus sylvatica "atropunicea"*	✓										
Geschl.blättr. Buche	*Fagus sylvatica "asplenifolia"*	✓										
Esche	*Fraxinus* sp.	✓✓										
Platane	*Platanus* sp.	✓			✓	?			✓			
Pappel	*Populus* sp.	✓	✓			?	✓	✓	✓	✓	✓	✓
Steinobstgew	*Prunus* sp.	✓						✓	✓	✓		
Weide	*Salix* sp.	✓✓✓	✓	✓		? ✓	✓	✓	✓	✓	✓	✓
Mehlbeere	*Sorbus sp.*		✓									
Linde	*Tilia sp.*	✓				✓			✓			
Ulme	*Ulmus sp.*					✓				✓		