

PHYTO-THREATS

Global Threats from *Phytophthora* spp.;

Understanding drivers of emergence and opportunities for mitigation through nursery best practice



Supported for three years by a grant funded jointly by:

- Biotechnology and Biological Sciences Research Council (BBSRC)
- Natural Environment Research Council (NERC)
- Economic and Social Research Council (ESRC)
- Department for Environment, Food and Rural Affairs (DEFRA)
- Forestry Commission
- Scottish Government

Under the Tree Health and Plant Biosecurity Initiative (THAPBI)

- *Phytophthora* means 'plant destroyer'
- Oomycetes - 'water molds' spread via free swimming zoospores
- Borne in water and soil - can persist in soil
- Mainly infect plants through roots but some species also infect stems and foliage
- ~ 150 species described worldwide on broad range of hosts
- ~ 50 species currently known to occur in UK
- 5 species pathogenic to trees 'emerged' in UK over last ten years



Phytophthora austrocedri on juniper.....from ?



Also associated with widespread decline of *Austrocedrus chilensis* in Patagonia (*mal del cipres*)



Photo: E. Hansen

Phytophthora ramorum
on larch

Host jump !. Which host next ?

From Eastern Asia via Europe ?

Severe impact on commercial
forestry in western parts of UK



Phytophthora lateralis on
Lawson cypress

From SE Asia

Devastated Lawson cypress
in Oregon/California since 1950s

Impact in Britain on amenity
plantings



Phytophthora kernoviae

Infects broadleaves (ie beech)
and *Vaccinium*

From ?



Phytophthora pseudosyringae

Infects *Nothofagus*, beech and other deciduous tree species as well as *Vaccinium*

From ?



Phytophthora introduction and spread linked to plant trade



(WP1) Phytophthora distribution, diversity and management in UK nursery systems

Led by David Cooke, James Hutton Institute

Examine the distribution, diversity and community interactions of *Phytophthora* in UK plant nursery systems



(WP2) Feasibility analyses and development of 'best practice' criteria

Led by Mariella Marzano, Forest Research

Provide the evidence base for a voluntary nursery 'best practice' accreditation scheme to mitigate further spread



(WP3) Global Phytophthora risks to the UK

Led by Bethan Purse, Centre for Ecology and Hydrology

Identify and rank global *Phytophthora* risks to the UK



(WP4) Predicting risk via analysis of *Phytophthora* genome evolution

Led by Paul Sharp, University of Edinburgh



Gain a greater understanding of the evolutionary pathways of Phytophthoras

(WP5) Project coordination, communication and interaction

Led by Sarah Green, Forest Research



Support project co-ordination, communication, and interaction



Help us reduce the spread of *Phytophthora*

A new research project is underway, aiming to tackle the spread of *Phytophthora* diseases in trade across the UK – and we'd like your help!

As part of this project, we are working to identify which *Phytophthoras* occur and where within nursery and retail production systems they are most prevalent.

We would like to work with you!

We seek plant nurseries and traders to participate in this project by sharing your expertise and experiences with us and allowing us to sample water and plants at regular intervals during the course of the project. In return, we will provide you with information about your *Phytophthora* risk and work with you to reduce it.

Why get involved?

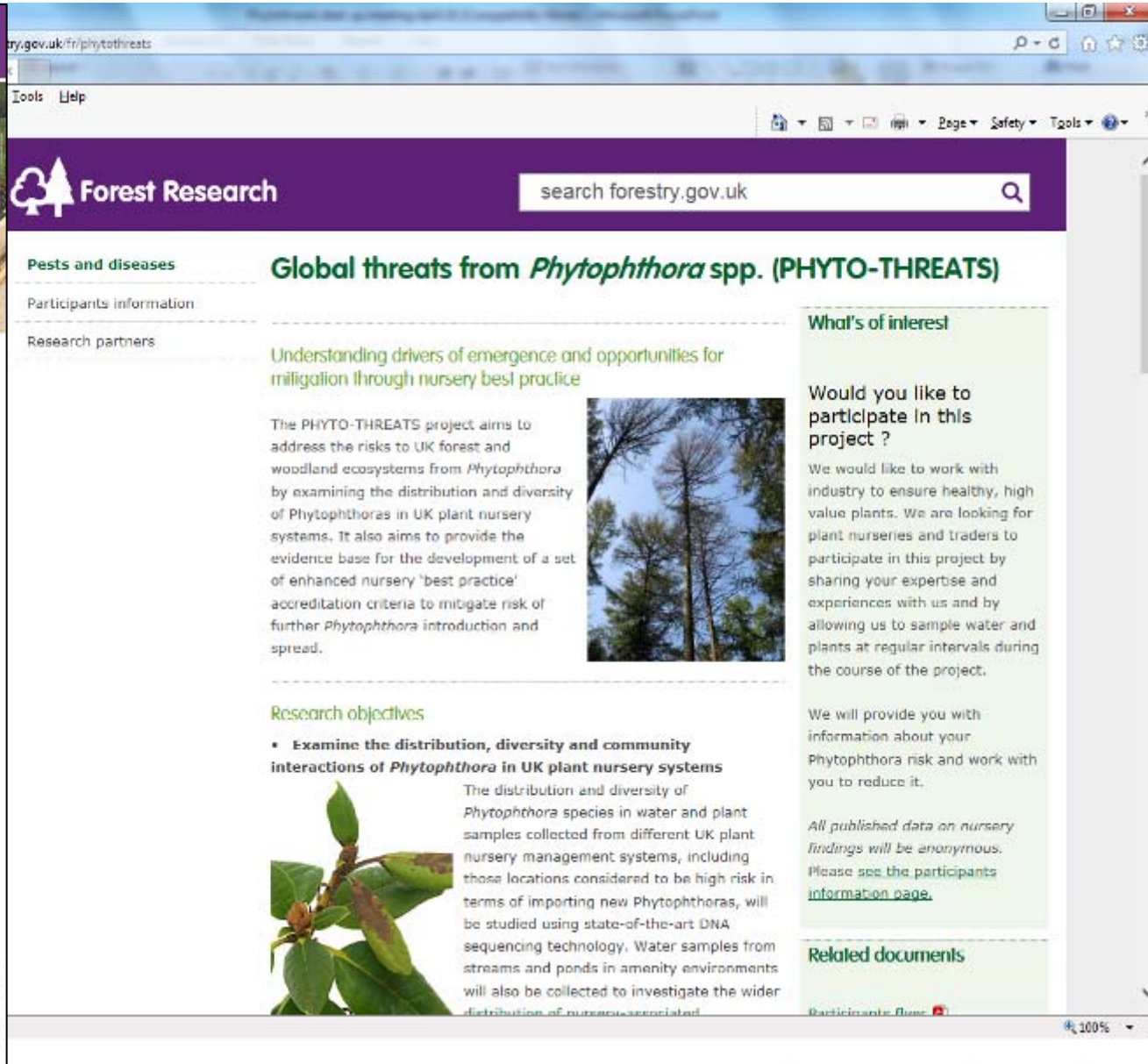
Britain's plant trade and natural environments are under increasing threat from a broad range of plant-pathogenic *Phytophthoras* that exist in many different parts of the world. These microscopic invaders are being brought into Britain and spread around the country in soil, water and tissues of a large number of plant species. This spread is damaging both our plant industry and our well-loved ecosystems. This project will provide invaluable data to help businesses – like yours – manage their *Phytophthora* risk.

For an informal chat about how you might get involved, please contact Sarah Green:

sarah.green@forestry.gov.uk or 0300 067 5941.

www.forestry.gov.uk/fr/phytothreats

All published data on nursery findings will be anonymous.

The screenshot shows a web browser window displaying the Forest Research website. The page title is "Global threats from *Phytophthora* spp. (PHYTO-THREATS)". The navigation menu includes "Pests and diseases", "Participants information", and "Research partners". The main content area features a section titled "Understanding drivers of emergence and opportunities for mitigation through nursery best practice", which includes a photograph of a tree and text describing the project's goals. A sidebar on the right contains a "What's of interest" section with the heading "Would you like to participate in this project?" and a "Related documents" section.

Project Manager - Sarah Green; lead advocate and project co-ordinator

Project Board - Sarah Green, David Cooke, Mariella Marzano, Bethan Purse, Paul Sharp, Senior User

Senior User - Stakeholder representative (to be appointed)

Expert Advisory Panel - Policy, regulatory and industry representatives;

- John Morgan, Head of Plant Health, Forestry Commission
- John Speirs, Senior Policy Advisor, Scottish Government
- Kelvin Hughes, Chief Plant Health and Seeds Inspector, Animal and Plant Health Agency
- Richard McIntosh, Assistant Chief Plant Health Officer, Defra
- Jon Knight, Head of Research and KT, Agriculture & Horticulture Development Board
- Giles Hardy, Director for Centre for *Phytophthora* Science and Management, Murdoch University, Australia
- David Slawson, Director of Opal Project, Imperial College, London
- Clive Potter, Environmental Social Scientist, Imperial College, London

Project Administrator - To be appointed, based within Forest Research

1. Introductions
2. Work package overviews; objectives, methods, programme of work and discussion
3. Stakeholder perspectives from three managers of partner nurseries
4. Policy and industry perspectives from four members of Expert Advisory Panel
5. Discussion on project communication

- i) **Network to promote information exchange and interdisciplinary practice within project team**
 - 'Huddle' for project/task management including sharing of project information and data
 - WP leaders to hold WP meetings according to programme of work
 - Monthly or bimonthly phone meetings of project board (WP leaders + stakeholder rep)
 - Biannual meetings of research team and members of Expert Advisory Panel - to incorporate a scientific 'outing' to facilitate joint understanding of the research problem
 - Where and when to hold next all-project meeting ? (alternate hosts)
 - Possibly York (Sand Hutton) in mid Sept with afternoon visit to nursery (Johnsons of Whixley?)

ii) Science-policy-practitioner Network (SPPN)

Three annual SPPN workshops to foster collaborative engagement and knowledge exchange involving project scientists, plant traders, policy makers, consumer representatives and conservation groups

- Year 1: scene setting and building relationships
- Year 2: identifying effective management options
- Year 3: scoping the potential and future development of an accreditation scheme

- Where and when to hold first SPPN ?
- Possibly link in with National Plant Show at Stoneleigh, Coventry June 21-22nd 2016 ?
<http://nationalplantshow.co.uk/>

Or

- Link in with September project meeting (ie project meeting day 1, SPPN day 2)
- Q: WHO TO INVITE ?