Oak Processionary Moth Information Seminar

Henry Kuppen, Mark Townsend and Alex Austin

Kuppen boomverzorging

Gristwood &Toms

House Keeping

- Welcome
- Toilets
- Fire exits
- Mobile phones
- Lunch and refreshments
- Questions

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Gristwood &Toms

Structure of the day

- Introduction to G&T
- Background to OPM outbreak
- OPM lifecycle
- Identification of OPM over other moths
- Health impact/issues
- Holland experience and digital recording
- G&T OPM experience since 2008
- Development in chemical applications
- Development in physical removal
- Questions

LUNCH 13:15

- Trip to Holland
- Control methods in Germany, Belgium and Holland
- Nematodes research and development
- Relevance of Dutch outbreak to London
- G&T working with the LTOA
- Current situation
- Open floor and Questions

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Gristwood &Toms

Gristwood and Toms

- The company was started by Andy and Dave in 1974.
- Carry out all aspects of tree work.
- Complete consultancy services.
- Partnership between Kuppen Boomverzorging and Gristwood and Toms.

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Gristwood &Toms

Background information

- OPM was first discovered in Richmond in 2006.
- High incidence of rash amongst residents on Housing estate lead to investigation by Environmental Health services
- Second site identified on Hanger Lane near A40 also planted with infected trees around same time.

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Life cycle – Egg Plaque

- Overwinter
- Survive extended freezing
- Up to 300 eggs per plaque.
- Lay on multiple oak trees
- Might not all hatch in same year
- Very hard to spot so not practical as survey tool.
- Located on new growth in upper half of canopy
- Open sunny habitat favoured

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Life cycle – Instar L1

- Eggs hatch just prior to bud burst, typically mid April.
- Small, <3mm
- Orange with black head
- Very hard to see from the ground
- Feed at night
- Stay in buds
- Don't form nests
- No harmful hairs

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Life Cycle – Instar L2

- Shed skin as food and temperature increases
- Early may
- Still no harmful hairs
- Remain in the extremities of the branches

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Life Cycle – Instar L3

- Mid May
- Between 10-15mm
- Start to produce toxic hairs but not many
- Aggregate in large groups
- Little predation due to hairs

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Life cycle – Instar L4

- Mid May to mid June
- Start to produce toxic hairs
- Start to form tents, clean and pale colour
- 20-25mm
- Accumulation of shed skin
- Protection from predation by birds
- Approx 700,000 toxic hairs each

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Life cycle – Instar L5

- June to mid July
- Easy to indentify
- Nests larger covered in silk and shed skins
- Silk trails leading into the canopy
- 30mm
- Clear signs of feeding damage
- Permanent tents further down tree

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Life cycle – Instar L6

- June to July.
- 35mm.
- Large, dirty nests. Brown colour due to shed skins.
- From golf ball size up.
- Located on trunk and scaffold limbs.

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Life cycle - Pupae

- Mid June to early September
- Consolidation of L6 nest
- Can be at ground level with grass incorporated.
- Contains lots of excrement and shed skins.
- Remains hazardous due to hairs for years.
- Recent evidence of intact nest in Autumn, possibility of over wintering

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Feeding damage

- Can be easier to spot than nests or caterpillars.
- Increases from L4.
- Stripping to mid vein.
- Caterpillars feed in groups resulting in localised damage.

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Life Cycle - Adult Moth

- Late July to end September
- Female fly up to 5Km.
- Males fly up to 20Km.
- Will not fly further than needed to reach good food source.
- Lives 4-5 days only

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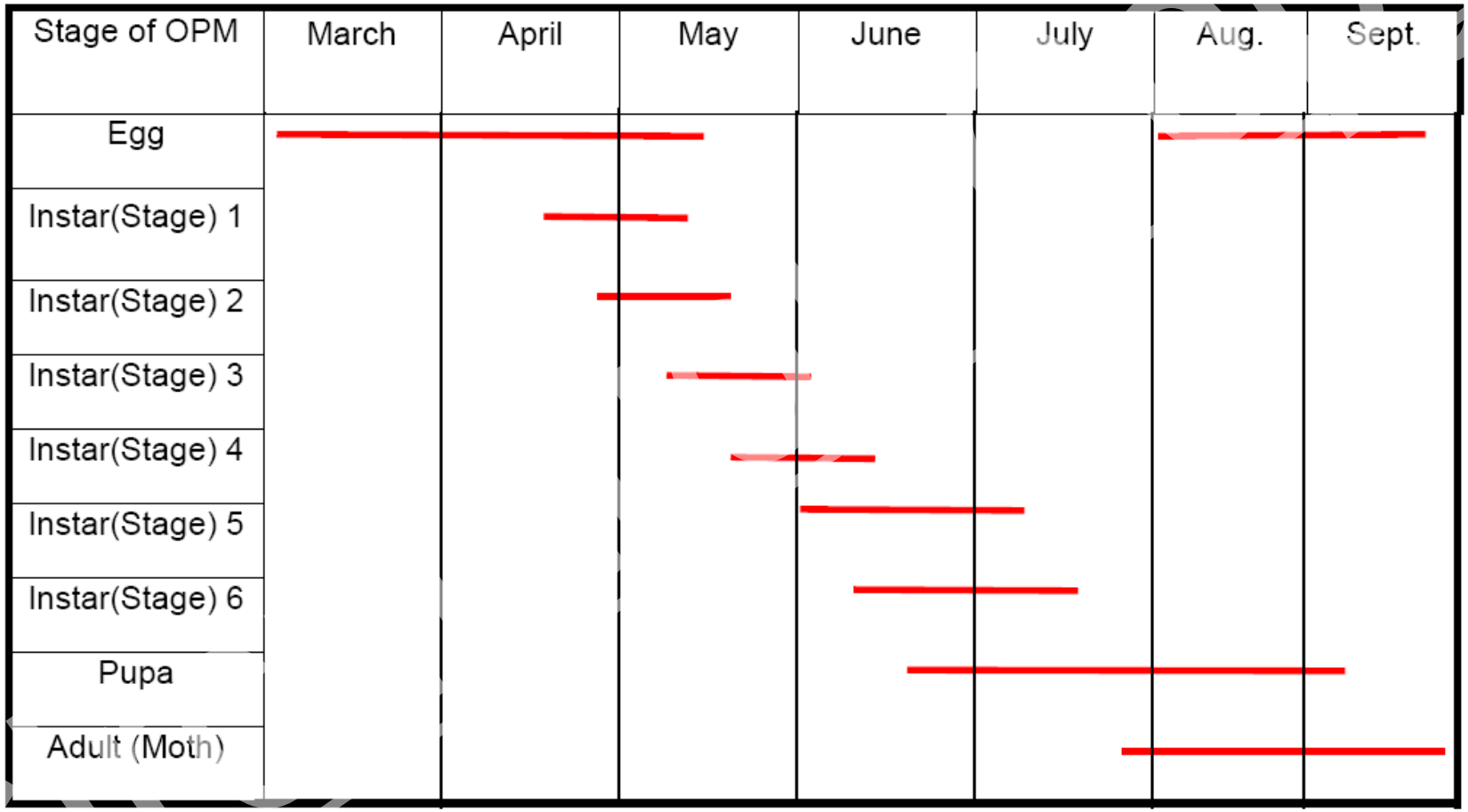
Life cycle summary

OPM life cycle stage – diagram



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Other moths

Lymantria dispar,
Gypsy moth

Other Moths

Euproctis chrysorrhoea
Brown Tail Moth

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Other Moths

Yponomeuta rorrella
Willon Ermine Moth

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Health impact and issues

Henry Kuppen

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L4

Urticating hairs contains foreign body protein, Thaumetopoiene

Health risks

- Skin
- Eyes
- Upper respiratory
- Overall malaise
- Restriction to leisure and recreational activity

4.Health issues OPM

- Urticating hairs remain active over a period of >5-7 years;
- Each larvae has approximately 700,000 urticating hairs from L4;
- Urticating hairs and shed skins persist in a tree for years;
- Urticating hairs spread by wind and removal work.

Mechanism of urticating hairs

- Mechanical irritation of skin;
- Pseudo-alergic reaction causes release toxin thaumetopoiene causing complete body reaction;
- Alergic reaction based on IgE mediated type 1 reaction = disfunction of body.

How health problems arise

- Direct contact with nests or larvea;
- Indirect contact with urticating hairs in the air.
- May until July: urticating hairs swarm in the air in area around larvae.
- May until August: urticating hairs drift in the wind from nests.

How health problems arise

- Tree workers are at risk all year round from contacting old nests

Other health effects

- Local effects on upper respiratory tract: similar to snivel, irritation of upper respiratory tract, sore throath, dyspnea;
- General complaints: vomiting, dizziness, fever, malaise.
- Limiting residential recreational enjoyment: cycling, hiking limited, windows have to be kept shut, limitation to hang laundry out, children can not play outside.

Risk Groups

- Users of public places.
- Pets, especially dogs and horses;
- Controllers, Inspectors.

Holland experience and digital recording

Henry Kuppen

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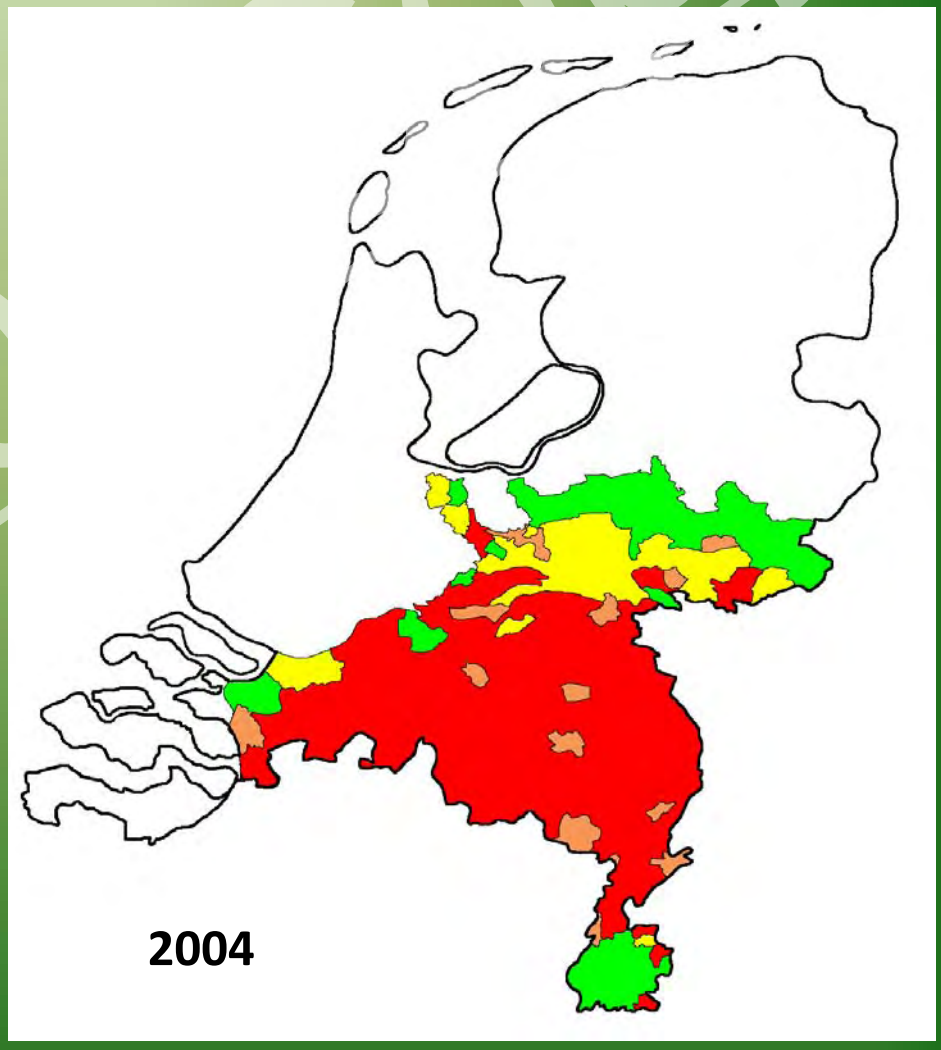
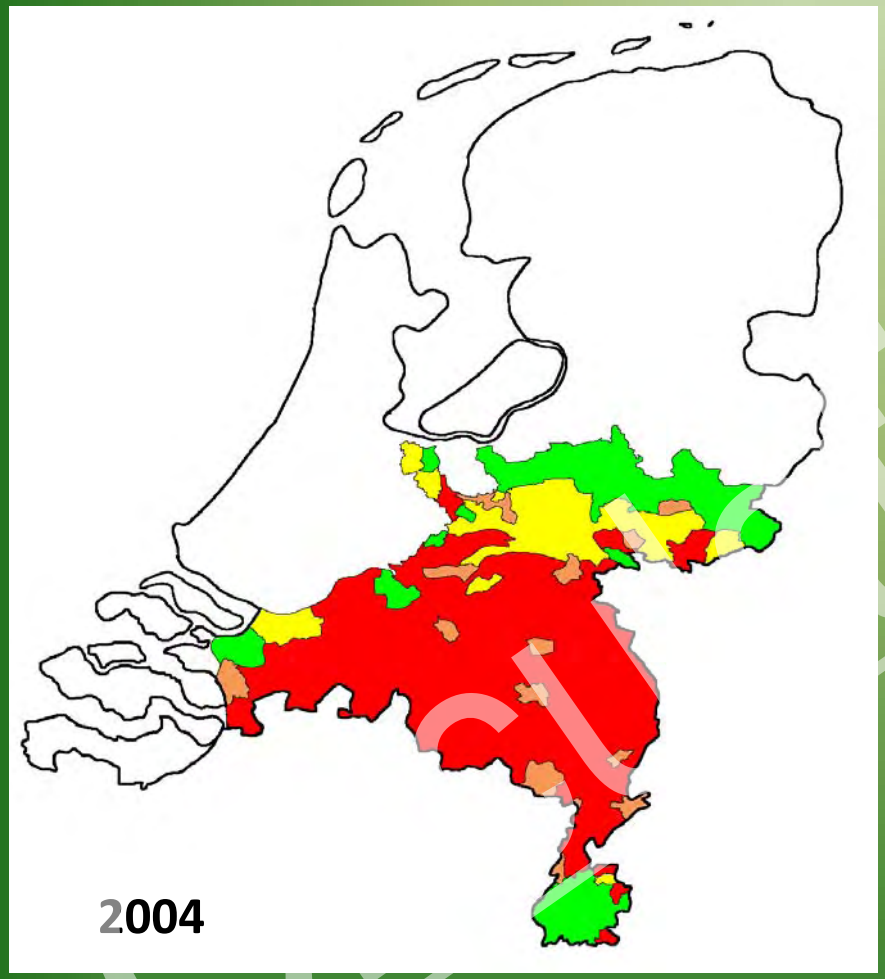
Expansion over the Netherlands



Bron: Plantenziektenkundige Dienst (LNV) www.minlnv.nl/eikenprocessierups

Expansion over the Netherlands



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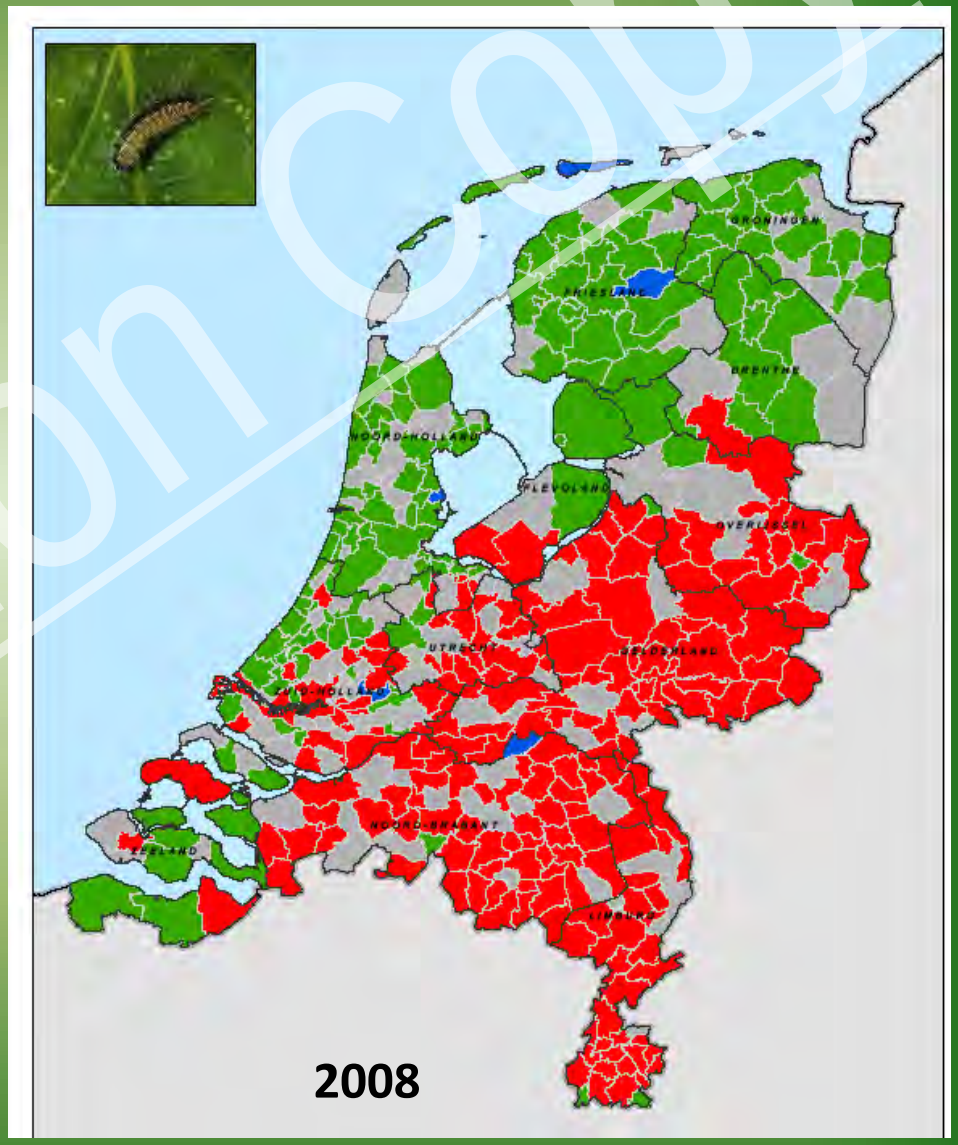
Expansion over the Netherlands



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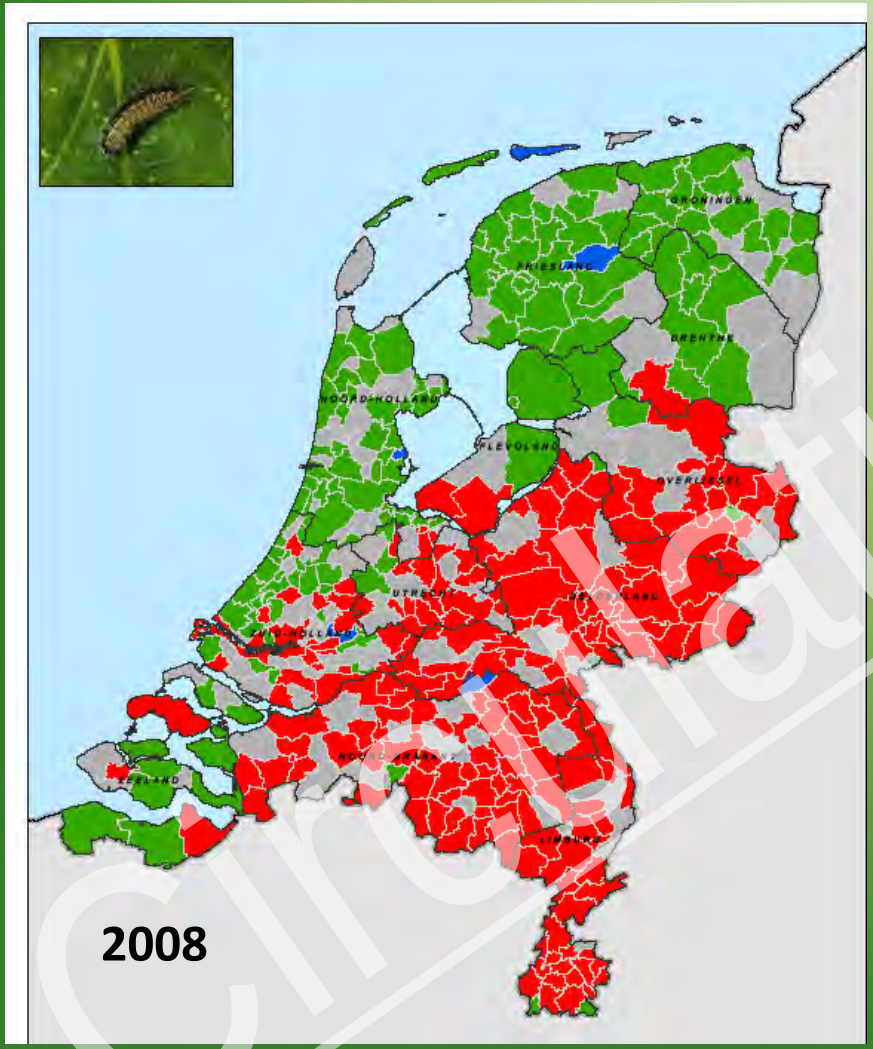

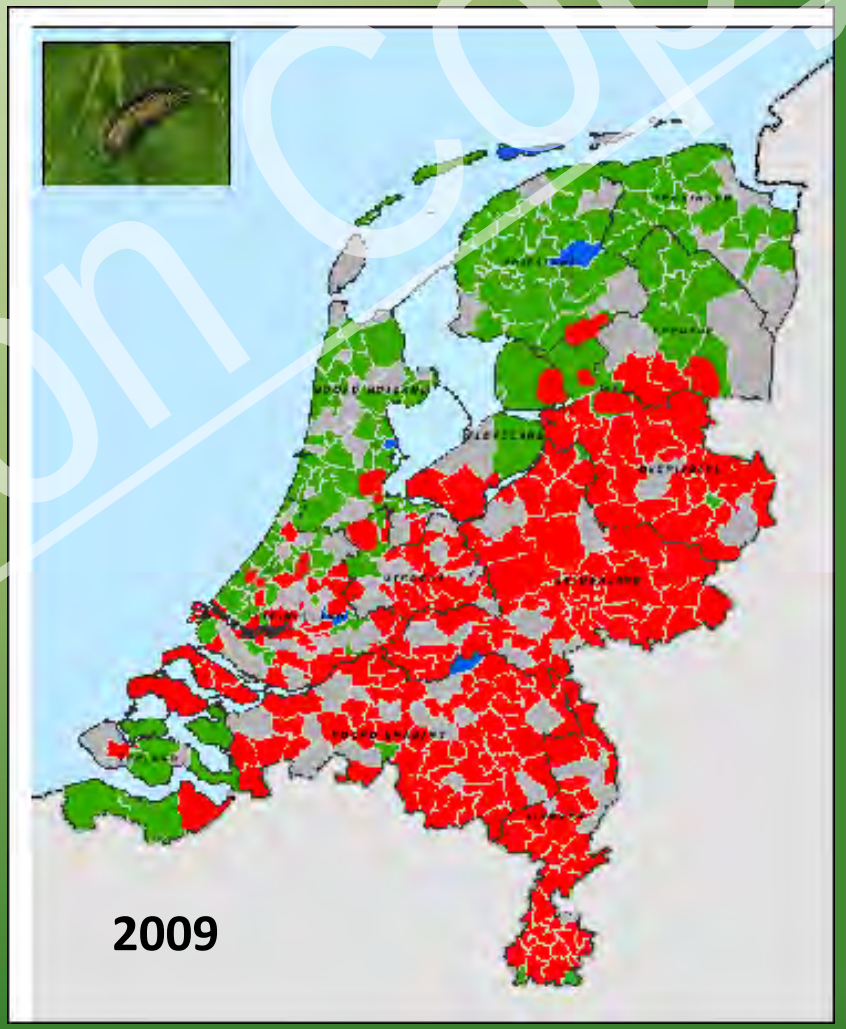

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Expansion over the Netherlands

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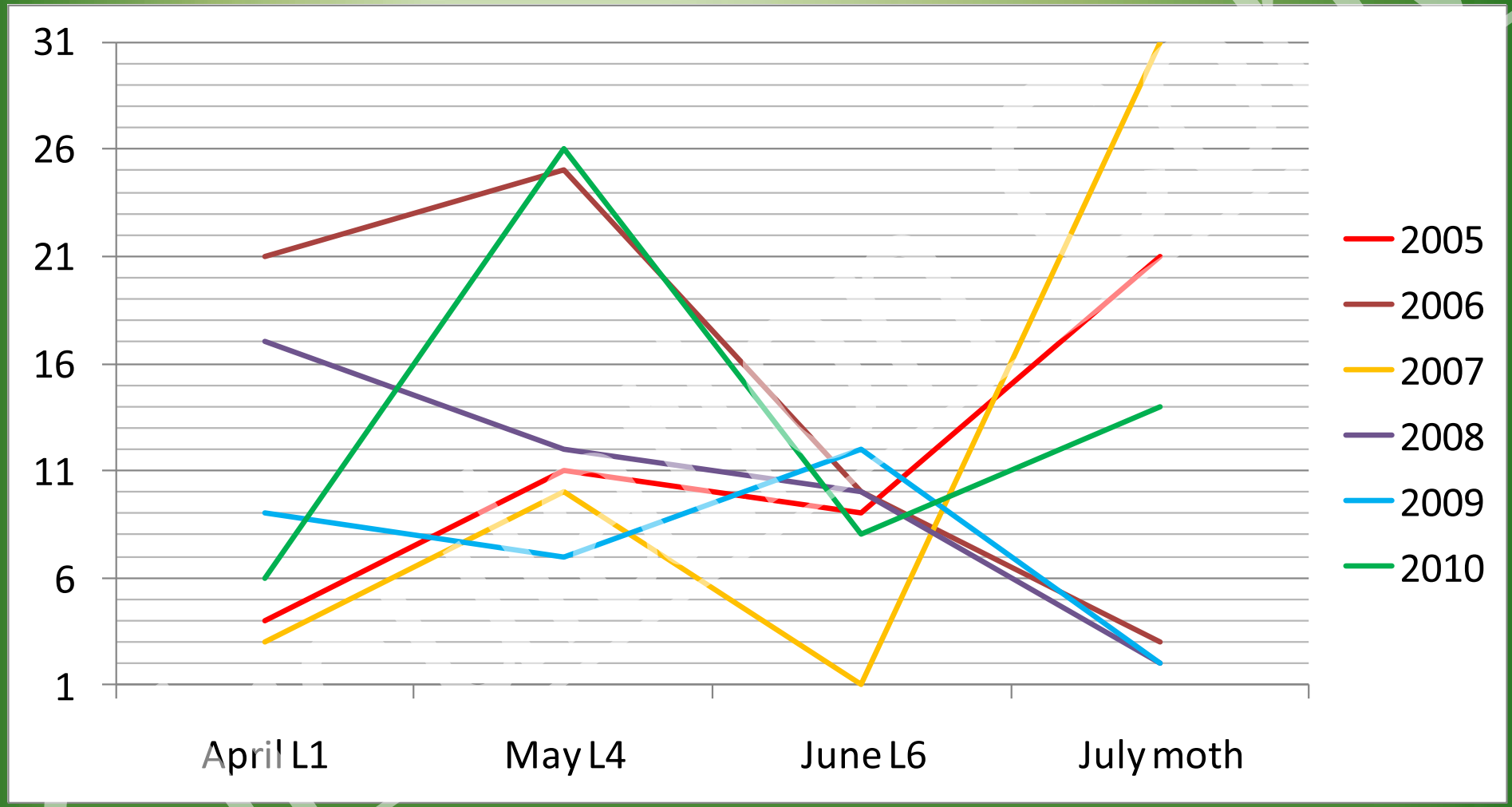
Lyfecycle year 2005-2010




L6
circulation copy

Natural parasites:

- Tachinidae, true flies;
- Calsoma sycophanta, forest caterpillar hunter;
- Pimpla procesionea, ichneumon flies;
- Bats, Great Tit…etc.

Management costs the Netherlands

- 418 Communities with between 100 to 100,000 Oaks

- 2010, costs increased by 25%, some communities spend more than € 200.000,

- Oak species

Preferred species

1st European species:

- Q. robur
- Q. petrea
- Q. cerris
- Q. frainetto ….

2nd

American species:

- Q. rubra
- Q. palustris
- Q. coccinea …

Recording

Totalen monitoring EPR en Risico Analyse seizoen 2008

Waarnemer: Willem en Henry
Opdrachtgever: Gemeente Rheden

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boomverzorging • boomtechnisch advies
ziekte- en plaagbestrijding • leiboomkwekerij

	Datu	Plaats	Straatnaam	Referentiekaart	V-klasse H-alfwas J-ongewas	Aantal gecontroleerd	Aantal besmette bomen	Aantal nesten tennisbal formaat	Aantal nesten voetbal formaat	aantasting per locatie		Besmettingsgraad	Risicofactor		Spuitadvies	Opmerking
6	13-jan	Dieren	Wilhelminaplein		V	3	3	31	3	100%	12,33	Hoog	2	24,67	J	
7	13-jan	Dieren	Oranje Nassaustraat		V	9	3	14	1	33%	5,33	Hoog	2	3,56	J	
8	9-jan	Dieren	Meidoornlaan		J	76	3	4		4%	1,33	Matig	2	0,11	N	vanaf imboslaan tot nr 7, 2-36 en131
9	9-jan	Dieren	Taxuslaan		H/V	20	1	1		5%	1,00	Laag	1	0,05	N	achter de huizen
10	9-jan	Dieren	Harderwijkerweg		V	135	25	35	6	19%	1,88	Matig	3	1,04	J	van Priesnitzlaan tot Imboslaan
11	9-jan	Dieren	Imboslaan		V	53	16	25		30%	1,56	Matig	3	1,42	J	Breukinklaan
12	9-jan	Dieren	Beverodelaan		V	57	10	14	3	18%	2,00	Matig	3	1,05	J	thv 19, 41-53, 193
13	12-jan	Dieren	Peter van Anrooylaan			5	1	1		20%	1,00	Laag	1	0,20	N	Achter speelveld
14	9-jan	Dieren	Ad. Helfrichlaan		H/V	12	7	11		58%	1,57	Matig	3	2,75	J	Basisschool de Vlinder en de Akker
15	9-jan	Dieren	Vogelplantsoen			3	1	1		33%	1,00	Laag	1	0,33	N	t.h.v. nr 2
16	12-jan	Dieren	Domeinenlaan			3	1	1		33%	1,00	Laag	2	0,67	N	Achter speelveld
17	12-jan	Dieren	van der Duyn van Maasdamstraat			5	2	2		40%	1,00	Laag	2	0,80	N	Achter speelveld
18	13-jan	Dieren	Burg. Bruinstraat		H/V	41	19	41		46%	2,16	Matig	1	1,00	J	Burg. Willemsestraat
19	9-jan	Dieren	Wilgenhof		J/H/V	25	4	9		16%	2,25	Matig	1	0,36	N	nr 2-32
20	13-jan	Dieren	Olmenhof		H	4	2	1	1	50%	1,50	Matig	1	0,75	N	Nr. 21+ 29 (achterkant woningen)
21	13-jan	Dieren	Nachtegaalpad		H	8	0	0		0%	nvt	nvt	1	0,00	N	Olmenhof 22
22	13-jan	Dieren	Magnolialaan		H	2	1	1		50%	1,00	Laag	1	0,50	N	
23	12-jan	Dieren	Labriehof			3	1	3		33%	3,00	Matig	1	0,90	N	Achter nr. 9
24	9-jan	Dieren	Rode Kruislaan		V/H	3	3	3	28	100%	19,67	Hoog	2	39,33	J	Nr 1, 2 Speeltuin.
25	12-jan	Dieren	Surinkhof			4	1	2		25%	2,00	Matig	1	0,50	N	thv nr 14
26	9-jan	Dieren	Einthovenlaan	.	V	1	1	12		100%	12,00	Hoog	1	12,00	J	nr 6 (particulier)
27	9-jan	Dieren	Druckerlaan		V/H	5	2	3		40%	1,50	Matig	2	1,20	J	to nr 10
28	12-jan	Dieren	Kolonieweg			15	3	3		20%	1,00	Laag	1	0,20	N	Parkeerplaats sc Erica

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DIGItal report and controlling online system for ***DIS***eases

Information:
www.digidis.org

1. ONLINE REPORT

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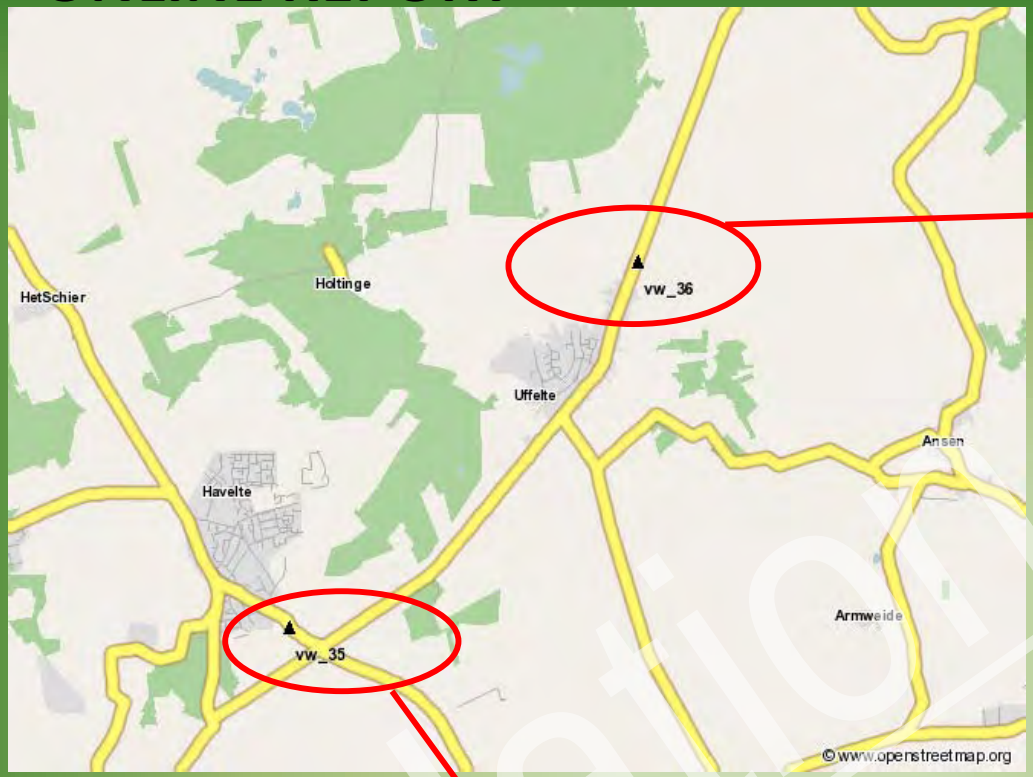
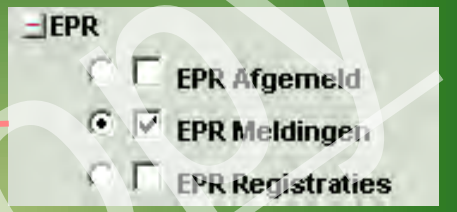




Nieuwe melding

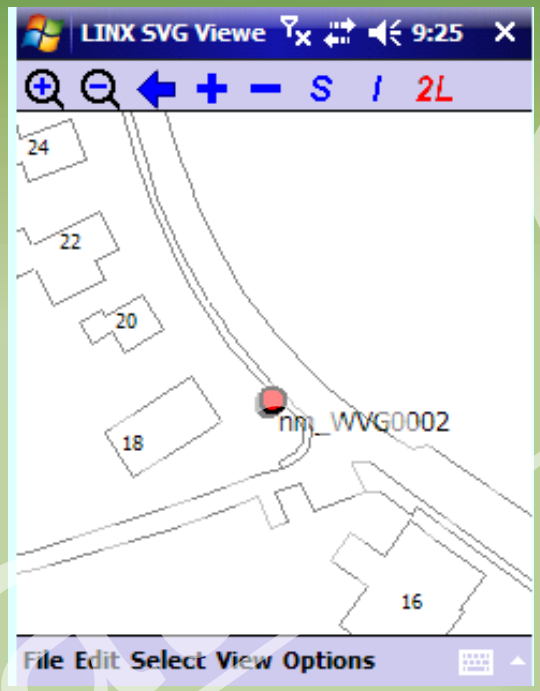
Naam van de melder:	Mevrouw Janssen
Telefoonnummer van de melder:	0521-123 456
Beschrijving van lokatie:	Dorpsstraat 52 Havelte
Naam van de medewerker Stadswinkel:	Johan Trompetter
Telefoonnummer van de medewerker Stadswinkel:	0521- 349 349

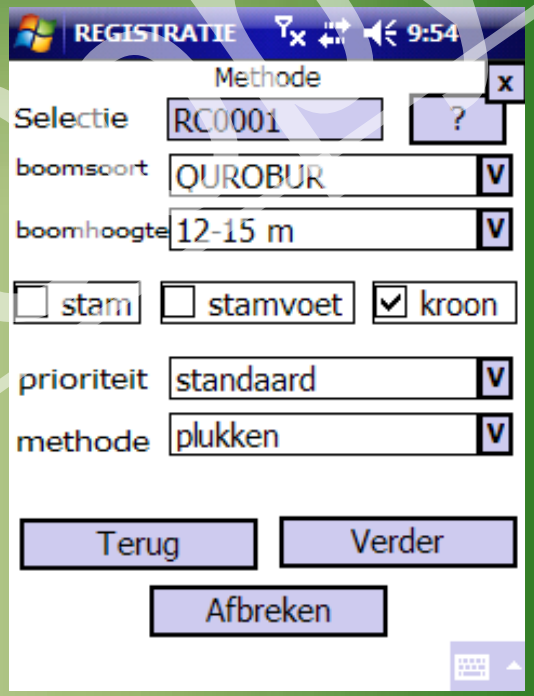
Opslaan

Report contains:
-Location
-Name
-Telephone nr.

1. ONLINE REPORT

Update onsite with outbreak data





Record contains:

-tree species

-tree height

-place of nest

-priority based on risk profile

-method of removal

-intensity

Every registration automaticly contains date and time

1. ONLINE REPORT

Add onsite with recorded data

digidis

2. ONLINE REGISTRATION

Recording and controlling data via a wireless connection over the internet

Prioriteit

- **Urgent**
- **Standard**
- **Low**

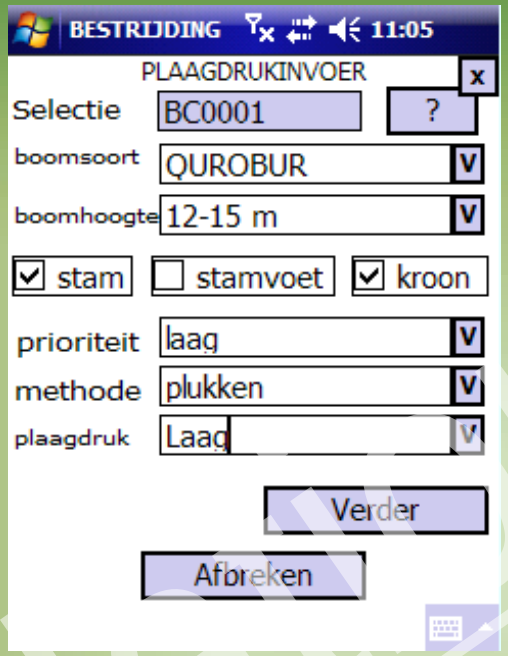
3. ONLINE ERADICATION

Contractors receive wireless record

With specific site colour based on priority

3. ONLINE ERADICATION

Update with eradication data



Eradication data contains:

-Tree species

-Tree height

-Place of nest*

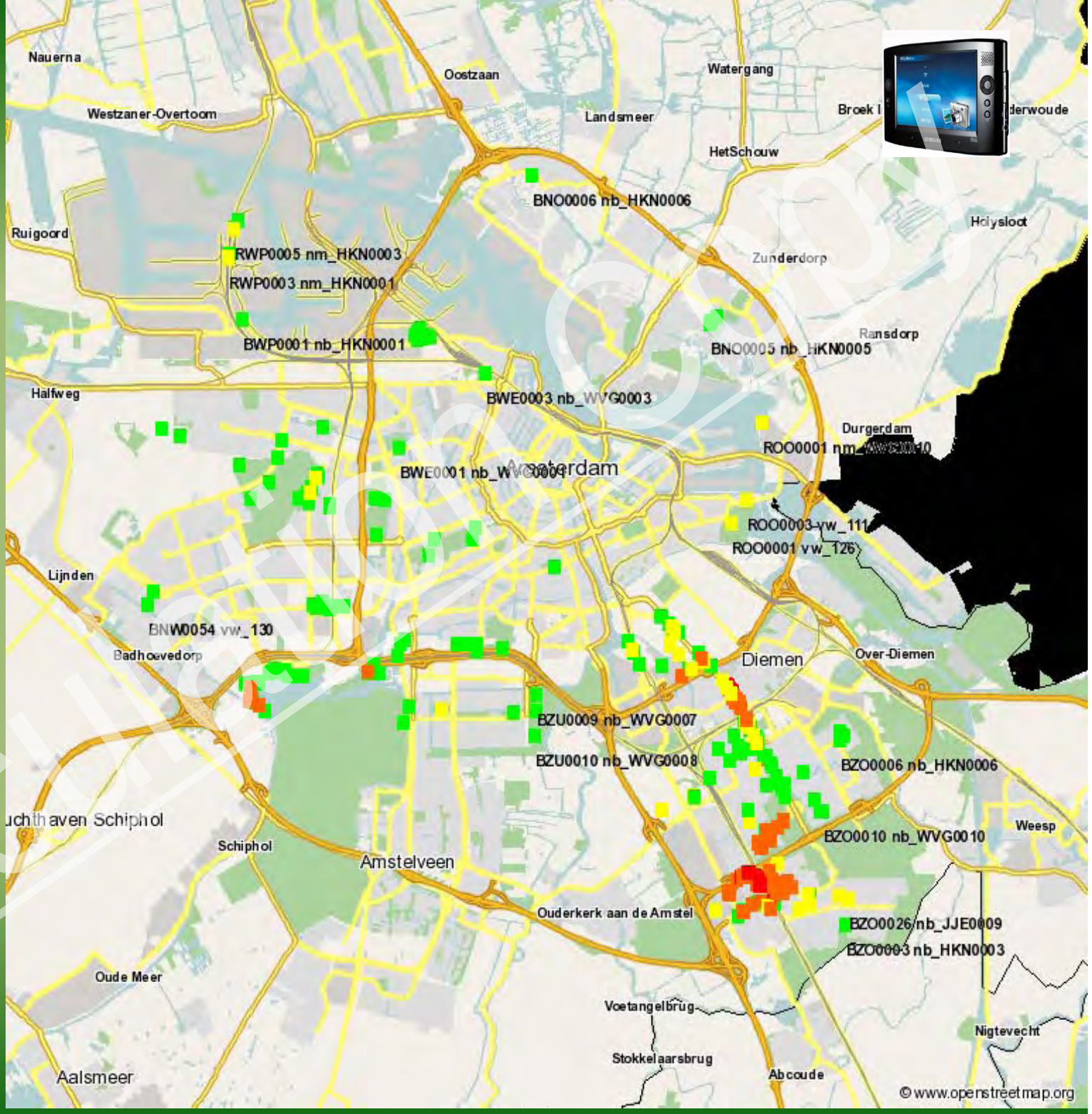
-Priority*

-Method of removal*

-Pest intensity

Pest intensity

- high
- moderate
- low



Viewer Popup - Windows Internet Explorer

http://epr.kaartenbalie.nl/eikenprocessierups/viewerdata.do?aanvullendeinfo=t&themaid=5&id=1444

Google™ This page is in Dutch. Translate it using Google Toolbar? Learn more Translate Tur on

Inspecteur	Willem Volleberg
Telefoonnummer	-
Datum en Tijd registratie	2009-11-19 09:56:39.0
Aantal bomen	1
Afspraak maken	nee
Eigendom	gemeente
Boomsoort	QUROBUR
Boomhoogte	12-15 m
Stam	-
Stamvoet	-
Kroon	1
Prioriteit	standaard
Methode	plukken
Opmerking	
Bestrijder	Roel Timmerman
Datum en Tijd bestrijding	2009-11-19 11:16:30.0
Prioriteit	standaard
Plaagdruk	Laag
id	1444
rdx	212806.1
rdy	531505.1
Extra	-

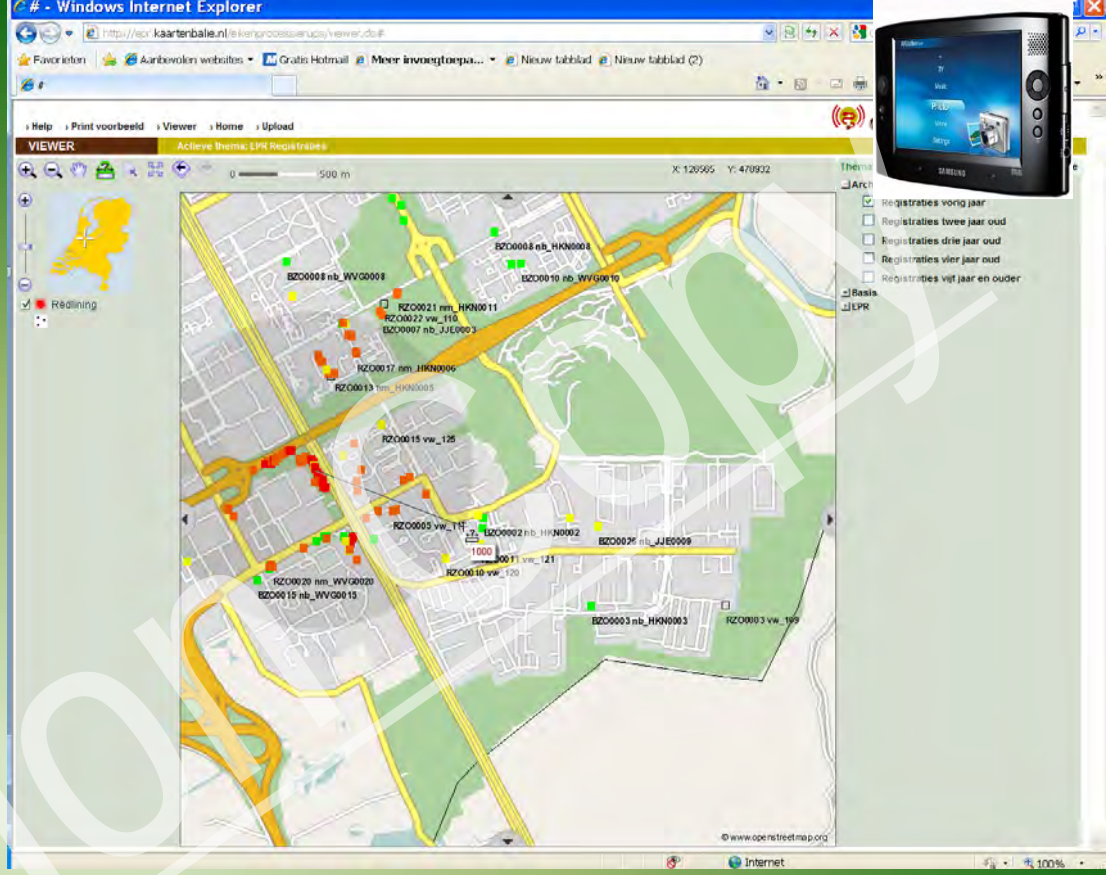
Gereed Internet 100%

start Microsoft P... Postvak IN ... GEBIEDSIN... 4 Internet... HauteCapt... Microsoft E... Document4 ... Documenten NL 14:40

Online opportunities:

- Print:
  - maps
  - data of each report

- Distance measuring



G&T OPM 2008 experience

- Sprayed 3 trees in Twyford Abbey with DiPel.
- Early morning application.
- Foliage spray from MEWP.
- Direct staff used.

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G&T OPM 2009 experience

- Hanger Lane area - 12 trees, 2 applications of DiPel.
- Manual nest removal required on all trees.
- Sites identified at Instar 4-6 by FC and E.B.C.
- Post emergence nest removal – still needed for Health reasons
- Quercus cerris on private land at plague stage. Nest approx 3'x1', by rail line.
- 6 FC traps installed for FC. FC monitored contents

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Gristwood &Toms

G&T OPM 2010 experience

- Kew monitored egg plaque for regional emergence (19th April).
- Within 2 weeks of emergence preventative foliage spray of DiPel on all infected trees from 2009.
- L3 found with FC on LBE trees 13th May.
- Deltamethrin applied to scaffold branches on all 2009 trees.
- External pesticide specialist used for Deltamethrine spray.
- Sprayed 19 public trees. Only 1 nest developed on these.
- Nest removal by vacuum on 12 public trees and 26 private trees.
- Vacuum nest removal carried out on A406 North Circular
- Trip to Holland to meet with Henry
- Trapping with Dutch and FC traps.

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Gristwood &Toms

Development in chemical use.

Deltamethrin

- BASIS certified consultant prepared Risk assessment and Method Statement prior to use.
- Environmental impact considered.
- External pesticide specialist applies chemical to scaffold limbs.
- Very successful treatment as only 1 nest in all 19 trees treated.

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Gristwood &Toms

Development in physical removal

- Purchase 2 specialist vacuums with medical grade, triple filtration HEPA filters
- Develop national manual removal standard with the FC
- Waste sealed in bags ready for disposal.
- Specific climbing equipment for OPM use only.
- No use of Blow torches.
- Upgrade in PPE including respiration protection.

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Meeting with Fargro

- UK presentative of Valent Biosciences manufacturers of DiPel and XenTari BT products
- DiPel effective against OPM
- Application is critical
- Mist/Fog and Sthil Blower for application
- Research into application methods
- Research into using Dimilin Flo and DiPel together

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Gristwood &Toms

Trip to Holland

- Established pest for many years.
- Tried and tested procedures and management.
- Benchmark our work methods.
- Explore potential developments.
- Large scale operation.
- Start of partnership between G&T and HK

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Gristwood &Toms

Control methods in Germany, Belgium and Holland

Henry Kuppen

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Gristwood &Toms

Controlling method

1. Electrostatic low pressure tree spraying unit

Properties:

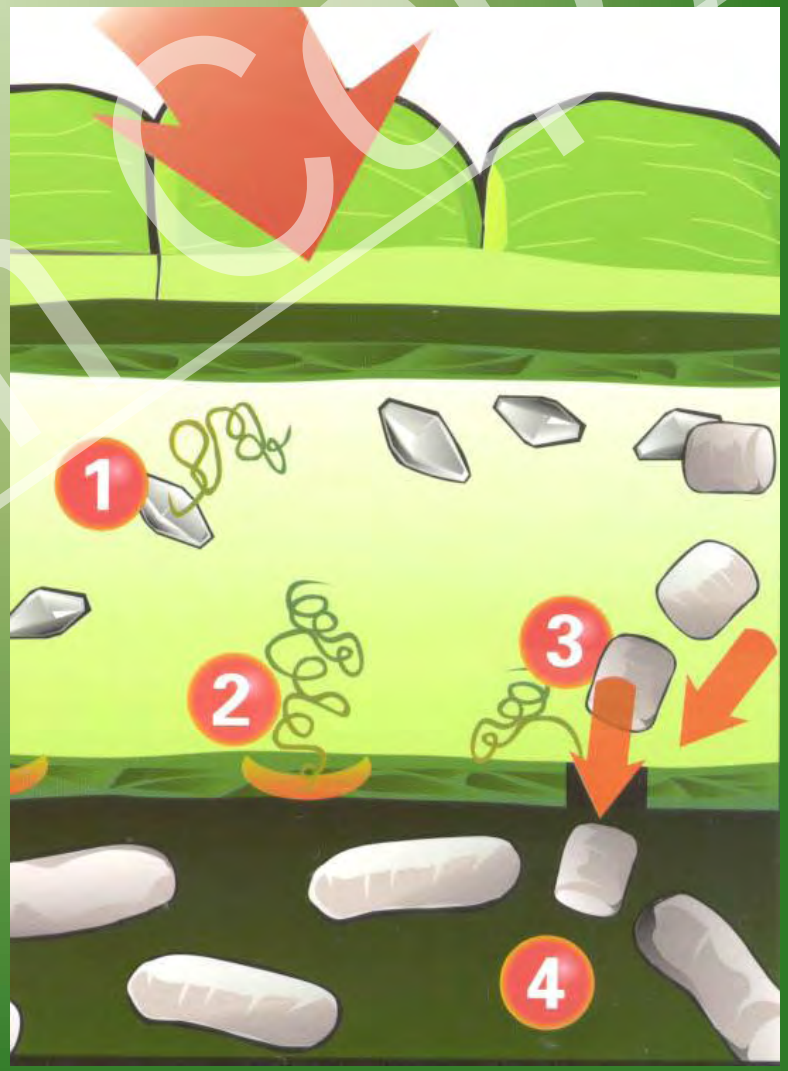
- Airflow capacity 300 m^3/min;
- Electric control valve;
- Electrostatic unit;
- Videocamera.

Bacillus thuringiensis (Bt's) action on larvea

- Caterpillars eat Bt's , in 1 to 4 hours they stop eating;
- Dying in 2 to 10 days.

Details

1) Bt toxin crystals dessolve in intestinal tract.
2) Bt toxin crystals activate and fix to intestine.
3) Intestinal tract is damaged.
4) Bt spreads in caterpillar and host dies.




Circulation Copy

Controlling method

2.Blow torch

Personal protection:

- Leather pressuremask
- Leather gloves
- Fire resistant overalls
- Fire resistant underwear
- Leather boots
- Fire extinguisher


Circulation Copy

2.Properties Blow torch

- Not to be used on young trees
- Dangerous material remaining
- Employees are highly exposed to urticating hairs;
- Urticating hairs spread over 100 meters.

Controlling method

3.Picking

Personal protection:

- Pressuremask
- Gloves
- Overals type 5/6
- Boots


circulation copy

3.Properties picking

- Quick, deployeable in every kind of tree;
- Labor intensive method;
- Limited spread of urticating hairs;
- Be aware of processing urticating material as dangerous waste.

Controlling method

4. Parasite Hit®

- Mobile burning unit with platforms;
- High transportation speed;
- High capacity;
- Researched method, waste material is harmless;
- No limitation for disposal as not dangerous material;

Controlling method

5. Sucking with industrial vacuum cleaner

- Labour intensive method;
- Contact with urticating hairs;
- High transportation speed;
- Flexible method useable from platform and inaccessible areas;
- Dispose of as hazardous waste.

Spraying

Picking

Controlling is the mix of right methods!

Sucking

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Registration

Accepting – Not in UK yet

Nematodes, research and development

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Gristwood &Toms

•Nematodes can be used as a natural parasite to OPM;

•Nematodes has to be applied twice in the evening;

•Nematodes reduce a population by 85%.

Spraying L5

9-6-2010

L 5

11-6-2010

L 5

13-6-2010

L 5

13-6-2010

L 5

14-6-2010

L 5

14-6-2010

L 5

16-6-2010

100% afgestorven

L 5

19-6-2010

Pheromone traps

Properties pheromone traps

- Gives information about pest intensity and spread;
- Collects moths from outside management area;
- Information can be translated to inspection areas;
- One fresh moth or more than 5 flew off moths indicates that there are nests in 500 meter.

4/AN 03
4/AN 04a
5/WP 05
5/WP 01
15/WK 06
3/ZB 06
Amsterdam
7/OD 03
8/SV 03
12/AW 03
3/ZB 03
2/OW 05
7/OD 06
11/AZ 05
11/AZ 06
8/SV 06
Diemen
10/ZA 05
2/OW 01
10/ZA 03
9/AB 06
Luchthaven Schiphol
Amstelveen
1/ZO 29
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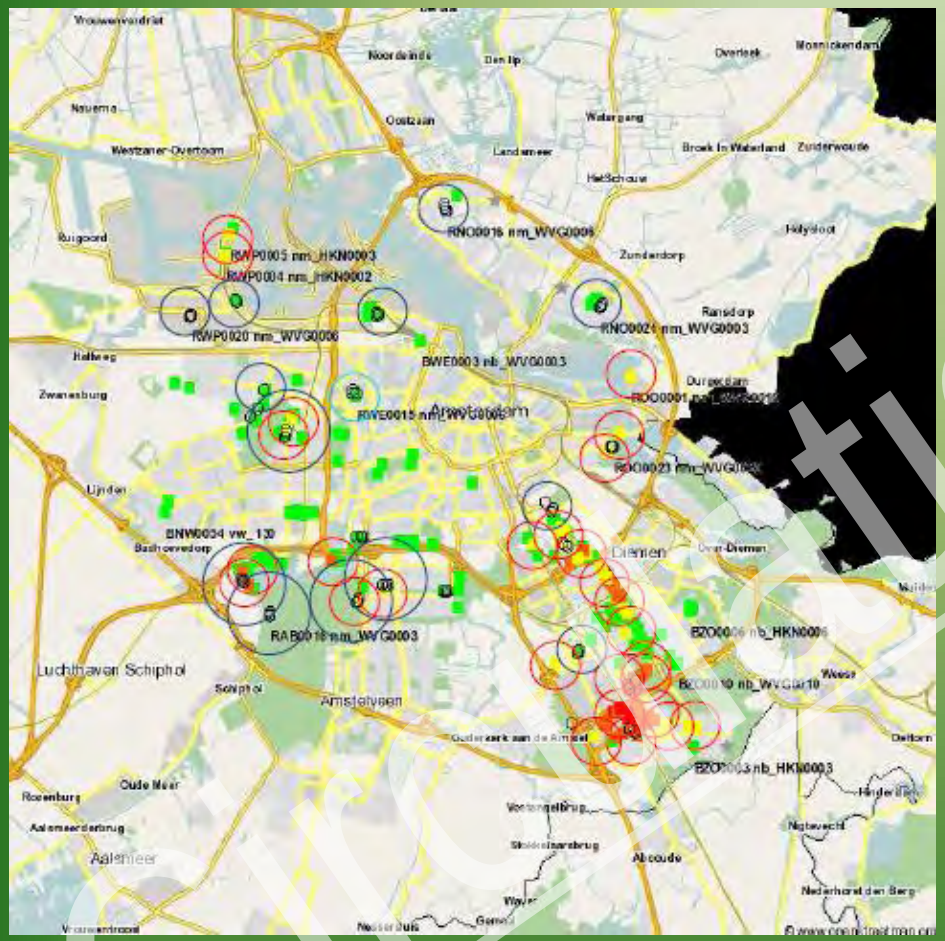
Inspection areas next season

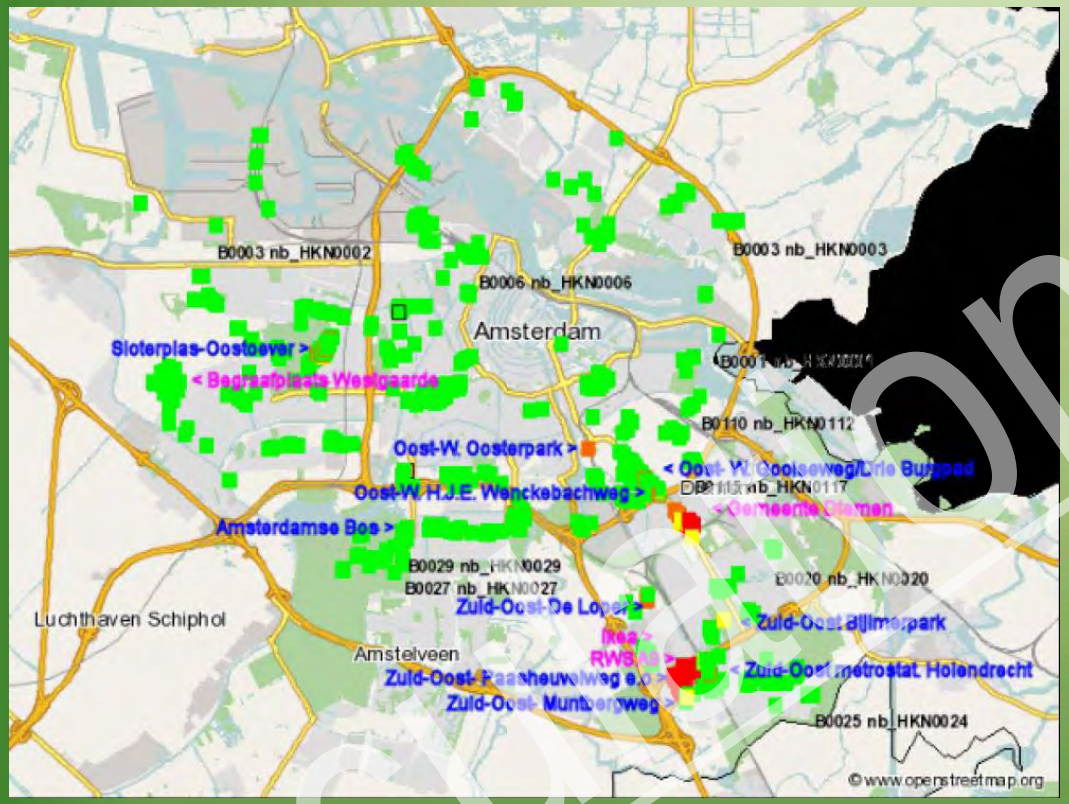


- Red circle, inspection area radius 500 metre from infected tree;
- Blue circle, inspection area radius 500 metre from pheromone trap with less than 5 moths;
- Big blue circle, inspection area radius 1000 metre from pheromone trap with more than 5 moths or 1 fresh moth;

Research nest 6 October 2010

Research Compact Unit by University of Wageningen

Relevance of Dutch outbreak to London



- New outbreak detected in 2009 in Amsterdam
- Urban environment
- Established for about 3 years
- Survey and Pheromone traps to indicate spread.
- Similar treatment restrictions

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Gristwood & Toms

G&T working with LTOA

- Part of the LTOA OPM working group
- Co-operative effort between tree officers and contractors
- Aims:
  - Accurate plotting of previous outbreaks
  - Uniform data collection going forward
  - Develop management plan across outbreak area

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Current situation

- HK to provide training to key G&T staff.
- Nest removal in Reading.
- LTOA OPM management plan.
- Van MEWP for all weather removal.
- Start pre-season checks of equipment.
- Awaiting clarification of FC involvement

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Current situation – Natural England

- LTOA OPM group request for information from NE regarding use of pesticides in SSSI.
- Highlight the need for more information
- Learn from experience in Europe.
- DiPel over Deltamethrin.
- Need for joined up response.

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Current situation – Forestry Commission

STOP PRESS

- Announcement from FC to move to Containment rather then irradication
- Management down to Local Authorities and Tree owners
- FC no longer to issue Statutory Notices in core outbreak zone
- Monitor population only via pheromone traps

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Why G&T

- Proactive and progressive leader in OPM management.
- Exclusive partnership with leading European expert.
- Access to latest R&D developments.
- Committed to protecting you, our staff and the environment.
- Fully equipment to handle all situations

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Discussion:

- Eradication

OR

- Reducing health problems to acceptable levels

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