

Phytophthora ramorum on Japanese larch in the UK

Joan Webber, Forest Research

Ben Jones, Forestry Commission

1994
1996
1998
2000
2002
2004
2006
2008
2009
2010

- ← First symptoms (USA)
- ← First symptoms (Europe)
- ← *Phytophthora* sp. identified (Europe)

- ← *Phytophthora* sp. identified (USA)
- ← Link between USA / Europe disease
- ← *P. ramorum* described
- ← PHSI surveys begin
- ← Emergency legislation implemented (*P. ramorum*)
- ← First UK finding (ornamental)
- ← First UK finding (tree)
- ← *Phytophthora kernoviae* identified
- ← RAPRA project starts
- ← Emergency legislation implemented (*P. kernoviae*)

- ← First UK finding on Heathland
- ← European Pest risk analysis
- ← First finding on commercial tree crop (Larch)

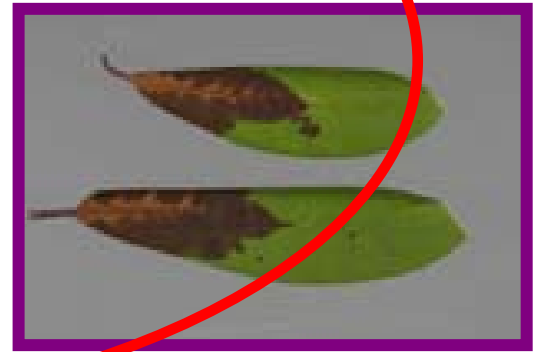


Phytophthora ramorum

Bleeding lesions
on beech



Inoculum from
rhododendrons



Emerging findings: Aug-Sept 2009

- Dieback of Japanese larch (JL) on the public forest estate reported to FR, triggered a visit in August 2009
- JL with extensive dieback & mortality in some SW forests
- *P. ramorum* isolated from the resinous cankers and symptomatic foliage, although difficult to culture the pathogen from conifer tissue
- Symptoms on affected larch - needle loss, dieback of fine branches, cankers on main branches and trunk
- Trees found with multiple cankers, eg 35cm dbh tree, with more than 80 individual resinous cankers

Infected maturing larch commonly 20-25m tall



Young larch (5-8 yr) probably infected from the mature larch

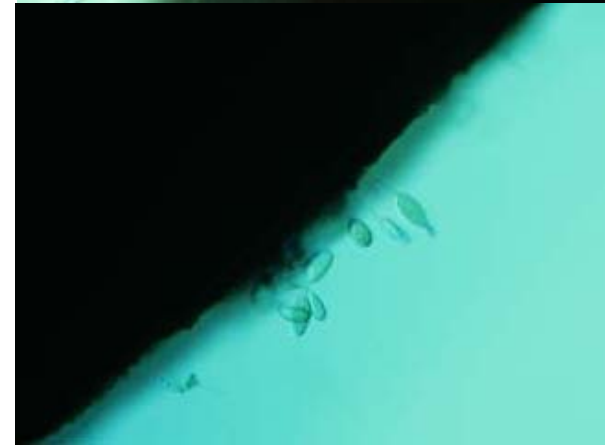


Foliar symptoms, Aug-Sept 2009



Naturally infected needles 2010

- Sporangia and chlamydo-spores visible on needles
- Numbers of sporangia ranged from 1-75 on each individual needle, average of 10/needle
- Washings plated from individual needles yielded from 1-150 colonies of *P. ramorum*
- Smaller number of sporangia on naturally infected needles, compared with lab inoculated but this may reflect original numbers of spores causing infection



Regenerating hemlock (4-10yr) amongst young larch

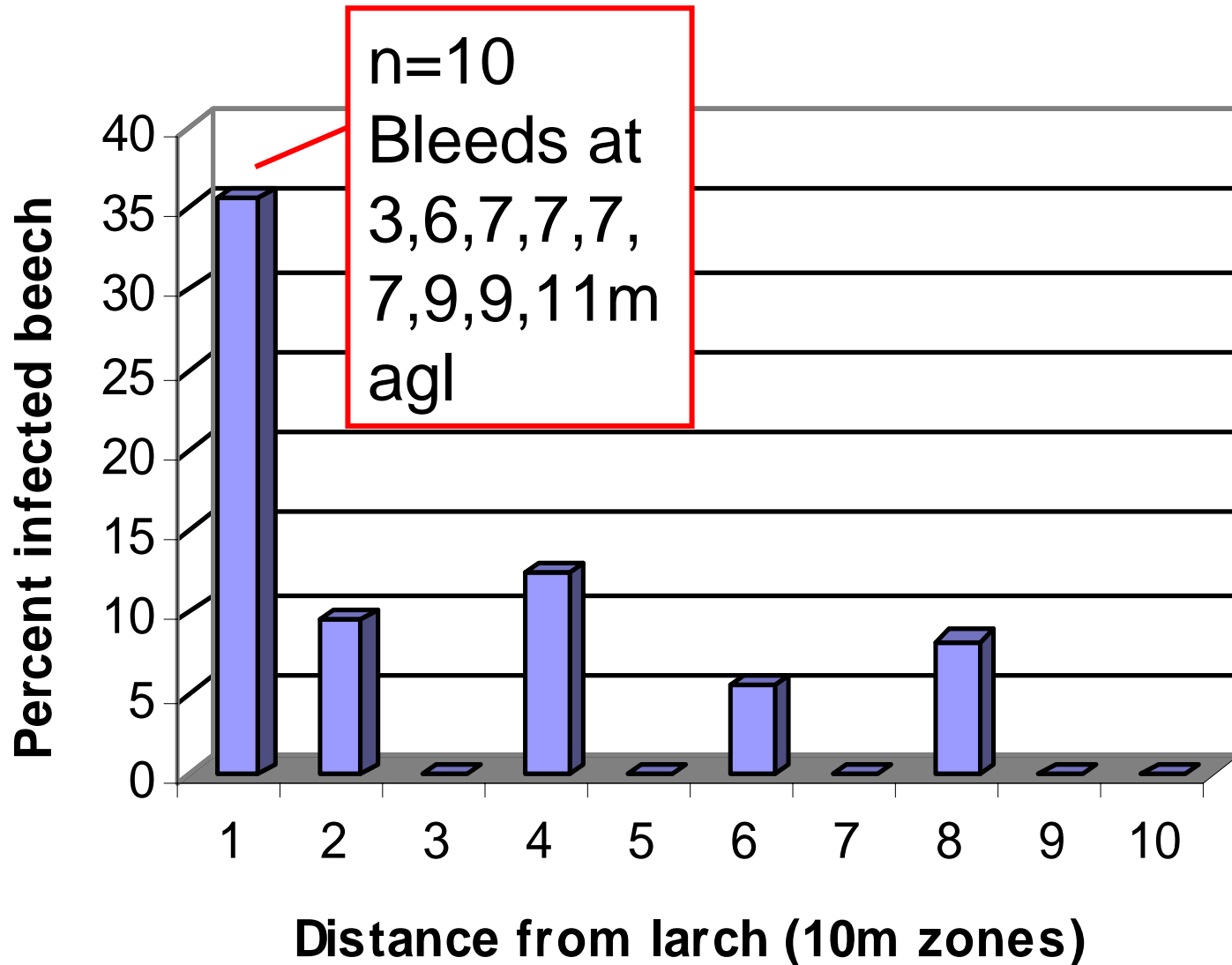


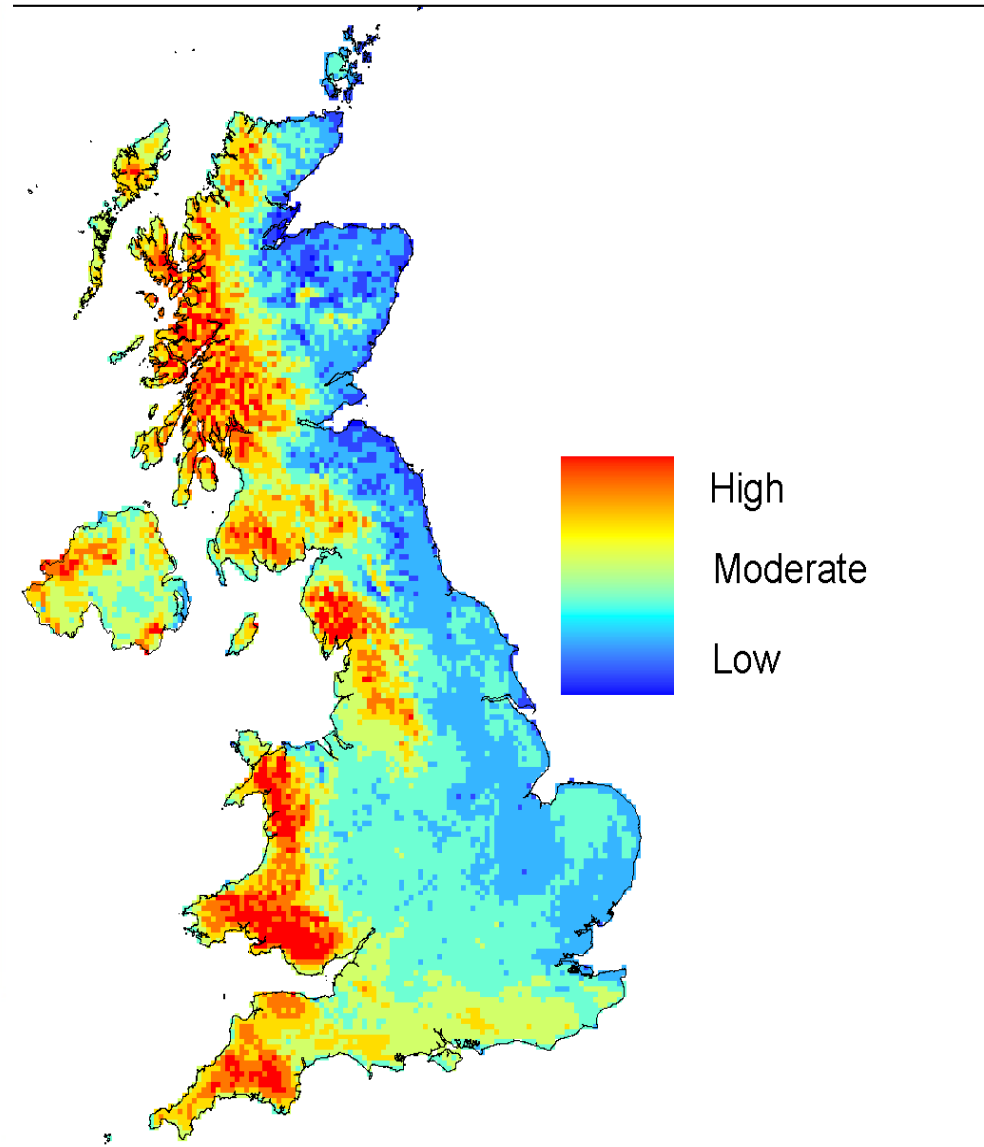
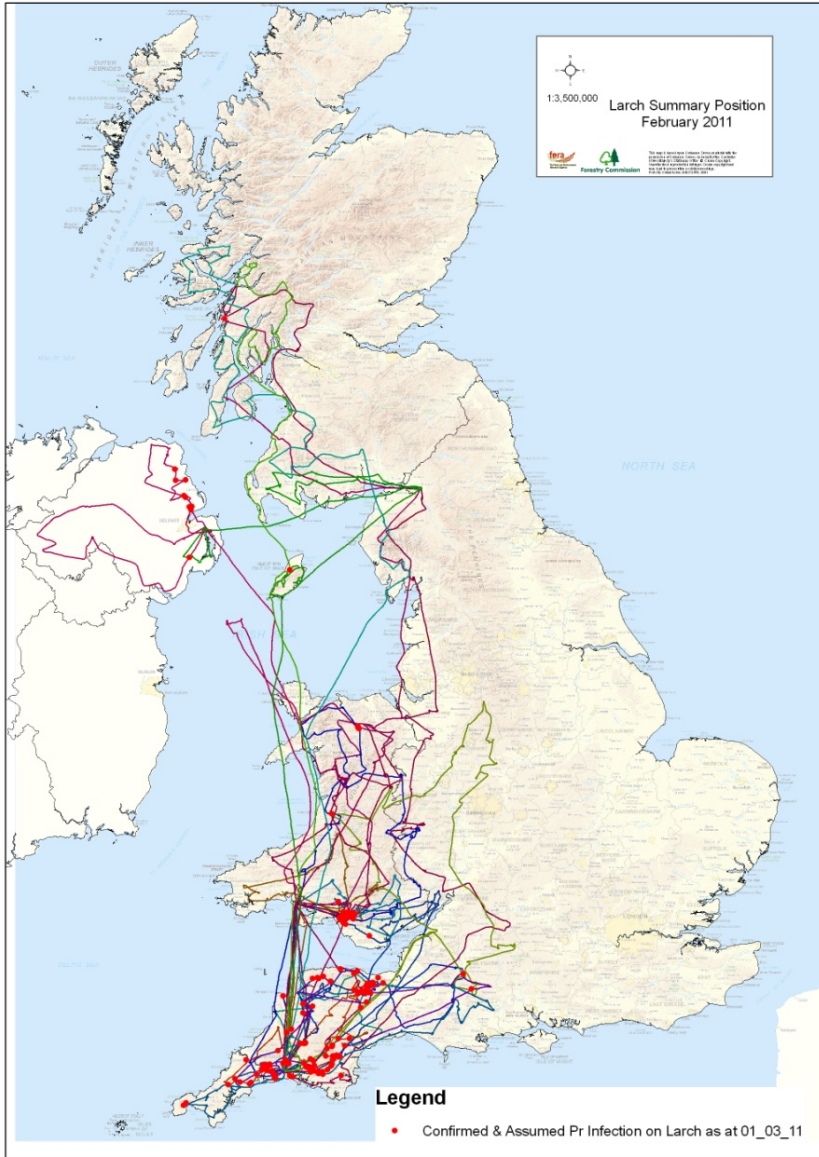
Dieback and resinosis



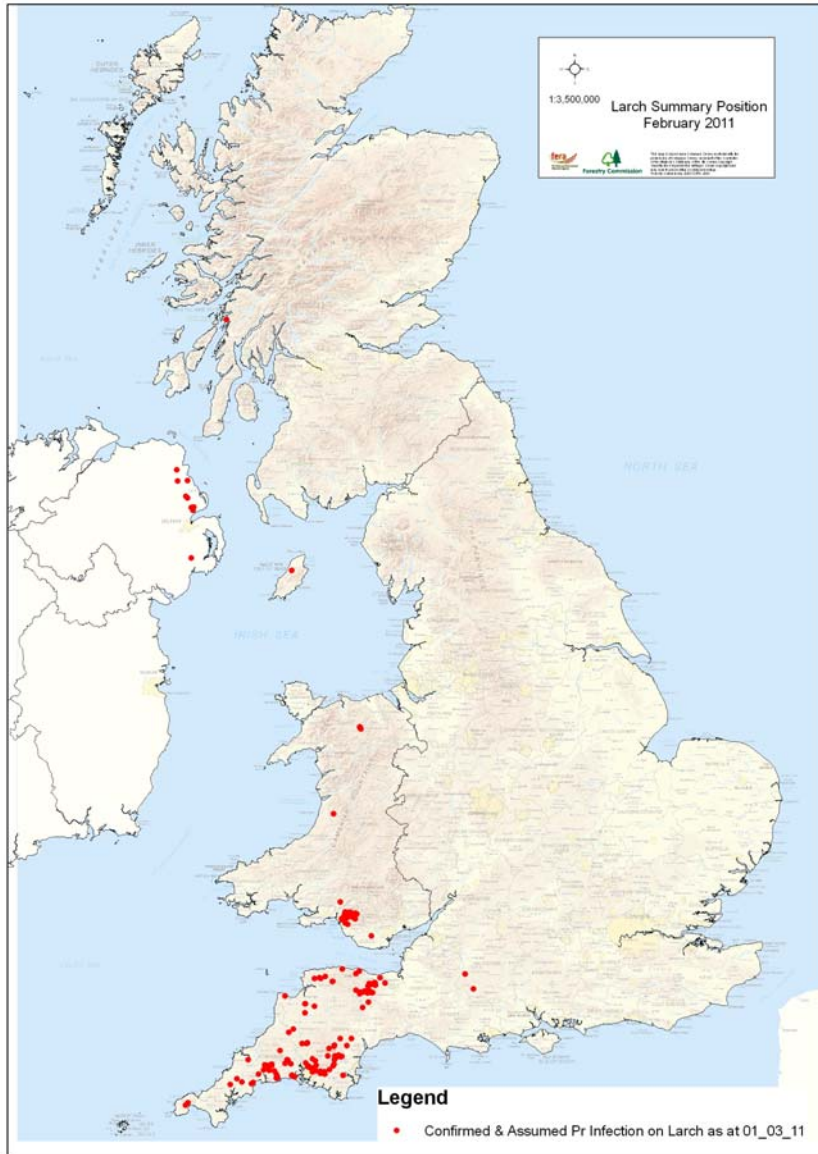


Inoculum spread to beech near infected larch

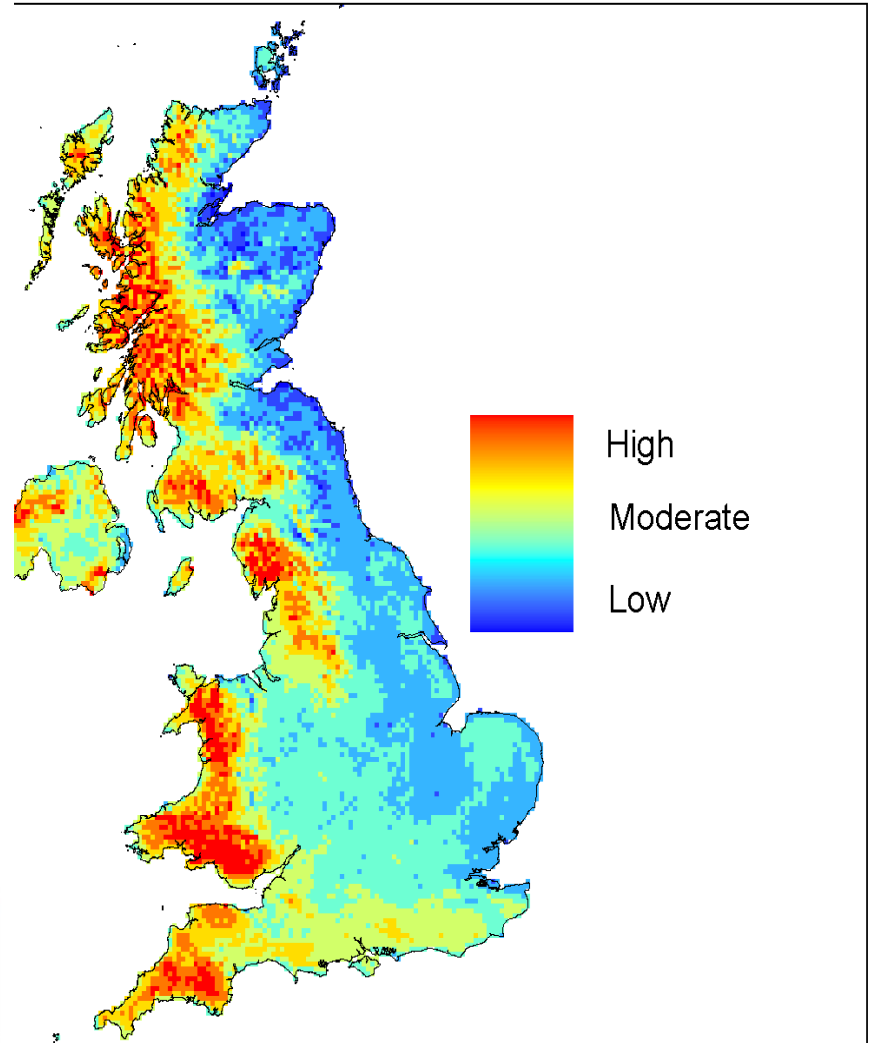


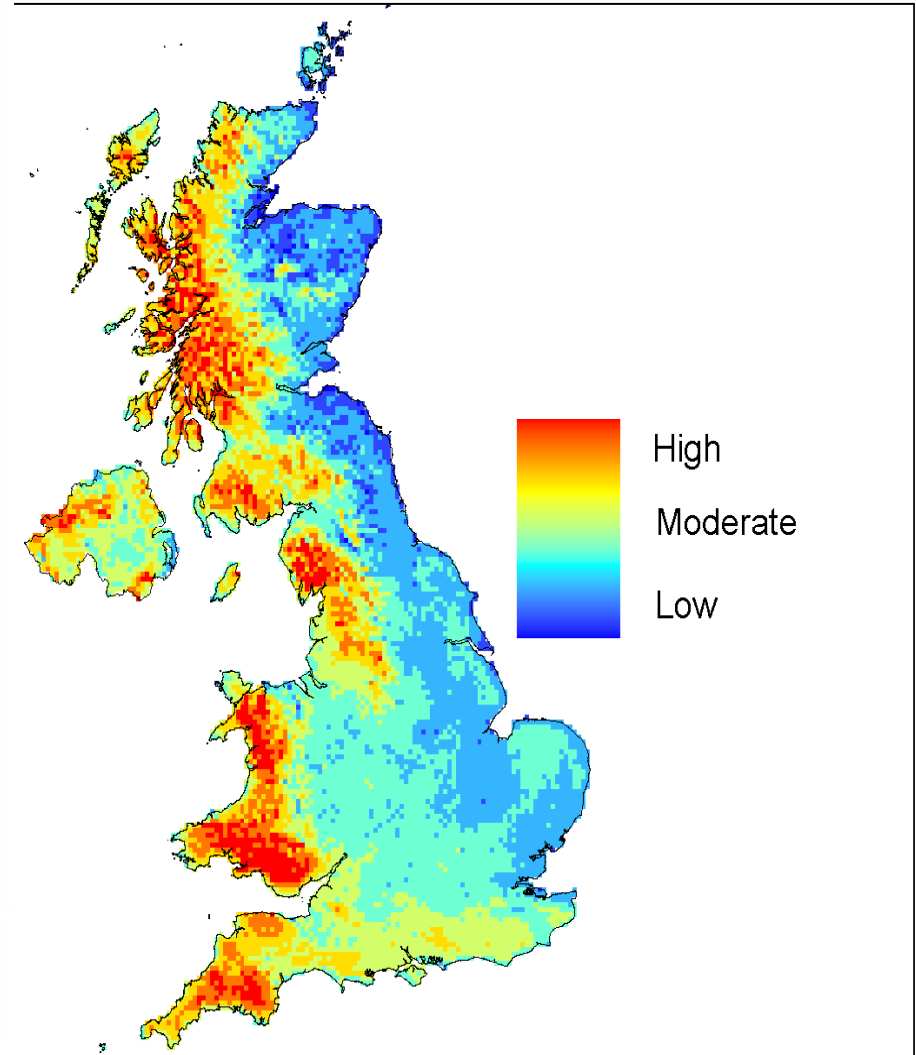
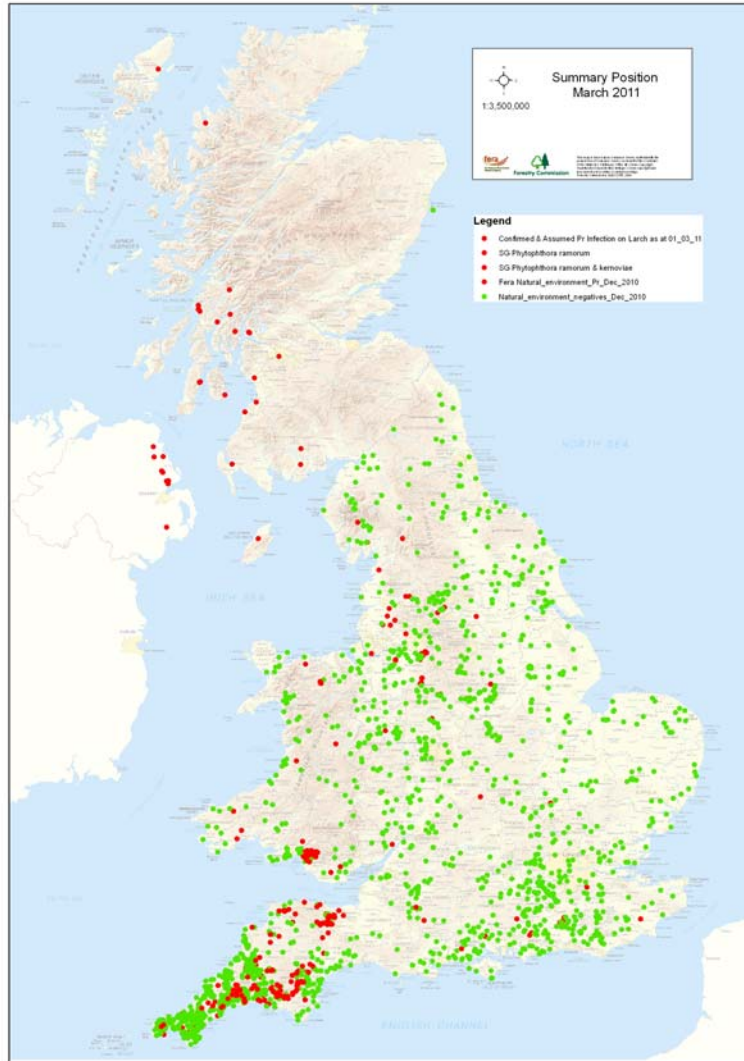






- 2185 Ha larch infected in UK
- More than 4000 Ha of forest and woodland affected
- 138 Statutory Notices issued requiring felling
- 11 sites totalling approx 120 Ha confirmed in Republic of Ireland







Thanks to:

Clive Brasier and to **Suzy Sanscisi** in the lab

Barnaby Wylder, Mick Biddle, Tony Reeves, Alan Ockenden
in the field

