UK Disease Threats

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Wales Tree Health Seminars 2016
- *Neonectria neomacrospora*
- *Neonectria fuckeliana*
- *Sirococcus tsugae*

Detected in Britain

- *Xylella fastidiosa*
- Plane wilt (*Ceratoscystis platani*)

Not detected in Britain
• *Neonectria neomacrospora* – New emergent disease in EU on fir trees
• *Neonectria fuckeliana* – Spruce stem canker
  Limited distribution in UK
• *Sirococcus tsugae* – Detected in Britain at the end of 2013 affecting cedars
Neonectria canker of Abies spp.

*Neonectria neomacrospora*
Neonectria neomacrospora

• EPPO: Emerging disease that was detected in Norway (2008) and Denmark (2011) on fir trees ([https://gd.eppo.int/reporting/article-2696](https://gd.eppo.int/reporting/article-2696))

• Records of the pathogen go back more than 100 years in Europe.
  • Denmark, Germany, Great Britain (there are no known records from Northern Ireland), Netherlands, Norway, Sweden

• There are reports from the 1950s onwards from North America. Also reported from Brazil.

• Taxonomy
  • Calonectria macrospora Weese
  • Nectria cucurbitula var. macrospora Wollenw.
  • Nectria fuckeliana var. macrospora (Wollenw.) C. Booth
  • Nectria macrospora (Wollenw.) Ouell.
  • Nectria neomacrospora C. Booth & Samuels 1981
In Britain

- Peace (1962): Abies cephalonica in Scotland and A. concolor in England with symptoms described as “severe twig canker and dieback”

- Strouts et al. (1991) reported that an area of 28 year old noble fir (A. procera) in Wales showed severe dieback and numerous shoot and branch cankers

- In 2015 THDAS confirmed in two locations in England on:
  - Taiwan fir (A. kawakamii)
  - Balsam fir (A. balsamea)
  - European silver fir (A. alba)
• In 2016 THDAS confirmed in two new *Abies* spp.:
  • *Abies pinsapo*
  • *Abies durangensis*
  • *Abies lasiocarpa*
  • *Abies fraseri*
  • *Abies vejarii*
  • *Abies magnifica*

• Other hosts (not in Britain):  
  • *Picea abies*
  • *Tsuga heterophylla*
  • *Pseudotsuga menziesii*
Abies kawakamii
Abies kawakamii
Abies procera
Abies pinsapo
Abies pinsapo
Spruce canker
*(Neonectria fuckeliana)*
Neonectria fuckeliana

- Fungal pathogen of spruce, fir
  - In New Zealand it has become an issue on *Pinus radiata*, with reports on this dating from the mid-1990s and the same species has been affected in Chile, reported from 2009.
- Present in North America, Honduras, Chile, South Africa, Malaysia, New Zealand, Europe and limited in the UK
- Targeted surveillance is being carried out to determine the extent of distribution.
- No statutory action against findings
• In the UK:
  • In Northern Ireland in 2015 on Sitka spruce (*Picea sitchensis*) on different sites
  • It has been recorded on Sitka spruce in Scotland (Laing 1947) and also in England and Wales (Peace, 1962), and the latter reference goes further stating that the “disease occurs chiefly on Sitka spruce”

• Symptoms
  • Sunken patches of dead bark making the stem fluted.
  • Trees have been recorded as dying, or becoming misshapen, however trees affected to this degree seem to be rare, and overall losses have been recorded as small.
• It has also been suggested that the fungus is usually secondary and often impacts are associated with some other injury, such as frost damage, drought or pruning.

• The disease is often associated with copious resin bleeds.

• Spruce sites are being surveyed as part of the ongoing Protected Zone Survey in England, Scotland and Wales.
Neonectria fuckeliana

Photos courtesy of Venche Talgo, NIBIO, Norway
Neonectria fuckeliana
Cedars and hemlocks under thread from *Sirococcus* spp.
Atlantic or Atlas cedar (*Cedrus atlantica*) belongs to the pine family (Pinaceae)

- It is a large evergreen conifer native to the Atlas Mountains of Algeria and Morocco and has also been employed as a plantation species for forest restoration in southern France
- It has historically been utilised as an ornamental in Britain
- It could become of increasing importance to UK forestry as an alternative species, particularly on drier sites in southern and eastern Britain
• Sirococcus conigenus was redescribed and two new species were recognized (Rossman et al., 2008):

✓ S. conigenus has many conifer hosts (mainly pines, spruces and larch, but also Douglas Fir) throughout the northern hemisphere

• S. tsugae (mainly hemlock and true cedars: Tsuga heterophylla, T. mertensiana, T. canadensis, Cedrus atlantica and C. deodara) in North America

Now in Britain!!!

• S. piceicola (mainly spruce: P. abies, P. glauca and P. sitchensis) in Canada and Switzerland
Sirococcus tsugae
Lesions and cankers were clear on the affected shoots
Sirococcus tsugae

05/12/2016
Sirococcus tsugae
Sirococcus tsugae
Sirococcus tsugae

Tsuga heterophylla
**Tsuga heterophylla**
Sirococcus tsugae
Tsuga mertensiana
Sirococcus tsugae
In Britain *S. tsugae* has been detected on:

- Cedar (*Cedrus atlantica* and *C. libani*)
- Western hemlock (*Tsuga heterophylla*)
- *Tsuga mertensiana*

Detected in:

- England
- Scotland
- Wales

This was the first report of *S. tsugae* in Europe.
EPPO Reporting Service

No. 4 Paris, 2015-04

2015/076 - First report of Sirococcus tsugae in Germany: addition to the EPPO Alert List

The pest status of Sirococcus tsugae in Germany is officially declared as: Present in two locations in Lower Saxony (Niedersachsen).
**Xylella fastidiosa**

It is a *‘xylem-limited’ bacterium* and invades the water conducting system of plants.

In nature it is exclusively *transmitted by* xylem-fluid feeding *insects* from the families Cicadellidae and Ceropidae.
**X. fastidiosa subspecies:**

- *X. fastidiosa subsp. fastidiosa* in Central America, North America and Taiwan, and hosts include grapevine (Pierce Disease), citrus, coffee and almond.

- *X. fastidiosa subsp. multiplex* is endemic to USA and has the widest host range including oak (*Quercus robur, Q. rubra*), elm (*Ulmus glabra*) and plane (*Platanus occidentalis*).

- *X. fastidiosa subsp. pauca* South American strains causing citrus variegated chlorosis and coffee leaf scorch.

- *X. fastidiosa subsp. sandyi* in USA on oleander.
X. fastidiosa is reported to infect more than 100 different hosts

The main economic hosts are:

• Grapevine (Pierce’s disease of grape)
• Citrus (Citrus variegation chlorosis)
• Almond (Almond leaf scorch)
• Peach (Phony peach disease)
• Coffee

It has also been reported on other fruit crops

• Asian pear
• Avocado
• Blueberries
• Japanese plum
• Pecan
• Plum
• Sour cherry
• On many amenity trees (leaf scorch diseases):
  • Oaks (*Quercus* spp.)
  • American sycamore (*Platanus occidentalis*)
  • American white elm (*Ulmus americana*)
  • Liquidambar (*Liquidambar styraciflua*)
  • Red maple (*Acer rubrum*)
  • Red mulberry (*Morus rubra*)
  • *Gingko biloba*
• Wilting
• Twig dieback
• Stunting
• Reduction in plant growth
• General decline
• Marginal necrosis of leaves (plane, maple, oak and elm, visible symptoms consist of leaf scorch)
On *Quercus rubra*

(John Hartman, University of Kentucky, Bugwood.org)
On Quercus palustris

(John Hartman, University of Kentucky, Bugwood.org)
• In mid-October 2013 *Xylella fastidiosa* subsp. pauca (included on the EPPO A1 List since 1981) was detected in Southern Italy on olives trees

• **Olive Quick Decline Syndrome (OQDS):**
  • Withering and desiccation of scattered terminal shoots
  • Rapidly spread to the rest of the canopy
  • Collapse and death of the tree
- In July 2015, the presence of the bacterium was reported for the first time by France in Corsica (*Xylella fastidiosa* subsp. *multiplex*).

*Polygala myrtifolia*

- In June 2016, detected in Germany (*Xylella fastidiosa* subsp. *fastidiosa*) on *Nerium oleander*
Plane wilt (canker stain of plane)  
*Ceratocystis platani*

It is considered the most serious disease to affect *Platanus* species which are an important feature street tree in many European cities and often seen in parks and avenues.
• The main hosts are:
  • Oriental plane (*P. orientalis*) which is highly susceptible
  • Their hybrid *P. x acerifolia* (London plane) which is of intermediate susceptibility
  • American sycamore (*P. occidentalis*) which is relatively resistant