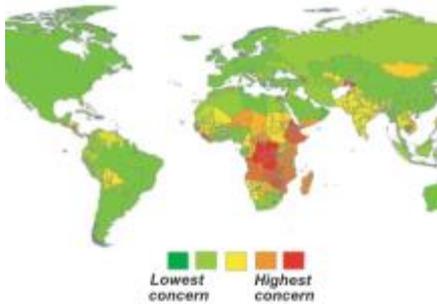
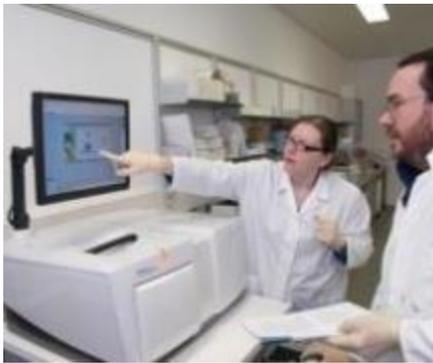




Plant and Tree Health early warning systems - working with Citizen Scientists

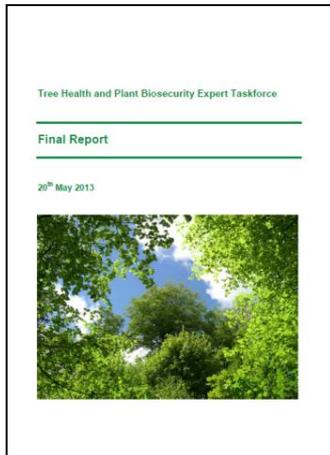
Dr Charles Lane, Consultant Plant Pathologist
charles.lane@fera.co.uk  @cobwebdr



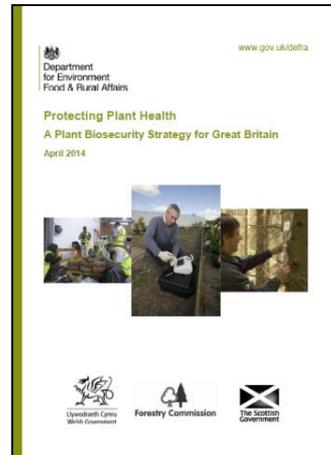
World food insecurity reports based on hunger, food aid and dependence on agricultural grain. Data from FAO and WFP, 2007-2010. (Global Environmental Change and Food Systems (GECFS), personal communication)



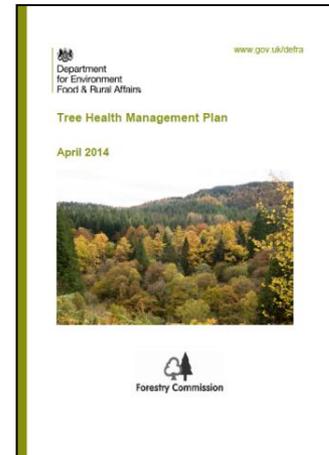
Tree Health and Plant Biosecurity Strategy



**Expert
Taskforce Report
2013**



**Plant Biosecurity
Strategy
2014**



**Tree Health
Management Plan
2014**



**Ash dieback found in
the UK in the 'wild' in
October 2012**

Protecting Plant Health: A Plant Protection Strategy 2014

Raising Awareness and Involvement

Ensure all those with a role in plant health are more aware of plant health risks and know what they can do to reduce them. Ensure that, where appropriate, responsibility sits with those who benefit from the reduction in risk.

The value of the input from public and industry was highlighted during the response to *Chalara fraxinea* (ash dieback), when they made a major contribution to the effort to identify its extent. Raising awareness of plant biosecurity and developing an integrated package of measures to mobilise people to act (drawing on a range of policy and communications tools to influence behaviour) is therefore a key element of this strategy.

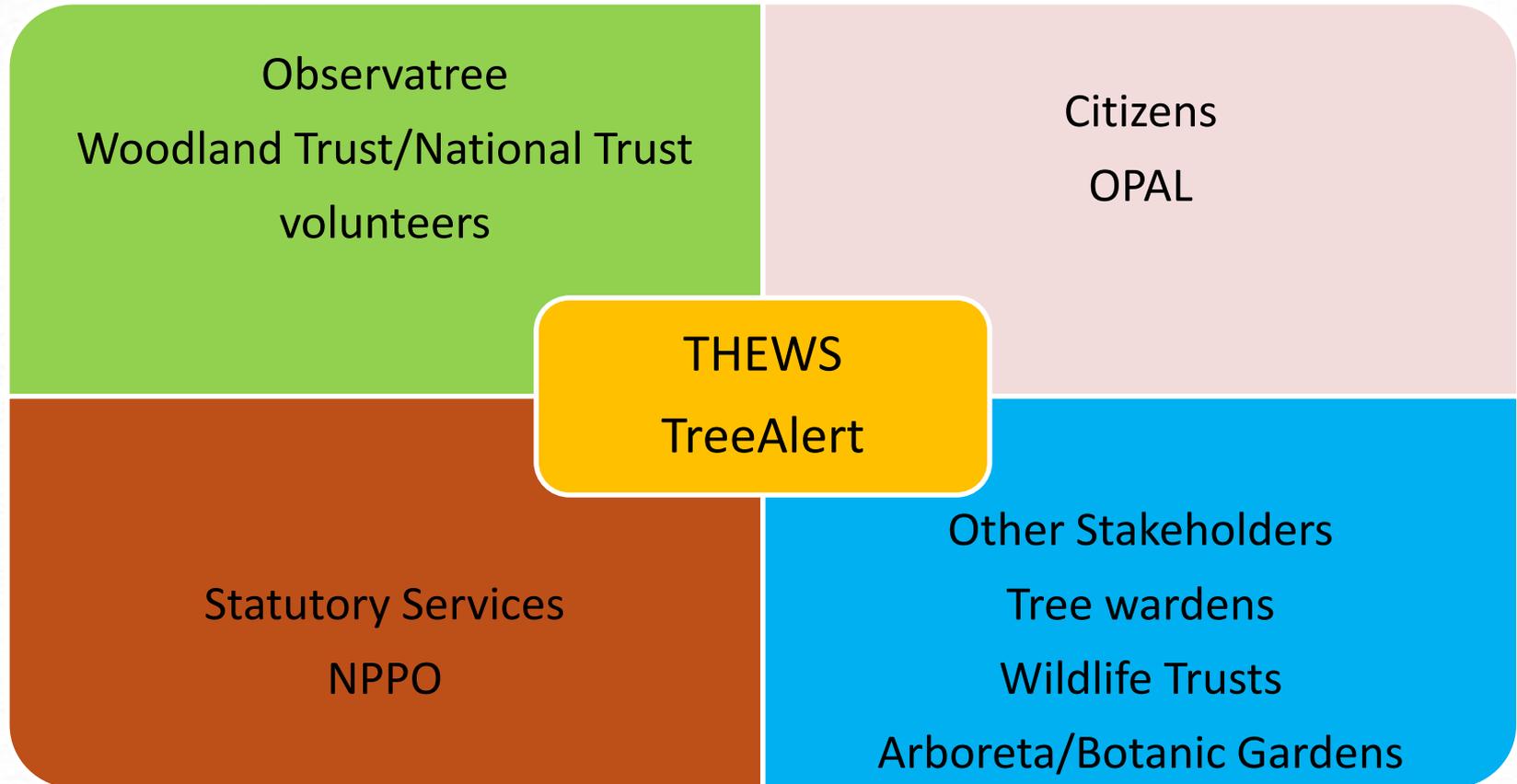
Make use of and support existing networks of individuals with an interest in plant health. Including supporting public participation in scientific research (citizen science) through initiatives such as Open Air Laboratories (OPAL) and ObservaTREE which seek the public's help in identifying tree pests. These will provide a cadre of trained members of the public able to spot outbreaks of plant pests thereby increasing capability and capacity. We will ensure that these individuals are aware of biosecurity and plant hygiene to avoid spreading pests through their own activities.



THEWS - Triage



Tree Health Early Warning System (THEWS) Relationships





Soil



Air



Water



Biodiversity



Climate

The OPAL Tree Health Survey – pioneering engagement of the public to support tree health policy needs

Dr David Slawson
OPAL, Imperial College, London



Funded by the EU's LIFE programme



LOTTERY FUNDED



Soil



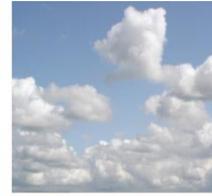
Air



Water



Biodiversity



Climate



Survey Design



Activity 1 Get to know your trees (Outreach – learning/awareness/stewardship)

Activity 2 How healthy are your trees? (Research)



6 “Most Unwanted” (Research/evidence)

Chalara ash dieback, Asian longhorn beetle, Citrus longhorn beetle, Emerald ash borer, Oak processionary moth, Pine processionary moth





Soil



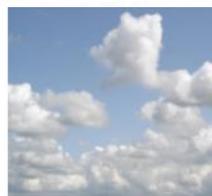
Air



Water



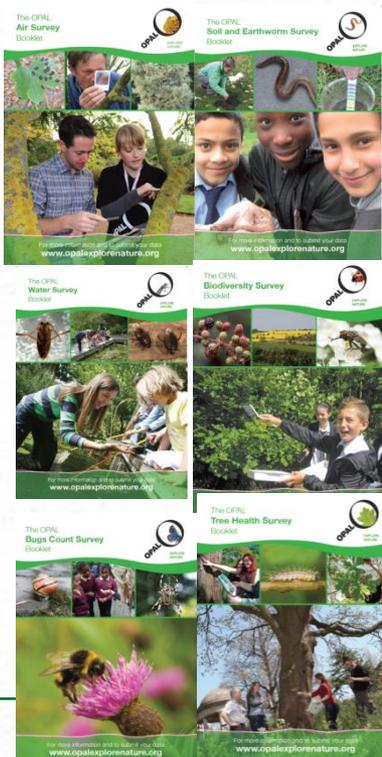
Biodiversity



Climate



Open Air Laboratories (OPAL) “Citizen science for everyone”



- Over **900,000** participants
- **20%** from hard to reach communities
- More than **3,500** schools involved
- **2,800** organisations engaged
- Over **54,000** surveys completed



Soil



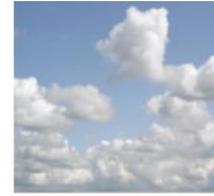
Air



Water



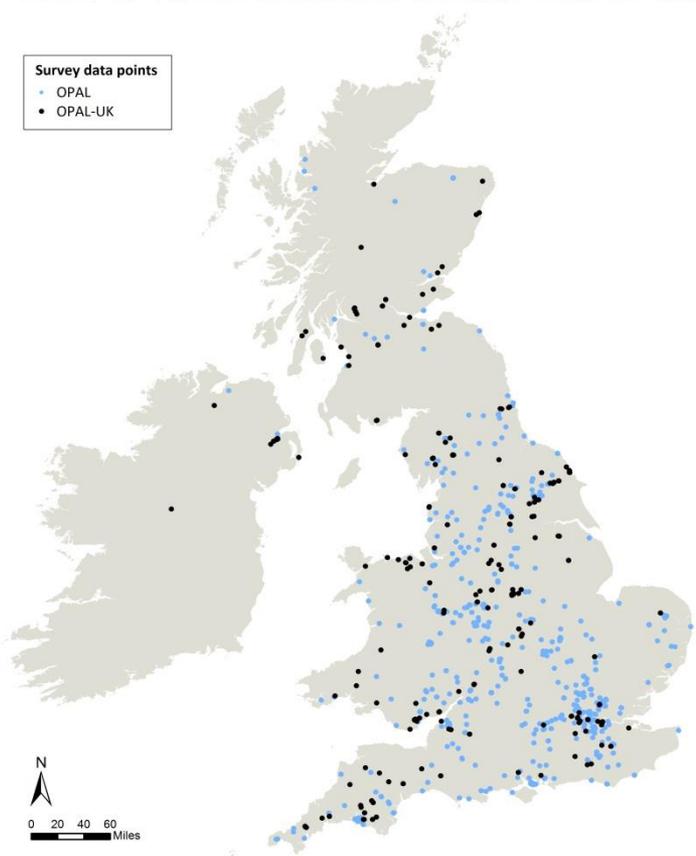
Biodiversity



Climate



Impacts – research/evidence



- **1741** survey forms (sites) submitted
- Across the whole of the UK
- **2483** trees surveyed
 - Oak (28%)
 - Ash (22%)
 - Horse Chestnut (14%)
 - Sycamore (6%)
 - Beech (4%)

supported by the EU's LIFE programme



LOTTERY FUNDED



Soil



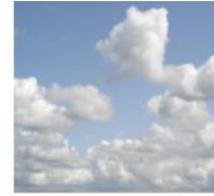
Air



Water



Biodiversity



Climate



Impact - Outreach

Participants:

- 28.1% Friends and family
- 48.2 % Education (Primary 16.7%; Secondary 28.0%; College/university 3.5%)
- 19.3% Adult volunteer group
- 3.5% Tree Buddy initiative

Outreach (learning/awareness)

- 92% learnt something new
- 86% developed new skills

Outreach (stewardship/behaviour change)

- 64% changed the way they think about the environment
- 59% changed their behaviour towards the environment



International Plant Sentinel Network



An International Plant Sentinel Network as an early-warning system for future pest threats

International Network & Collaboration



Who?

- Global network:
- Botanic Gardens & Arboreta
- Plant Health Scientists
- National Plant Protection Organisations
- Plant Health Policy Makers



What?

- Evidence gathering
- Education and awareness – pest & disease recognition, biosecurity
- Capability and capacity building
- International & local collaboration

Role

Predict	✓
Prevent	
Protect	✓
Prepare	
Partnering	✓



Conclusion - protecting the value: The 5 precepts of Plant Health



- Systematic and proactive screening of new and emerging risks – UK PH Risk Register
- International Plant Sentinel Network of botanical gardens and arboreta



- Targeted inspections at the border to intercept high risk trades
- Protected zones to restrict the movement and import of high risk species



- Aerial and ground based surveillance for high priority pests
- Eradication and control programmes



- Generic and pest-specific contingency plans
- World leading research and modelling



- Biosecurity advice and good practice, increasing skills
- Shared responsibilities and expertise

Contact:

Katherine O'Donnell, BGCI katherine.o'donnell@bgci.org

Charles Lane, Fera charles.lane@fera.co.uk

Developing and Sharing Best practice

- Pest and Disease Technical Input
- Plant Health Checker
- Guides
- Posters

Plant Health Checker - Step 1

Name of Botanic Garden / Institution: _____
Country: _____
Address: _____

Name of POB contact: _____
Survey details: _____
Survey carried out by: _____

Date of survey: _____
Time of day (approx. time of day): _____
Site name (if applicable): _____

Plant details:
Species (Full name): _____
Common name: _____
Age: _____
Country/region species is native to: _____
Significance of tree/plant has been present in garden: _____
Other comments: _____

General description of environment:
 Are there any other plants in the vicinity?
 Description of environment (fencing, access, etc.)

For each section of the plant give a rating dependent on the health of the plant.
 1 = Good
 2 = Fair
 3 = Poor
 4 = Very Poor
 5 = Dead

1) Crown
 2) Flowers / Foliage
 3) New growth
 4) Bark
 5) Trunk / C-rot

Plant Health Checker - Step 1

Name of Botanic Garden / Institution: _____
Country: _____
Address: _____

Name of POB contact: _____
Survey details: _____
Survey carried out by: _____

Date of survey: _____
Time of day (approx. time of day): _____
Site name (if applicable): _____

Plant details:
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Significance of tree/plant has been present in garden: _____
Other comments: _____

General description of environment:
 Are there any other plants in the vicinity?
 Description of environment (fencing, access, etc.)

For each section of the plant give a rating dependent on the health of the plant.
 1 = Good
 2 = Fair
 3 = Poor
 4 = Very Poor
 5 = Dead

1) Crown
 2) Flowers / Foliage
 3) New growth
 4) Bark
 5) Trunk / C-rot

Plant Health Checker - Step 2

Name of Botanic Garden / Institution: _____
Country: _____
Address: _____

Name of POB contact: _____
Survey details: _____
Survey carried out by: _____

Date of survey: _____
Time of day (approx. time of day): _____
Site name (if applicable): _____

Plant details:
Species (Full name): _____
Common name: _____
Age: _____
Country/region species is native to: _____
Significance of tree/plant has been present in garden: _____
Other comments: _____

General description of environment:
 Are there any other plants in the vicinity?
 Description of environment (fencing, access, etc.)

For each section of the plant give a rating dependent on the health of the plant.
 1 = Good
 2 = Fair
 3 = Poor
 4 = Very Poor
 5 = Dead

1) Crown
2) Flowers / Foliage
3) New growth
4) Bark
5) Trunk / C-rot

6. Leaves and twigs (leaf spots)
7. General pest damage
8. Fruit damage
9. General observations and additional notes

1) Crown
 2) Flowers / Foliage
 3) New growth
 4) Bark
 5) Trunk / C-rot
 6) Leaves and twigs (leaf spots)
 7) General pest damage
 8) Fruit damage
 9) General observations and additional notes

P&D Workshops & training



Huntington Library, Art Collections and Botanical Gardens, U.S.



Shenzhen Fairy Lake Botanical Garden (CAS), China



Royal Botanic Gardens Kew, UK



The International Plant Sentinel Network #Spittlebughunt



In an effort to protect the UK from *Xylella fastidiosa*, a bacterium causing mortality to many plant species, the #spittlebughunt project aimed to collect information on current plant hosts of spittlebugs, which are known to carry the disease. People were invited to share information on Twitter using #spittlebughunt, including a photo, the location, and the name of the plant hosting the spittlebugs.

Volunteers

A total of 20 people participated in the project



Location



Plants

Lavender (*Lavandula*)
Dock (*Rumex*)
Bramble (*Rubus fruticosu*)
Nepeta 'Six Hills Giant'
Lady's-mantle (*Alchemilla mollis*)
Gorse (*Ulex*)



Honeysuckle (*Lonicera periclymenum*)
Black Knapweed (*Centaurea nigra*)
Red campion (*Silene dioica*)
Ribwort plantain (*Plantago lanceolata*)
Rosemary (*Rosmarinus officinalis*)
Salad burnet (*Sanguisorba minor*)
Strawberry (*Fragaria x ananassa*)

#spittlebughunt

May to June 2017

IPSN Information Poster

Web based resources

Twitter for data recoding

65 tweets; 20 participants

80 host records

Reciprocal identification skills
– plants and cuckoo spit



International Plant
Sentinel Network



BGCI

Plants for the Planet

Observatree



Observatree volunteer network

Volunteer activity to date:
13,670 hours logged

2,996 site surveys (1,046
finding a tree pest or disease)

- Oriental chestnut gall wasp
- Acute oak decline
- Suspected European mountain ash ringspot
- Chalara
- Horse chestnut leaf miner
- Various *Phytophthora* species



Priority pests and diseases

1. Chalara Dieback of Ash
2. Dothistroma Needle Blight
3. Acute Oak Decline
4. *Phytophthora lateralis*
5. Oak Processionary Moth
6. Great Spruce Bark Beetle
7. Mountain Ash Ring Spot Virus
8. Horse Chestnut Leaf Miner
9. Chestnut Blight (South)
10. *Phytophthora austrocedri*
11. Citrus Longhorn Beetle
12. Asian Longhorn Beetle
13. Oriental Chestnut Gall Wasp
14. Emerald Ash Borer
15. Red-necked Longhorn Beetle
16. Plane Lace Bug
17. Pine Processionary Moth
18. Oak Lace Bug
19. Plane Wilt
20. Bronze Birch Borer
21. *Sirococcus tsugae*

Information Portal « Observatree » x +

www.observatree.org.uk/public-information-portal/

Search

Search...

[About](#)
[Tree health](#)
[Latest News](#)
[Blog](#)
[FAQ](#)
[Contact us](#)

Information Portal

Home → **Information Portal**

Welcome to Observatree's information portal – a central directory that will help lead you to a wealth of further online material related to tree pests and diseases. Please [contact us](#) if you find a link not working or you need information you cannot find.

Tree Health

- General Tree health
- Tree Health Citizen Science Projects

Biosecurity

- General biosecurity
- Measures and guidance

Biggest threats - priority pests and diseases

Click on names for more information.



Acute Oak Decline



Chalara Dieback of Ash
(*Hymenoscyphus fraxineus*)



Asian Longhorn Beetle
(*Anoplophora glabripennis*)



Bronze Birch Borer
(*Agrylus anxius*)



Chestnut Blight
(*Cryphonectria parasitica*)

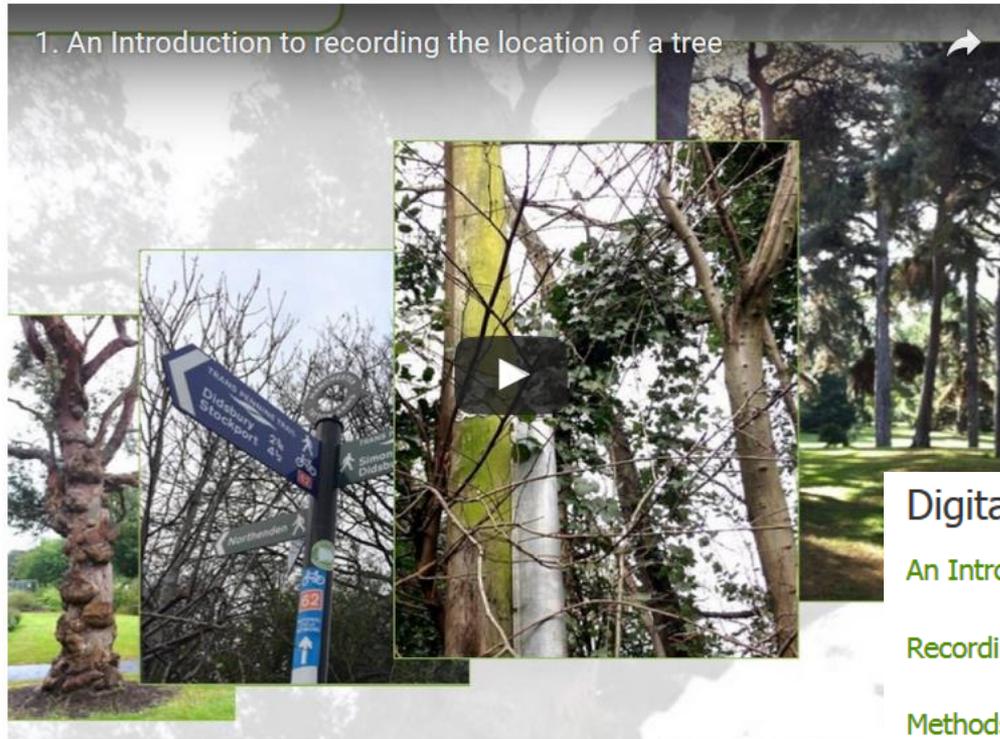


Oriental Chestnut Gall Wasp
(*Dryocosmus kuriphilus*)

Windows taskbar: 11:57 23/09/2015

An Introduction to recording the location of a tree

[Home](#) → [Resources](#) → [Watch and Learn](#) → [An Introduction to recording the location of a tree](#)



Digital Learning Resources

Digital Learning

[An Introduction to recording the location of a tree](#) (12.21 mins)

[Recording the location of a tree](#) (19.31 mins)

[Methods and technologies](#) (15.49 mins)

[Returning to a tree](#) (13.56 mins)

Observatree Media

Observatree
monitoring tree health

Don't let tree disease cost you

The UK is at risk of losing millions of trees to a number of pests and diseases which could seriously damage UK landscapes and woodland.

Approximately 13% of the total land area of the UK is woodland. The benefits that UK can provide are worth over £270 billion* to the UK economy. Woodlands have a huge role in attracting tourism and leisure, and generating businesses, such as farming and game shoots, often rely on trees to provide shelter belts to protect animals and birds. But the full value of woodland is not always recognised until it's too late.

Observatree is a project that aims to help protect UK trees, woods and forests from new pests and diseases through early detection and reporting. Early detection is most always recognised until it's too late.

We need your help
If you notice or work with trees we would like you to keep an eye out for the most prevalent tree pests and diseases and report anything of concern.

Your help is essential to monitor any outbreak or spread. Diseases and insects impact across the UK.

As a gardener and tree surgeon and imager, impact across the UK.

Join our team of volunteers and help us monitor any outbreak or spread. We have worked with them for many years. Observatree resources provide invaluable information on the latest pests and diseases threatening them.

Terry Bates, Landscape Designer, Arborist and Observatree volunteer

Working with the UK Government Plant Health Risk Group, we have identified 21 tree pests and diseases which are of the highest concern at the moment.

To help you, we have developed free, downloadable resources, including:

- Identification Guides
- Signs and symptoms calendar
- Webinars and training videos
- Reporting checklists

For more information visit: observatree.org.uk/resources

20% funded by the EU LIFE programme

Download your toolkit today, visit: observatree.org.uk/toolkits

To help you, we have produced free, downloadable toolkits which include:

- Identification guides
- Reporting checklists
- Frequently asked questions

20% funded by the EU LIFE programme

Top Posts By Clicks

f The Woodland Trust @thewoodlandtrust
Jun 14 2017 10:01 by James Wainwright
There are hundreds of pests and diseases that are currently a potential threat to UK trees. The Government has created the UK Plant Health Risk Register which records and rates risks to UK trees (and other plants) from plant pests and diseases.

Working with the UK Plant Health Risk Group (the group that maintains the UK Plant Health Risk Register), Observatree has identified those pests and diseases which are of the highest concern at the moment. Find out what pests and diseases we are most keen to hear about at <http://www.observatree.org.uk/risks/> (<http://www.observatree.org.uk/Media>) and help us stand up for trees.

44741 64 183 47 324

f The Woodland Trust @thewoodlandtrust
Jul 27 2017 9:00 by James Wainwright
There are hundreds of pests and diseases that are currently a potential threat to UK trees. The Government has created the UK Plant Health Risk Register which records and rates risks to UK trees (and other plants) from plant pests and diseases.

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35504 63 145 33 255

f The Woodland Trust @thewoodlandtrust
Jul 20 2017 9:00 by James Wainwright

Top posts by Interactions

f The Woodland Trust @thewoodlandtrust
Jun 14 2017 10:01 by James Wainwright
Help #Observatree spot the effects of #PestsAndDiseases with our handy #FieldGuide to Identification. <http://www.observatree.org.uk/FieldGuide> to #TreeDisease (<http://www.observatree.org.uk/FieldGuide>)

240076 14 20 1 27

f The Woodland Trust @thewoodlandtrust
Jul 12 2017 14:00 by James Wainwright
Hundreds of #PestsAndDiseases are currently a threat to UK trees. Help #Observatree spot and record them. <http://www.observatree.org.uk/risks/>

44741 64 183 47 324

f The Woodland Trust @thewoodlandtrust
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222385 35 27 1 21

f The Woodland Trust @thewoodlandtrust
Jul 14 2017 9:00 by James Wainwright
Help #Observatree protect our trees from pine processionary moths, with our handy #FieldGuide to Identification. <http://www.observatree.org.uk/FieldGuide> to #PineMoth (<http://www.observatree.org.uk/FieldGuide>)

June/July 2017
multi media
campaign achieved:

- Highest ever web sessions in one month (2,748)
- Highest ever number of web visitors via social media (36%)
- Number of resources watched in one month doubles to 1,000

Citizen Science



Plant Health Scientists : Citizen Scientists

Reciprocal benefits

Co-created project design

Understand each others motivations and desired outcomes

Citizen Science - issues



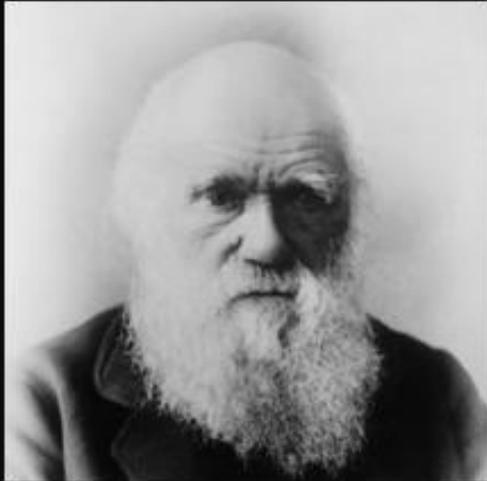
Challenges

- 'Big' data sets
- Verification
- Value
- Integration into statutory surveillance data
- Investment in co-ordination, training, feedback, rewarding Citizen science inputs
- Sustained and long term commitment

Rewards

- Large network of hard working, passionate, highly engaged people
- Training and interactions are inspiring and fun
- Raised awareness and understanding of plant health and biosecurity – ambassadors
- Improved networking amongst Statutory bodies, NGOs, stakeholders, public

The original Citizen Scientist?



Charles Darwin

It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to change, that lives within the means available and works co-operatively against common threats.