

Sweet Chestnut Blight: An overview and an update

Mick Biddle

Forestry Commission England, Tree Health Team

Overview

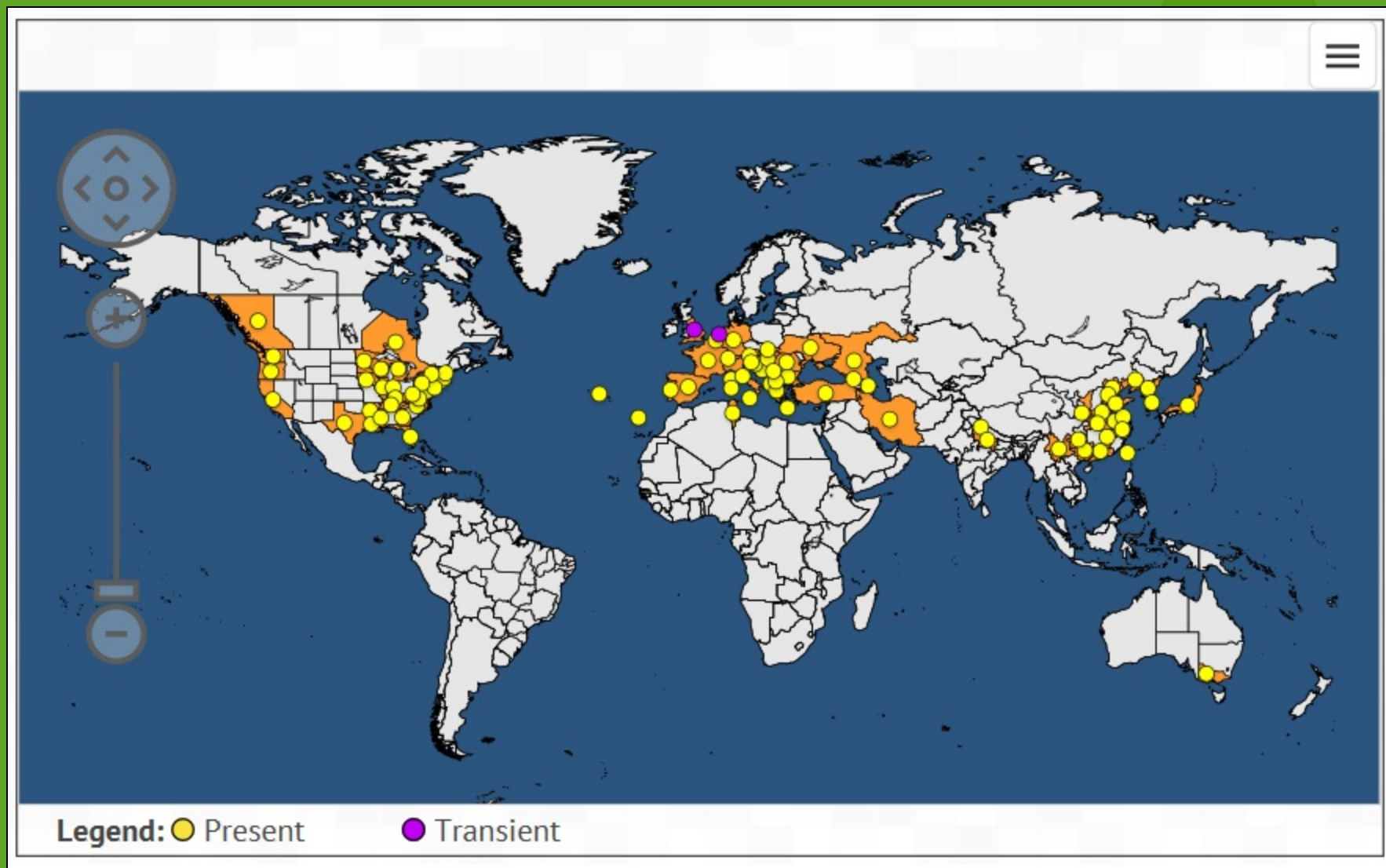
- Background***
- Lifecycle & Symptoms***
- Latest situation – UK***
- Hypovirulence***



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- Fungal disease
- Primarily affects *Castanea* species, especially *C. dentata* and *C. sativa*
- Devastating impact in USA
- Significant impact in Europe
- Surveys undertaken in UK since 2006
- UK currently a Protected Zone
- First found in the UK in 2011

Distribution



Source: EPPO Global Database, June 2017

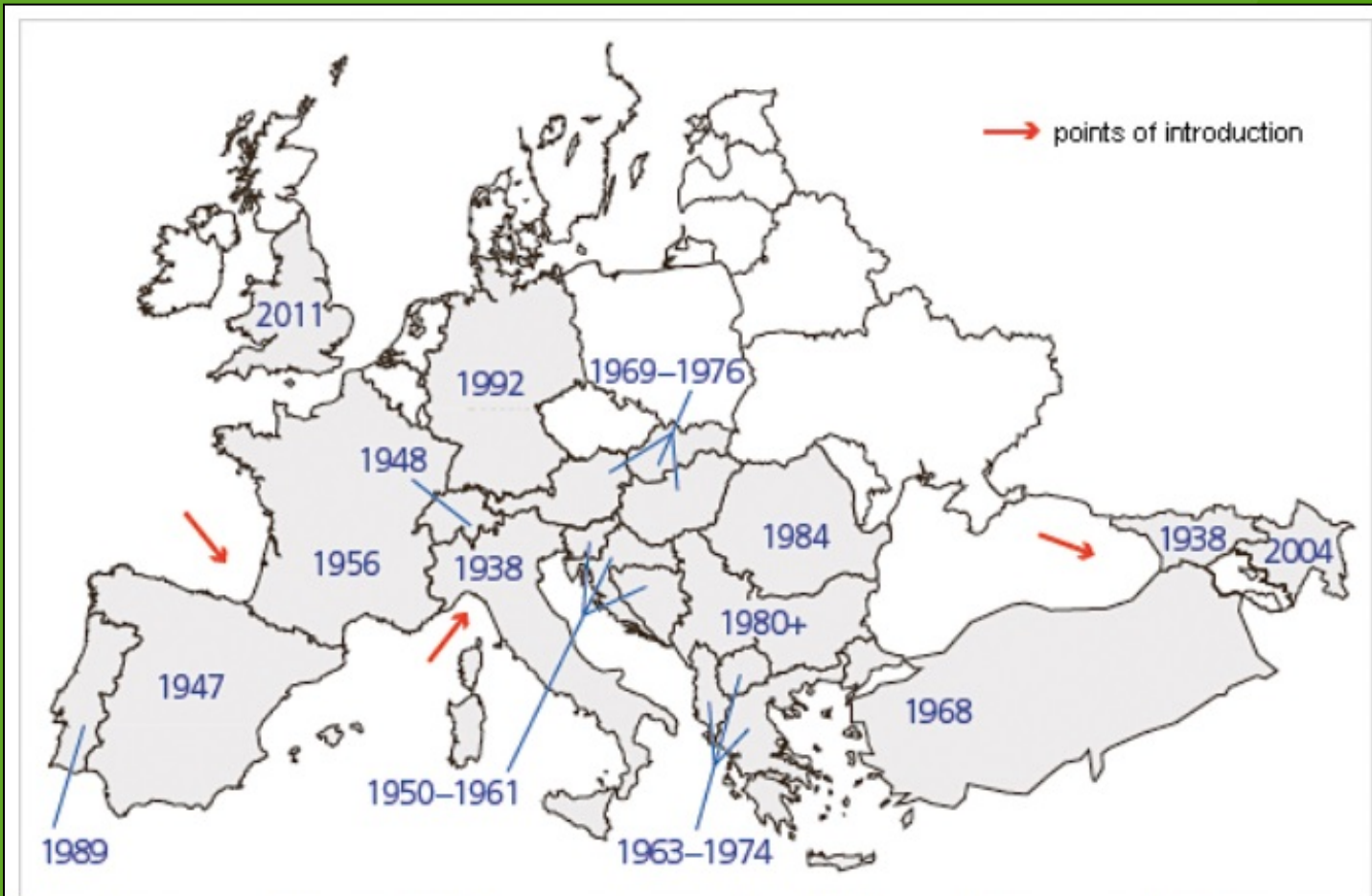


Fig. 2 - Occurrence of chestnut blight (*Cryphonectria parasitica*) within the distribution range of the European chestnut (*Castanea sativa*). Years indicate when the disease was first observed, while arrows suggest probable points of introduction.

**Source: Chestnut blight symptoms, biology and management strategies. 2014
Rigling *et al.***



- Orchard settings
- Affected trees destroyed
- Import regulations strengthened
- Contingency plan

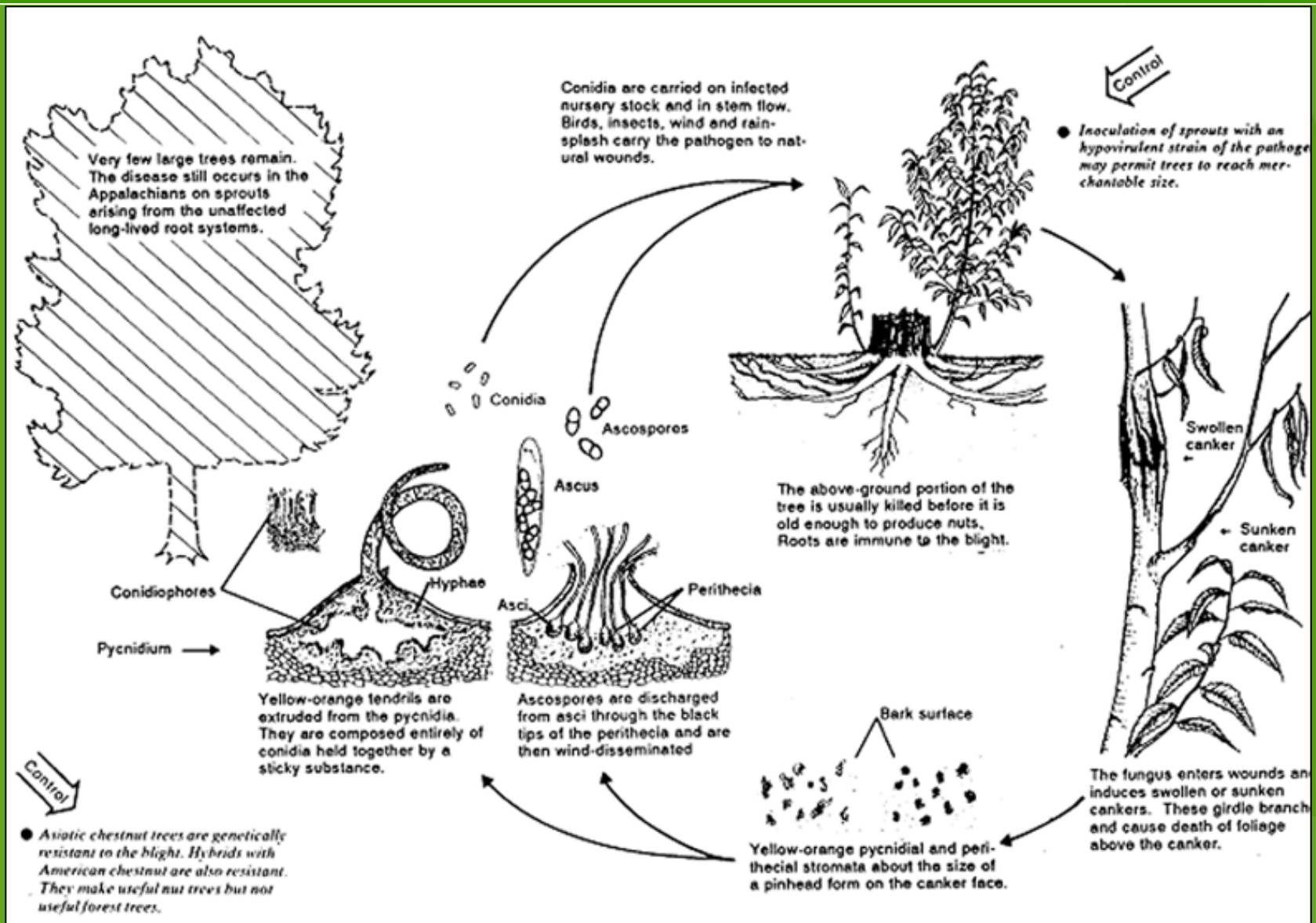


Cryphonectria parasitica



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- Wound pathogen (& ascomycete)
- Can cause mortality of *Castanea* spp.
- *Quercus* spp. and others are incidental hosts
- Impact can be reduced with hypovirulence
- Fissured cankers, with characteristic “flagging” and epicormic growth
- Numerous small orange fruiting bodies
- Buff-coloured mycelial fans



Drawn by Valerie Mortensen:

<http://sfr.psu.edu/public/chestnut/breeding/blight/life-cycle/view>

Cankers (stems 4-5 yrs+)



Cankers – maturing stems



Cankers – early mature trees



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Epicormic growth



Epicormic growth



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"Flagging"



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Dieback



Mycelial fans



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Mycelial fans



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Fruiting bodies



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Fruiting bodies



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Fruiting bodies



Asexual reproduction

- Individual mating types can reproduce asexually
- Conidia are waterborne
- Ascospores are airborne
- Sexual reproduction requires both mating types to be present

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01/10/2013 13:12

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- Amenity setting
- 35-37 year old trees
- No recent planting





- Forestry plantation
- Mature trees, coppice stools and young maiden trees affected
- Multiple plantings from 1990 – 2001
- Traceforward initiated



UK – Spring 2017



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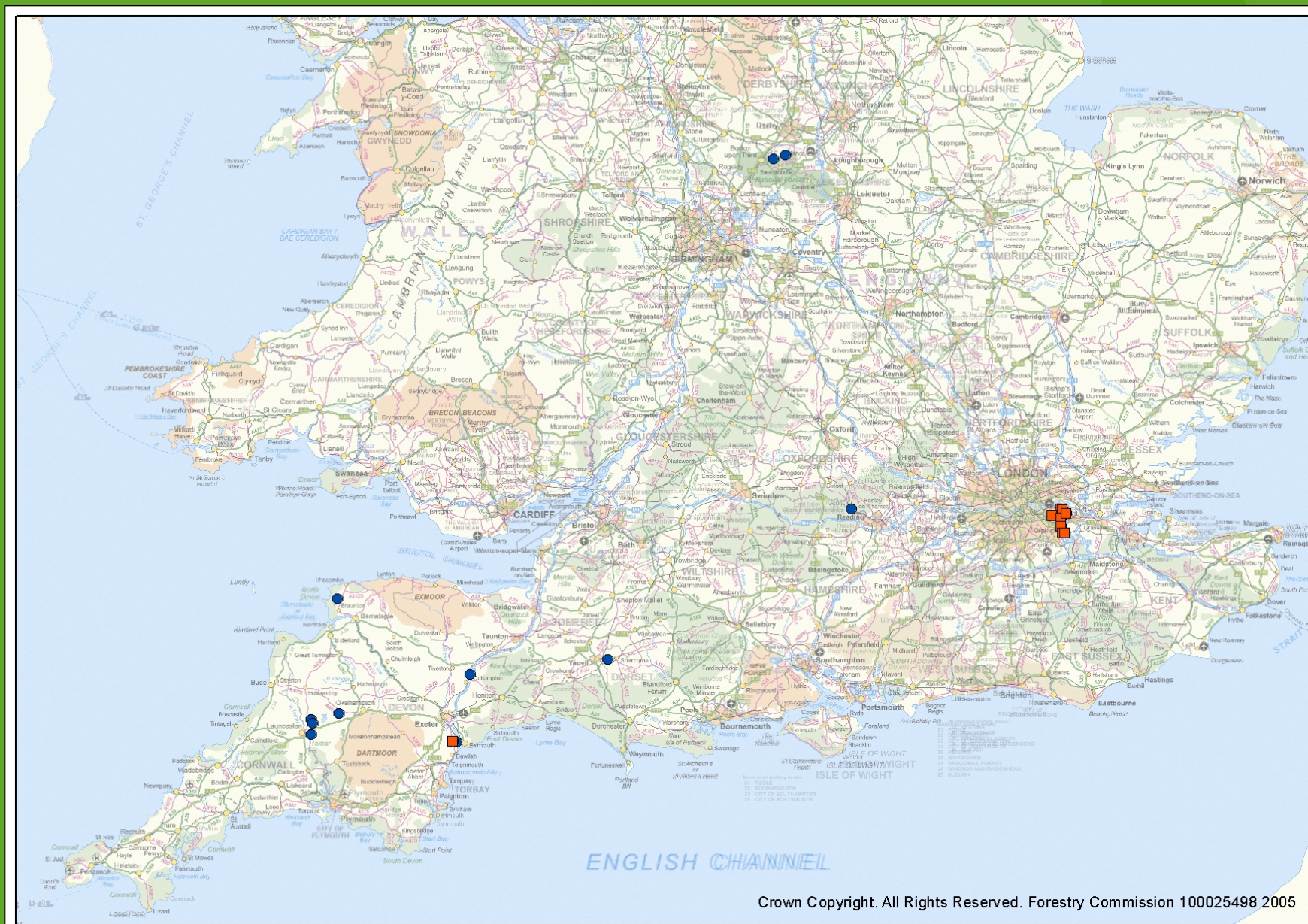
- Young plantations
- Very few trees affected
- Infection restricted to introduced stock





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England

UK – Jun - Sep 2017




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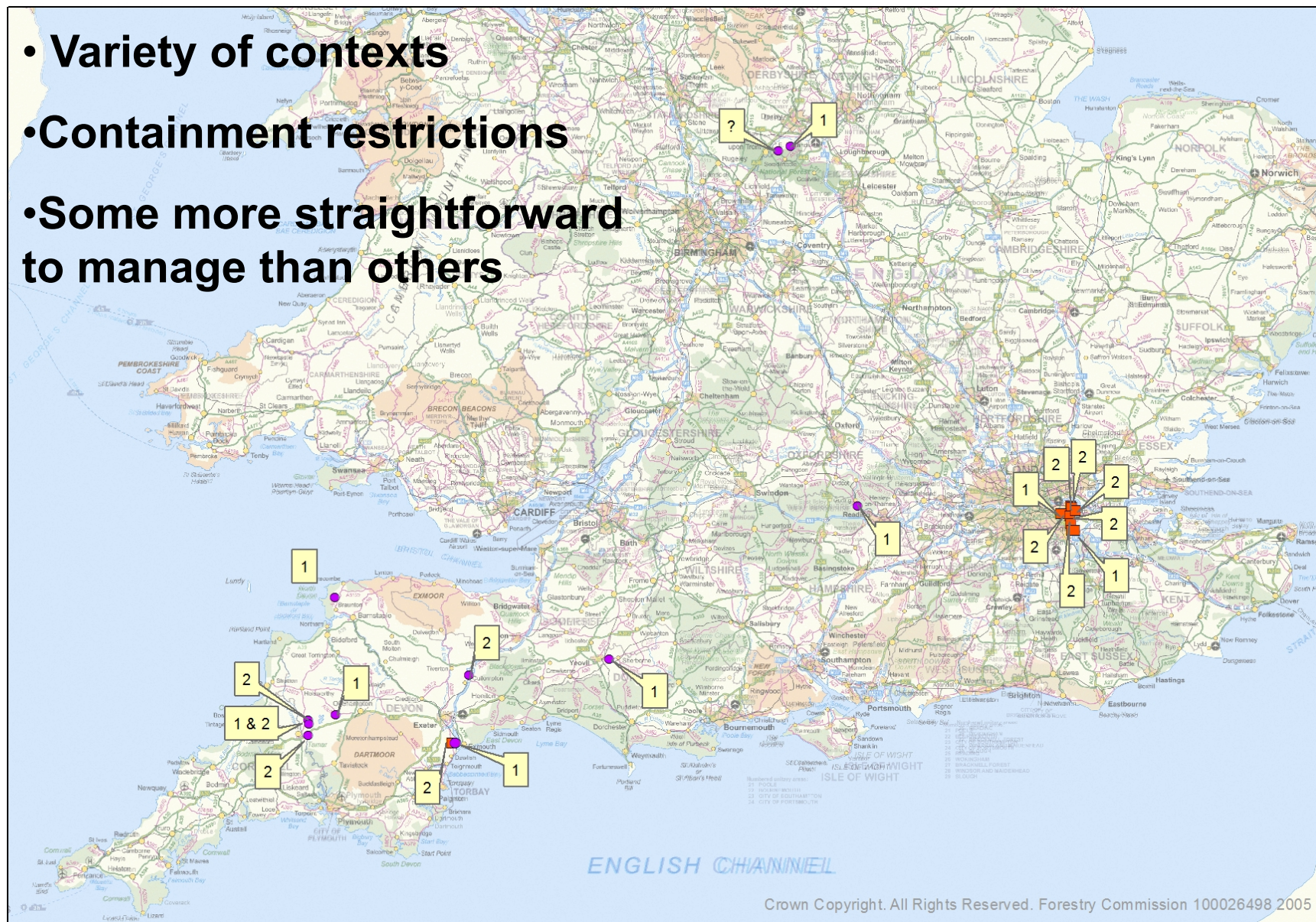
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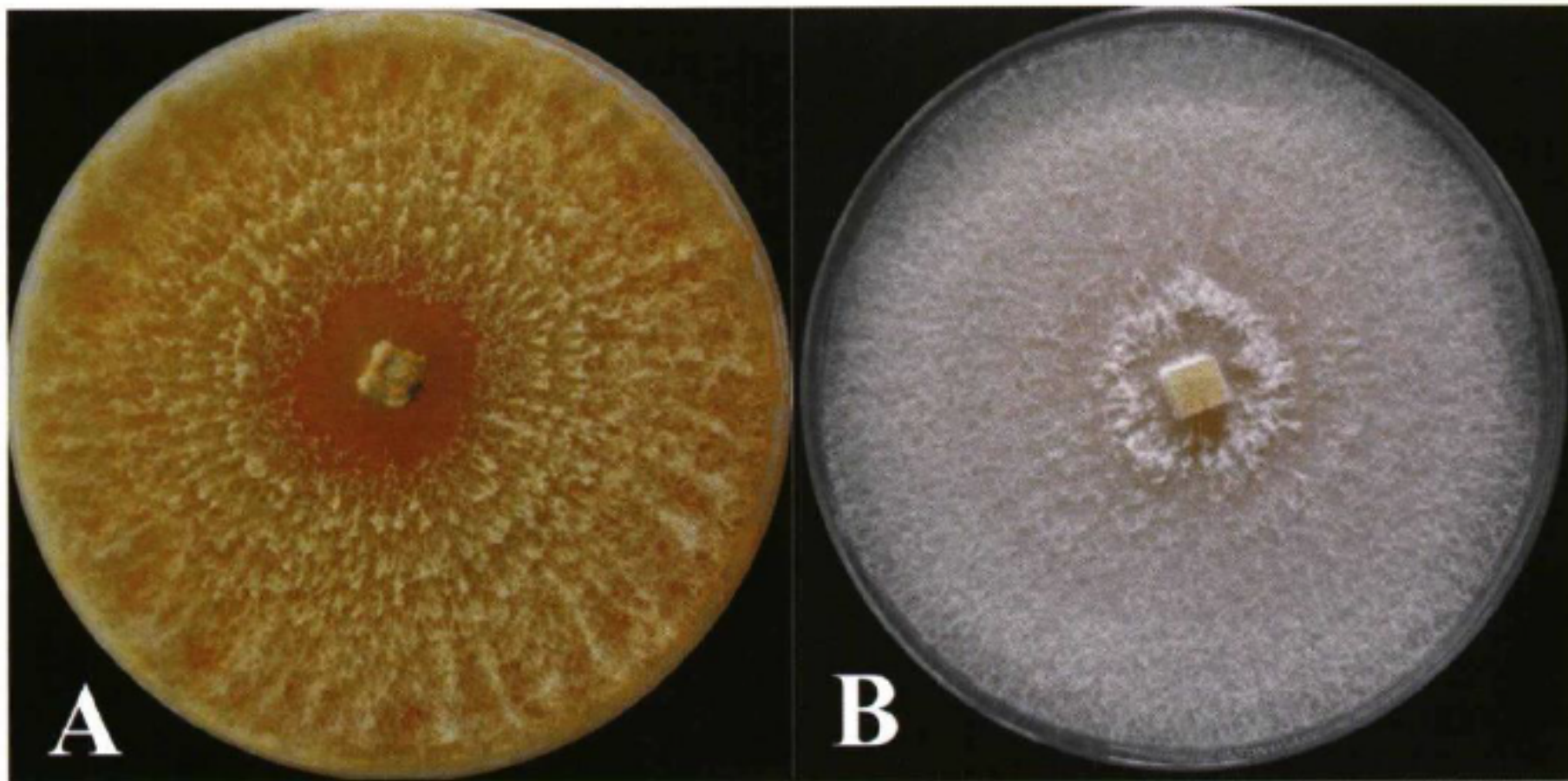
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- Variety of settings, in an urban context
 - Symptoms observed at a low level over a very wide area
 - Indicative of a more established infection

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UK – mating types

- Variety of contexts
- Containment restrictions
- Some more straightforward to manage than others





Source: O. Aguin, D. Montenegro, M.J. Sainz, M. Hermida, J.P. Mansilla (2008). Caracterización morfológica y molecular de las poblaciones de *Cryphonectria* parasítica en castaños de Galicia. Boletín Sanidad Vegetal Plaga 34: 581-594.

Hypovirulence





- Potential long-term tool
- Difficult to apply to mature trees
- Effectiveness determined by genetic population



Tree Alert

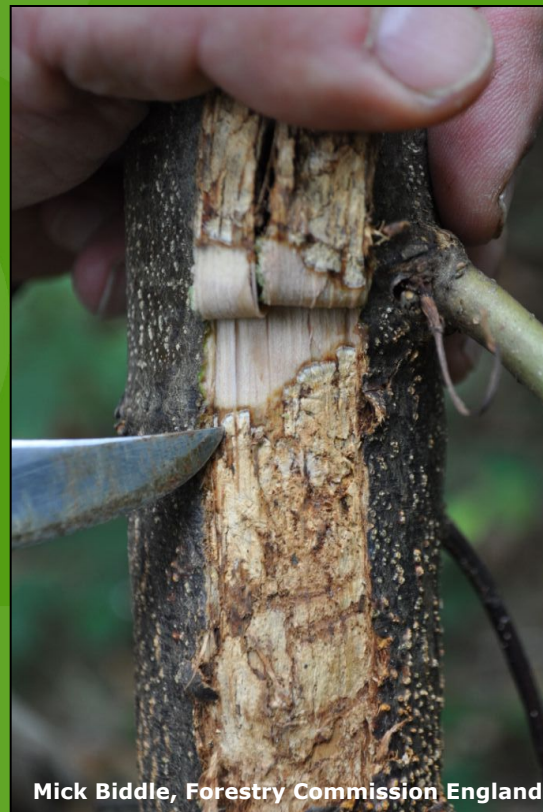
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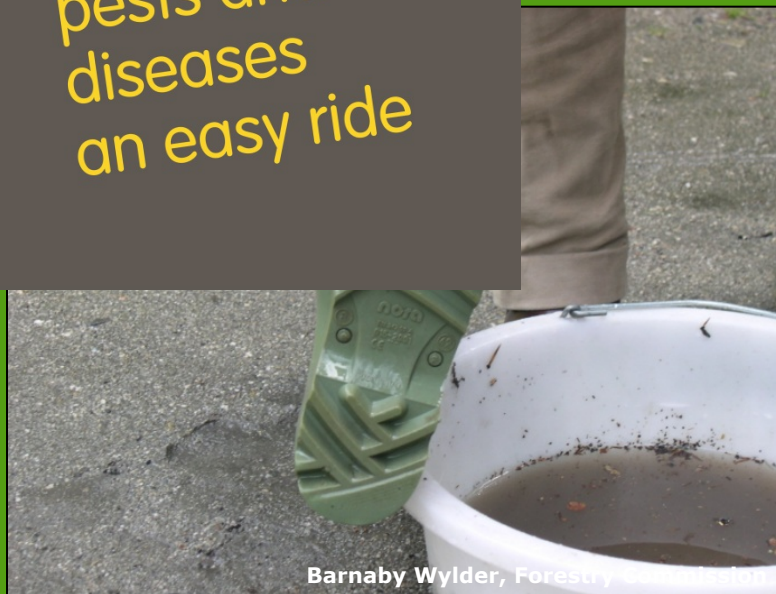
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Don't give
pests and
diseases
an easy ride

www.forestry.gov.uk/chestnutblight

www.observatree.org.uk

<https://gd.eppo.int/taxon/ENDOPA>

Cryphonectria parasitica, the causal agent of chestnut blight: invasion history, population biology and disease control (Rigling and Prospero, 2017)



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