

# Learning more about Elm Trees: Disaster, hope, and lessons for the future



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# Background – Who I am

- Paul Selby
- Aged 36
- Work for the Department for Work and Pensions (DWP)
- Professionally qualified economist (MSc Econ) and senior government analyst
- Keen interest in nature and wildlife – birds, butterflies, plants and trees
- Since December 2015, a member of Save Nether Edge Trees (SNET), and Sheffield Trees Action Groups (STAG)

# The Chelsea Road elm tree – Sheffield's most famous tree

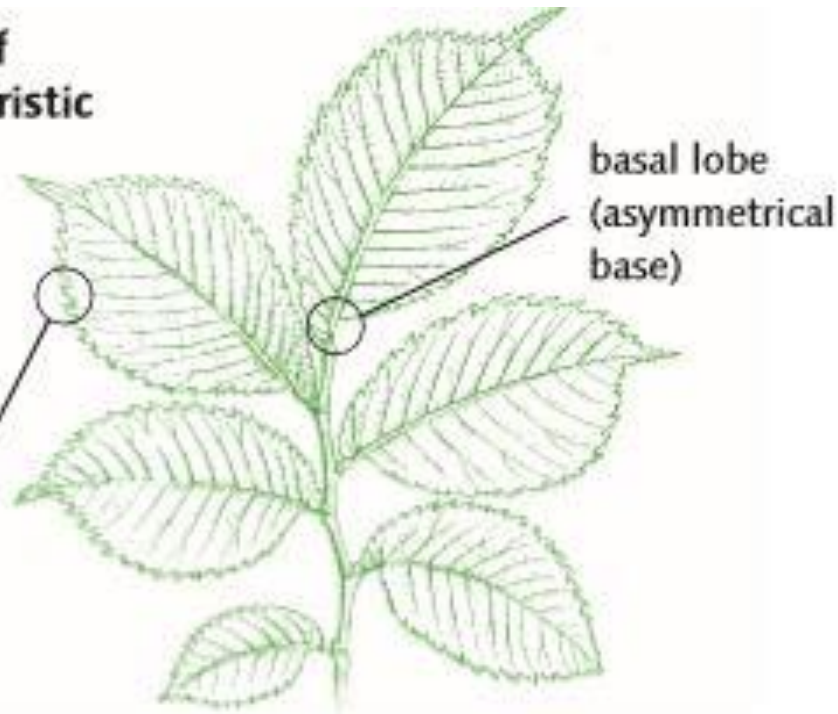
- 120 year old Huntingdon Elm
- One of less than 1000 old elm trees in the whole of the UK outside of protected zones in Brighton and Edinburgh
- Home to a colony of the White Letter Hairstreak butterfly, a species that has declined by 97% in 30 years
- 2<sup>nd</sup> place in English Tree of the Year 2016 competition



# Elm Species

- English Elm
- Field Elm
- Wych Elm
- Huntingdon Elm
- European White Elm

The following leaf shape is characteristic of elm trees



## ELM MAP

### ELM IDENTIFICATION GUIDE

If you would like to identify your elm to species use this guide to the leaves of the three British elm species.

1.	Leaves >7cm length, roughly hairy on upper side, >12 pairs of lateral veins; leaf stalk <3mm	<b>wych elm</b> <i>Ulmus glabra</i>
Or	Leaves usually <7cm, leaf stalk >5mm.	See 2
2.	Leaves usually smooth on upper side, very variable in shape, generally distinctly longer than wide, leaf stalk and shoot usually hairless at maturity.	<b>smooth-leaved elm</b> <i>Ulmus minor</i>
Or	Leaves rough on upper side, usually circular in shape with noticeable basal asymmetry, leaf stalk and shoot distinctly hairy at maturity.	<b>English elm</b> <i>Ulmus procera</i>

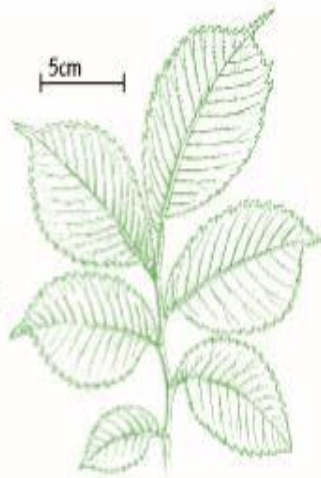
Species key by Max Coleman, The University of Reading

NB. If your elm leaves seem intermediate in character your tree may be a hybrid (a cross between two elm species)

This guide is only applicable to plants in the 'tree' or 'large tree' size categories, it is not suitable for sucker growth or 'small trees'.

#### Wych elm *Ulmus glabra*

The branchlets remain smooth and ashy grey. The leaves are 10–18cm long, larger than the leaves of other elms. The upper surface of the leaf is very rough, like sandpaper. The rounded basal lobe overlaps the short stalk. The trunk rarely produces suckers.



#### Smooth-leaved elm *Ulmus minor*

This vigorously suckering species rarely exceeds 30m in height and is variable in growth habit. Longer hairless leaf stalks and the smoother, glossy, bright green upper surface of the mature leaves link the many and distinct growth forms of this species. In the past, these have been recognised as different species, e.g. Plot's elm, Cornish elm.



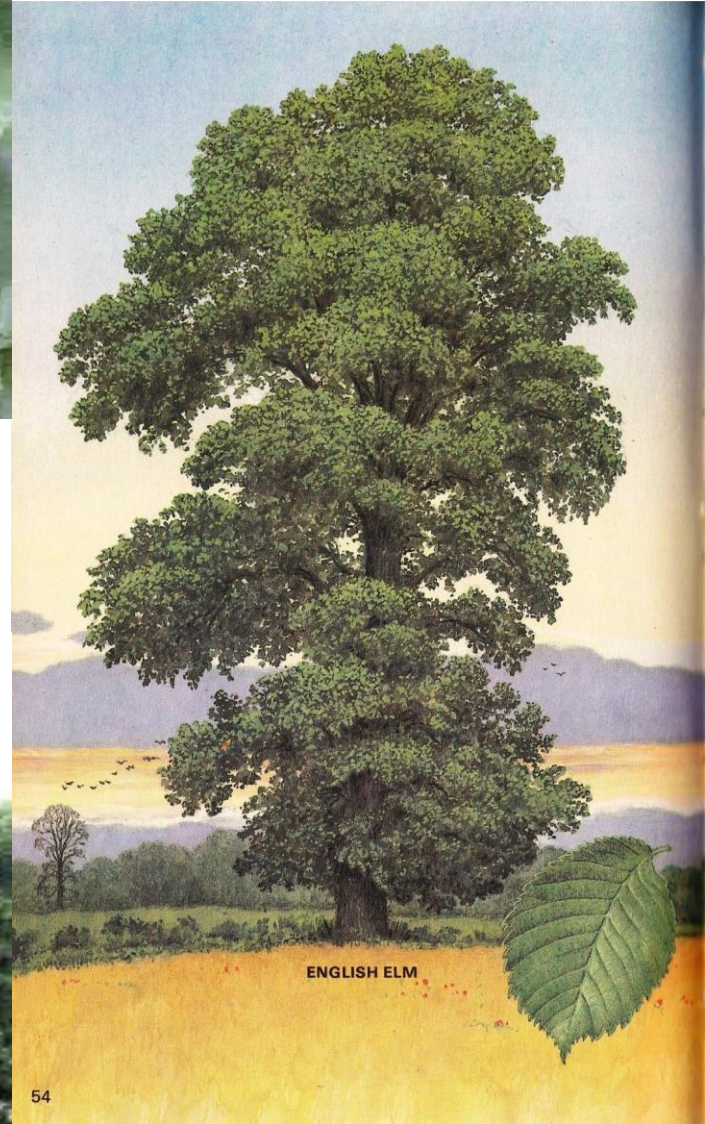
#### English elm *Ulmus procera*

This suckering species is the tallest of the elms, growing to 35m. The leaves are broadly ovate or almost circular in outline. The hairy leaves have a rather buckled appearance. This species seems to have very rarely survived as a mature tree.



# English Elm

- *Ulmus procera* or *Ulmus minor* var. *vulgaris*
- The most famous UK elm tree species
- Sterile seeds so can only be propagated by either taking cuttings, or by its spreading sucker growth (ie all English Elm trees are clones)
- The two oldest English Elm's in the world are the "Preston Park Twins" in Brighton
- Evocative "number 8" shape that gave rise to historic "elm landscapes"



# The evocative Elm landscape of the past



# Field Elm (or Smooth Leaved Elm)

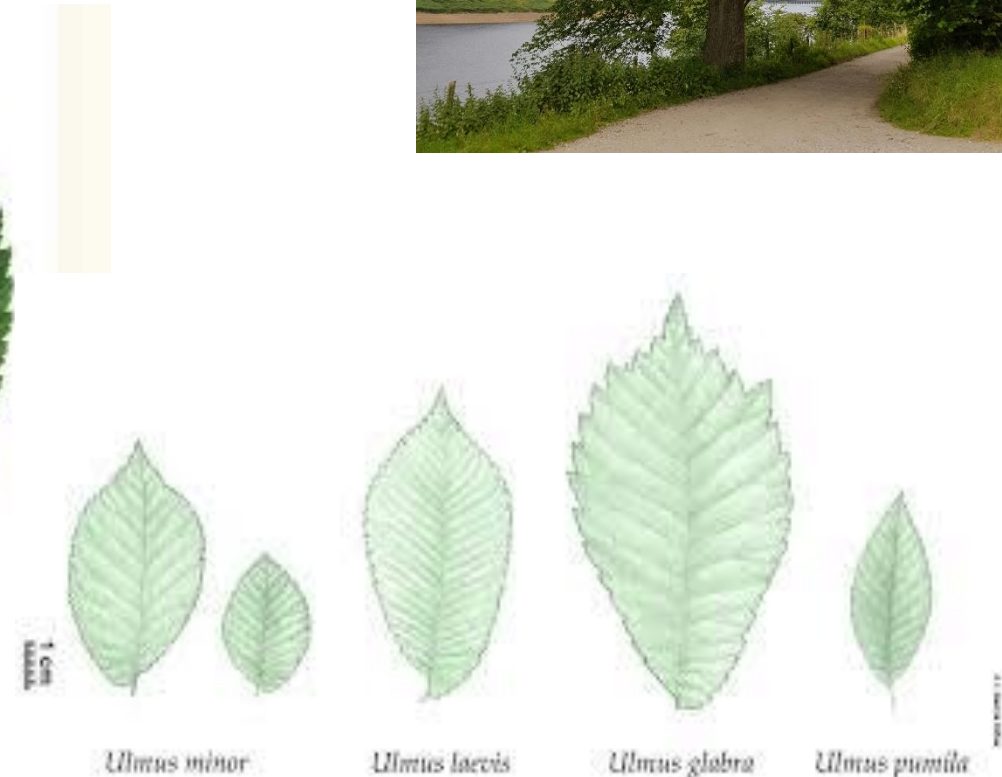
- *Ulmus minor*
- Predominant in East Anglia, where it is drier (similar to conditions in Europe, where it is also the most common Elm)
- Many variants, of which English Elm is one
- Leaves tend to be a lighter green than the dark green English Elm
- Also doesn't have the "corky" appearance on young stems
- Some variants show resistance to DED, but they are not immune





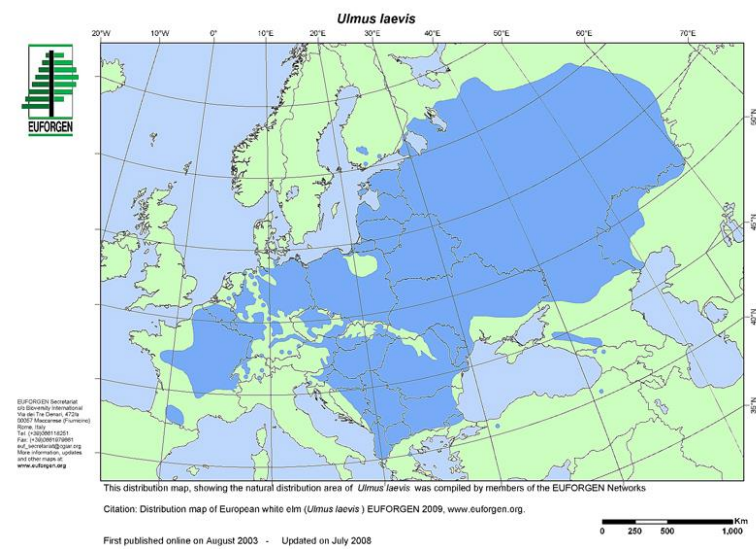
# Wych Elm

- *Ulmus glabra*
- Possibly the only native UK elm
- Spreads by seed, and it the most common elm in western and northern UK
- The wood is not favoured by the elm bark beetle, so sometimes survives a wave of DED
- But if it is attacked, the tree often succumbs quickly. It is rarely resistant and not immune



# European White Elm

- *Ulmus laevis*
- Not historically seen much in the UK as its native distribution is in Europe
- Trunk has two notable characteristics
  - Triangular shape
  - Carpeted in “leaf fur”
- Another elm, where the bark is less favoured by the elm bark beetle
- Again however, if attacked, the tree is rarely resistant and not immune to DED



# Huntingdon Elm

- *Ulmus x hollandica* “Vegeta”
- Hybrid between Field Elm and Wych Elm
- Sterile seeds
- Big leaves very similar to Wych Elm
- Grows tall, much like English Elm
- Outside Brighton and Edinburgh, if you see an Elm Tree over 50 years old, it is most likely to be a Huntingdon Elm
- Bark not favoured by elm bark beetle and has some resistance too

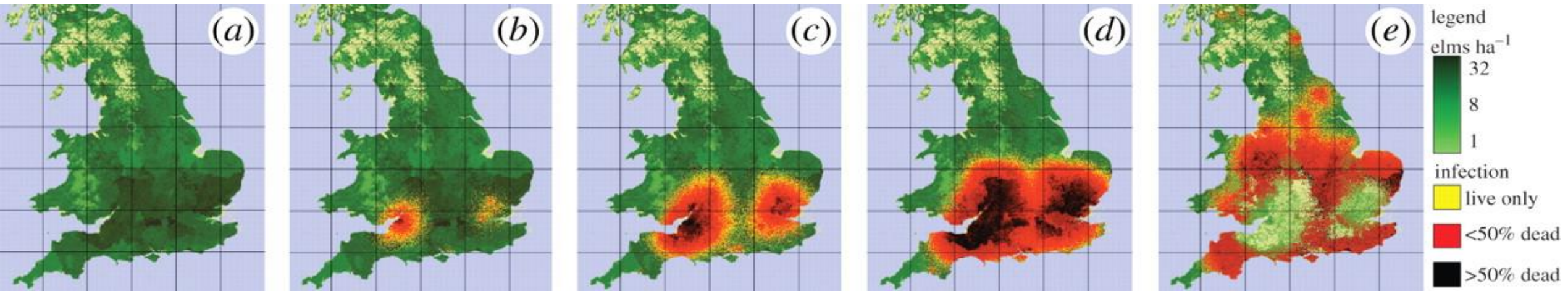
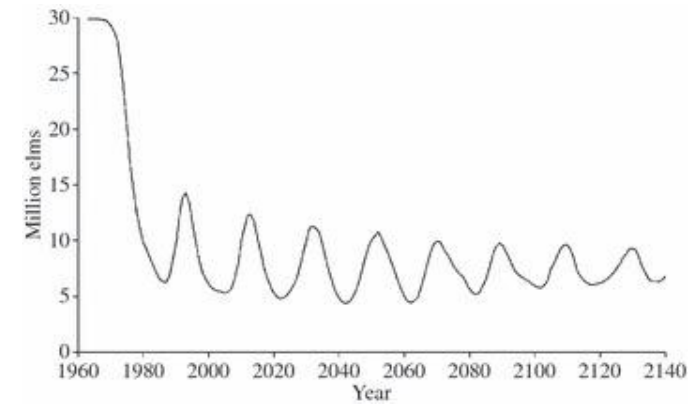


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# Dutch Elm Disease

- A fungus, spread by the Elm Bark Beetle
- Trees react to being infected by closing off their xylem
- But not quickly enough, which kills the whole tree
- First outbreak in the 1920s – a minor disease
- Second outbreak, a more virulent strain, began in 1964 – a consignment of elm logs from the USA arrived in Tetbury Docks, Gloucestershire
- 60 million elm trees died in total (from both waves)
- Still spreading:
  - 1964 wave reached Aberdeen in the last few years
  - After burning itself out in the mid 1980s, the latest wave hit Sheffield in 2012
  - But the process is less “wave like” today, and has reached endemic proportions more quickly than expected



# Dutch Elm Disease (continued)



# Other Sheffield elms

English Elms in Bingham Park



Elm Sapporo Gold (resistant elm)



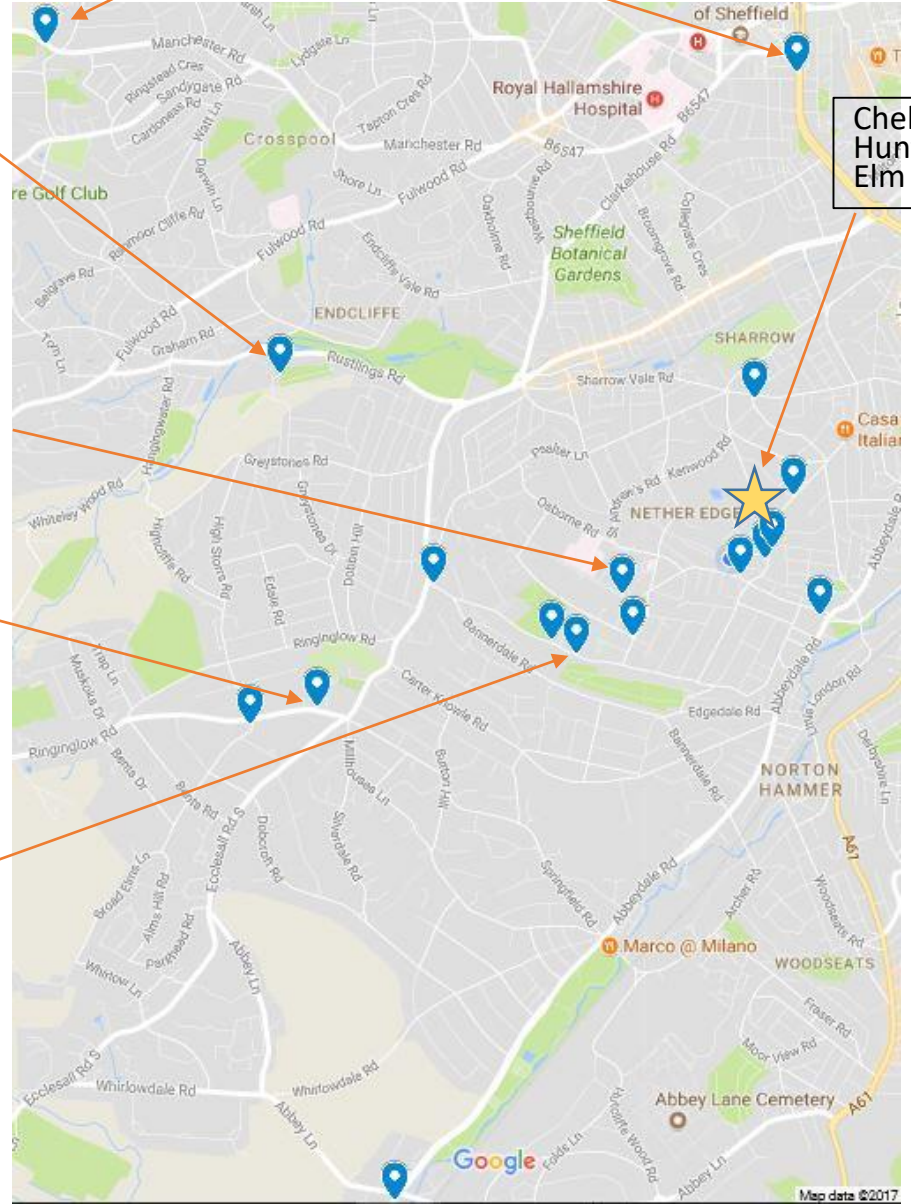
Knowle Lane European White Elm

40 year old Wych Elm in Brincliffe Edge Woods



Old Huntingdon Elms in Crosspool and on Hanover Way

Chelsea Road Huntingdon Elm



# The future of elm trees

- They do have a future, but perhaps never again as a true landscape tree
- Brighton has the national elm collection
- Edinburgh also has lots of elms, notably on the hill slopes of Edinburgh castle
- 70 years of amateur (and expert) enthusiast breeding have created a number of interesting cultivars
- Many are European elm species crossed with resistant Asian varieties which are naturally resistant to DED
- These were planted in the late 1980s onwards
- But many of these are quite badly behaved as they often have Siberian Elm ancestry
- For example: *“New Horizon”* or *“Sapporo Autumn Gold”* or *“Columella”*
- They have a habit of losing branches and snapping
- Also they don't have the prized “number 8” shape
- Genetic Modification is a possibility – but controversial
- Great British Elm experiment (The Conservation Foundation)

# The future of elm trees (continued)

- Five highly resistant Field elms found in Spain, and some in the UK too. Two examples include:
  - *Ulmus Minor var. "Ademuz"* is the most promising
  - Also *Ulmus Minor var. "Dehesa de Amaniel"*
- Vital to have genetic variety to prevent the DED disaster happening all over again
- [www.resistantelms.co.uk](http://www.resistantelms.co.uk) – The life's work of Dr David Herling, who I now count as a friend
- Experimental plantations across the UK – Including one in Sheffield, in Greno Woods – Crowd Funded £620
- But Dutch Elm Disease continues to mutate and biosecurity is lax





# Lessons for the future

- The devastation caused by DED was an early warning about how one of our most common trees could become virtually extinct as a mature tree in just 25 years
- But we didn't learn that lesson:
  - Ash Dieback reached the UK in 2012
  - Phytophthora Ramorum arrived in 2009, killing Japanese Larch (a key timber tree)
  - Horse Chestnut leaf miner and Horse Chestnut bleeding canker
  - Acute Oak Decline and Sudden Oak Death
  - Phytophthora austrocedri has been killing native Juniper since 2011
- Biosecurity remains lax and is unlikely to change – more diseases and pests on their way:
  - Sweet Chestnut gall wasp and Chestnut Blight
  - Emerald Ash Borer
  - Elm Yellows and the Zig Zag Elm Sawfly
  - Plane tree wilt
  - Xylella (affecting many plant and tree species, but famously, Olive Trees)

Questions???