Jill Butler, Woodland Trust

And on behalf of ATF and Tree Register

Special thanks to Nev Fay and Lynne Boddy

Long, long lives in one spot

Sunshine, CO_2
oxygen

Leaves, twigs,
branches,
major limbs
seeds, pollen

Hollowing trunk

Roots-hollowing/decay

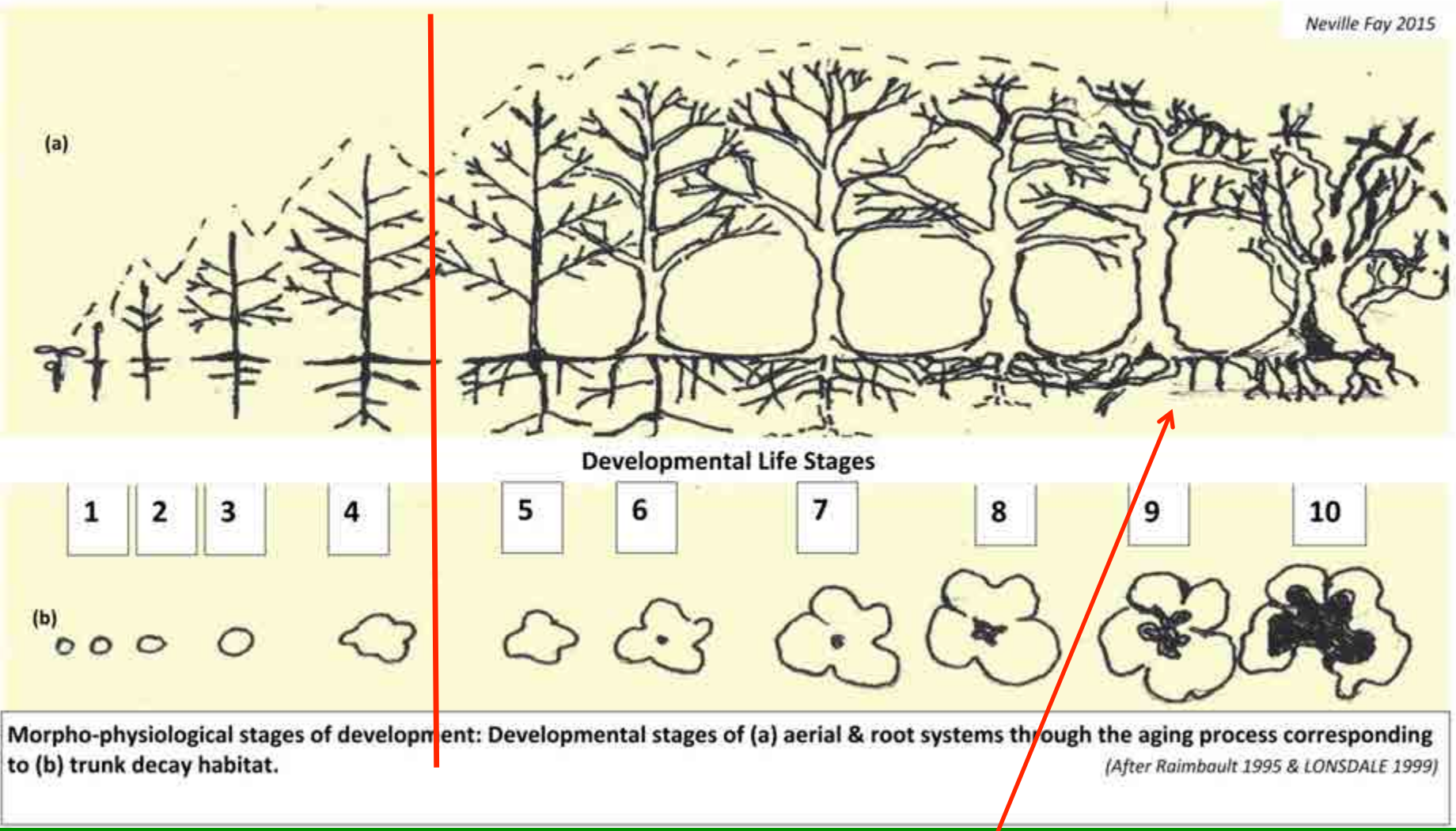
Water, nutrients

Stabilising medium

Young maturing phase:
Apical dominance

Early to late maturity:
Lower units break free from apical dominance

Early-, mid- & late-ancient phases:
Crown retrenchment & reiterative growth



Morpho-physiological stages of development: Developmental stages of (a) aerial & root systems through the aging process corresponding to (b) trunk decay habitat.
(After Raimbault 1995 & LONSDALE 1999)

Aging of trees

Root structure

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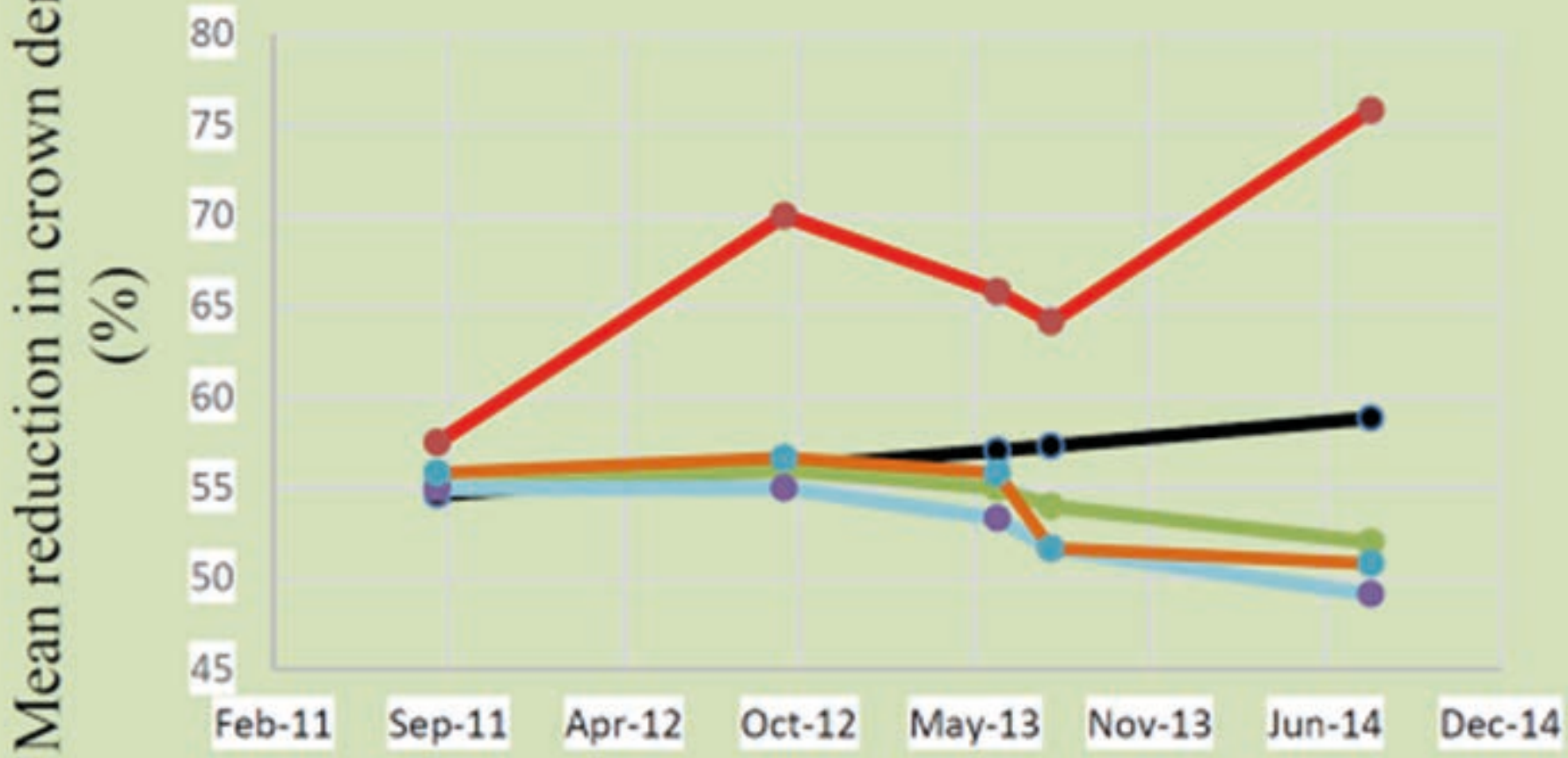
Analysis name	Value	Comparative values for good fruit tree growth
pH	4.6	On low side
Accessible Phosphorus	16.0	High
Accessible Potassium	4.3	Low
Accessible Magnesium	2.3	Low
Potassium/Magnesium ratio	1.9	OK
Accessible Calcium	31.0	Low
NH_4 –Ammonium nitrogen	< 8.0	Low
NO_3- Nitrate nitrogen	11.0	Low
Copper	0.3	Low
Manganese	30.0	OK
Iron	420.0	OK
Zinc	4.5	High
SO_4 (sulphate)	23.0	High
Boron	0.43	Low

Table 1 – showing the results from the soil sample taken from the rooting area of Kvilleken on 7th June 2013 as well as a comparison of these values with values established for fruit, berry and vegetable production (Eurofins, 2013).

Vikki Bengtsson, Pro Natura
Jon Hartill, Hartill Trädexpert AB
November 2013

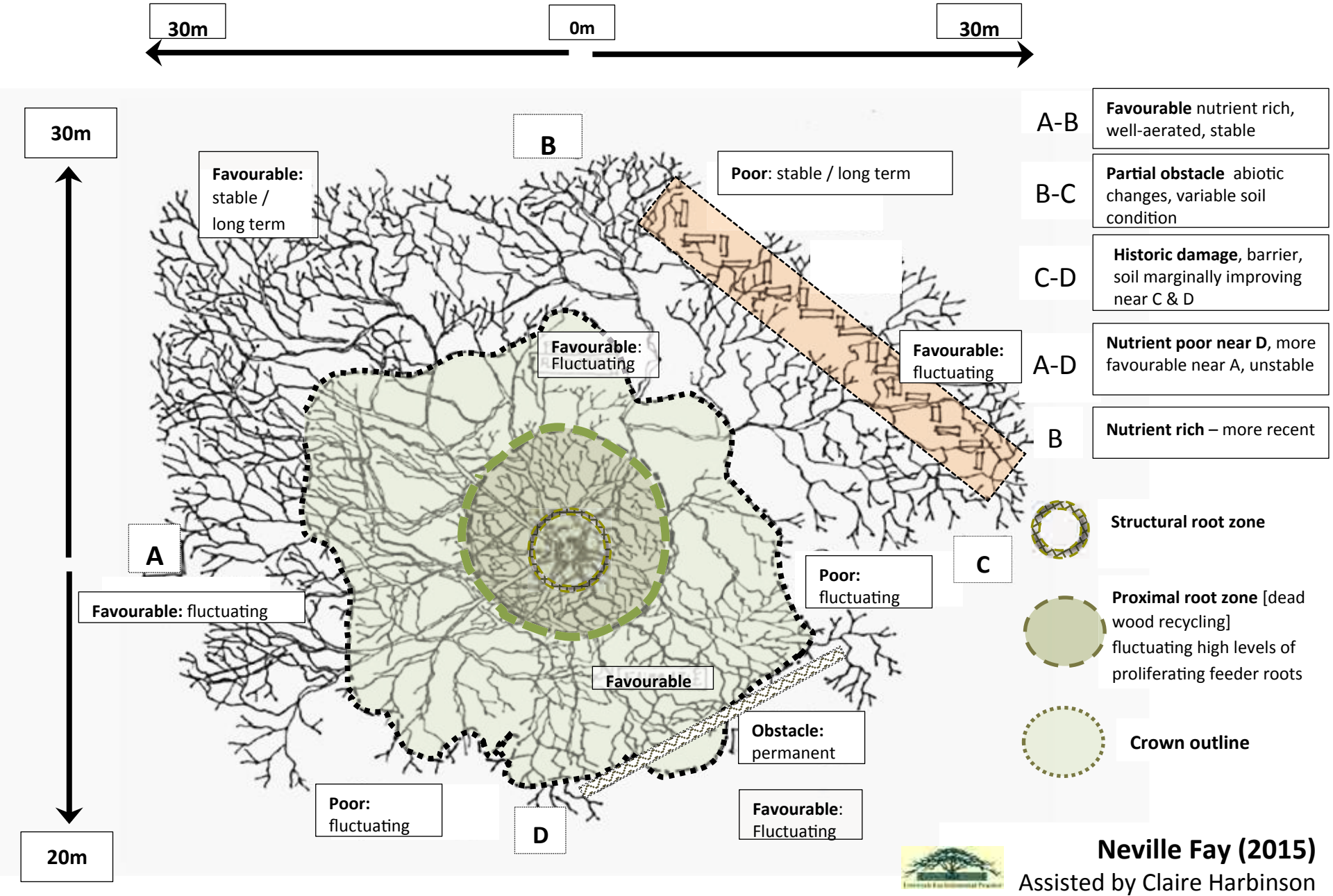

Peter Glassey

Mean reduction in crown density (%) for each treatment group



Treework Environmental Practice

Veteran tree roots: a dynamic process over time

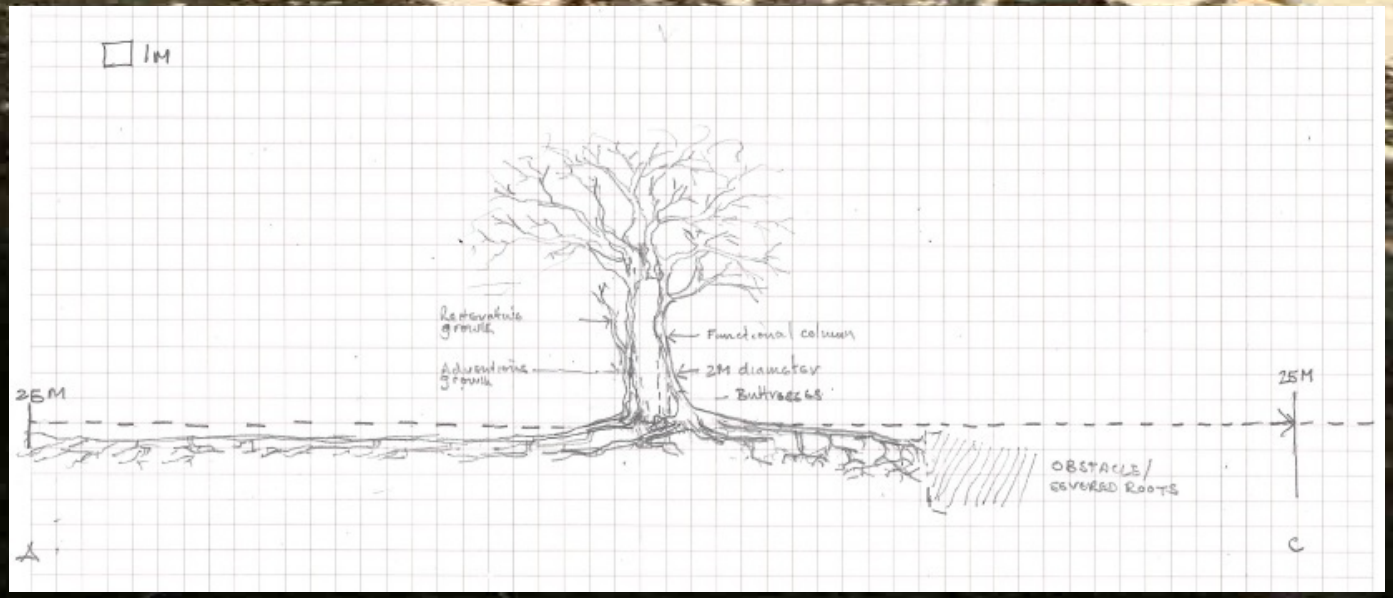


Neville Fay (2015)
Assisted by Claire Harbinson


Roots > 25mm

Beech 1.63 dbh,

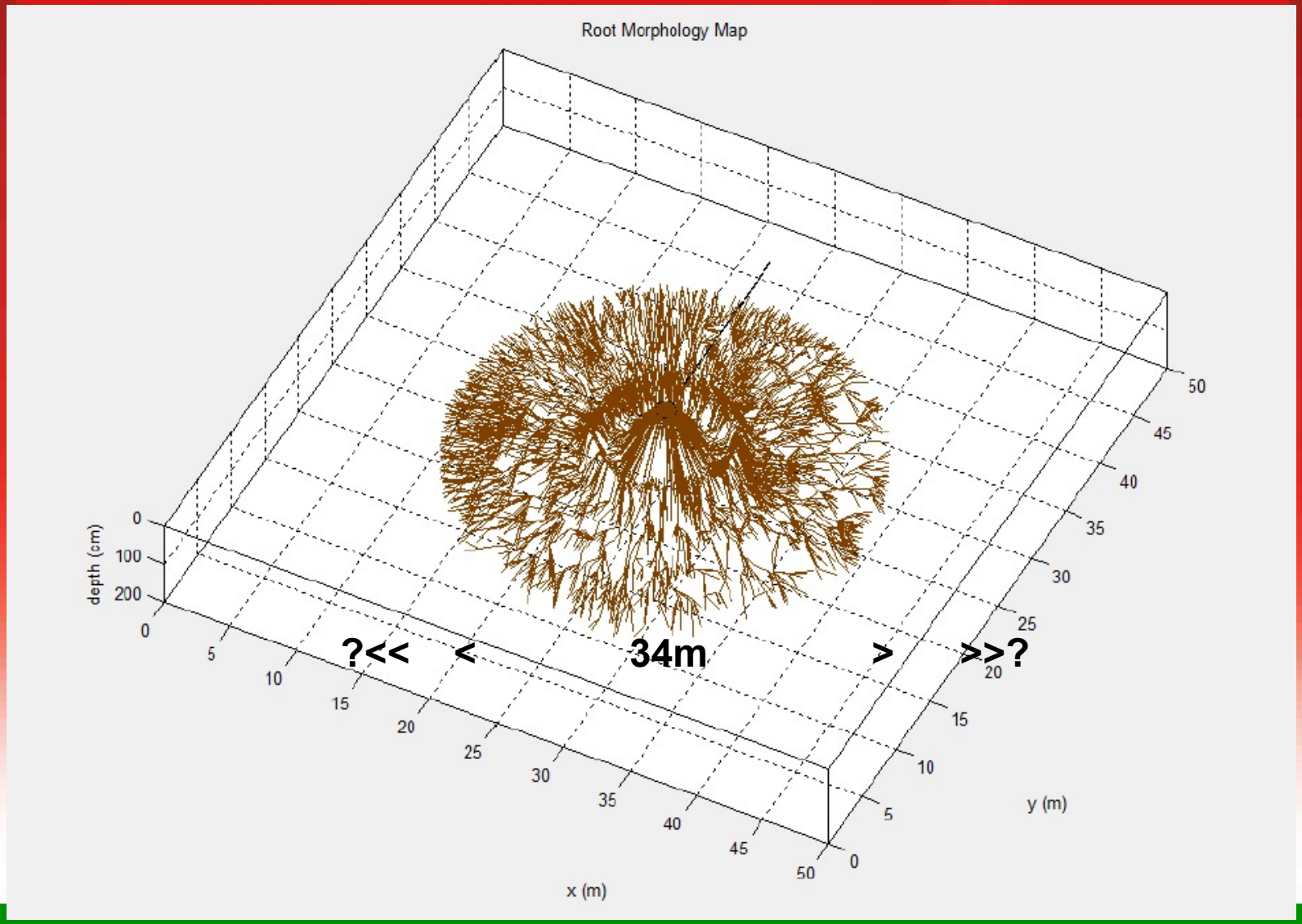
roots >25 mm at
over 30m from trunk



’Skirt‘ of roots radiating out from trunk

Burghley Oak – 2m dbh, crown radius 15m

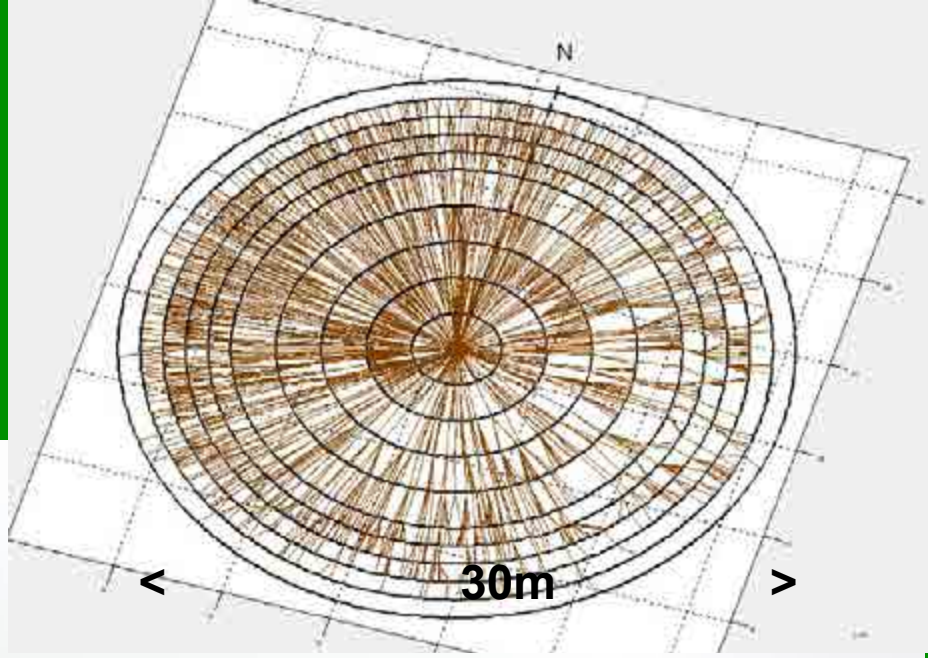
one Britain Beneath Your Feet



Burghley Oak – 2m dbh, crown radius 15m
Root Radar – Sharon Hosegood, JD Clarke

Brimmon Oak – 1.85m dbh, crown radius c 5m

Root Radar – Jerry Ross and Peter Barton PBA Consulting



Healthy Soil - Characteristics

Contains full soil food web

Per gram of soil

- **Bacteria**: 1 billion
- **Fungi**: 200 m hyphae
- **Protozoa**: 10,000
- **Nematodes**: 30
- **Arthropods**: 50,000

- **Fungal - Bacterial Ratio balance**
- **F-B R** influences plant community growth, optimal ratio varies between annual, perennial and woody (trees)

Per 'average cup'

Bacteria: 200 billion

Fungi: 90 KM hyphae

Protozoa: 20 million

Nematodes: 100,000

Arthropods: 50,000 x?

See S. Frey, Ohio State University

Obligate, mycorrhizal, Leccinum duriusculum (Poplar bolete)
fruiting over 25m from nearest tree (Ted Green) at Knepp Estate

Caloboletus radicans, ectomycorrhizal fungus

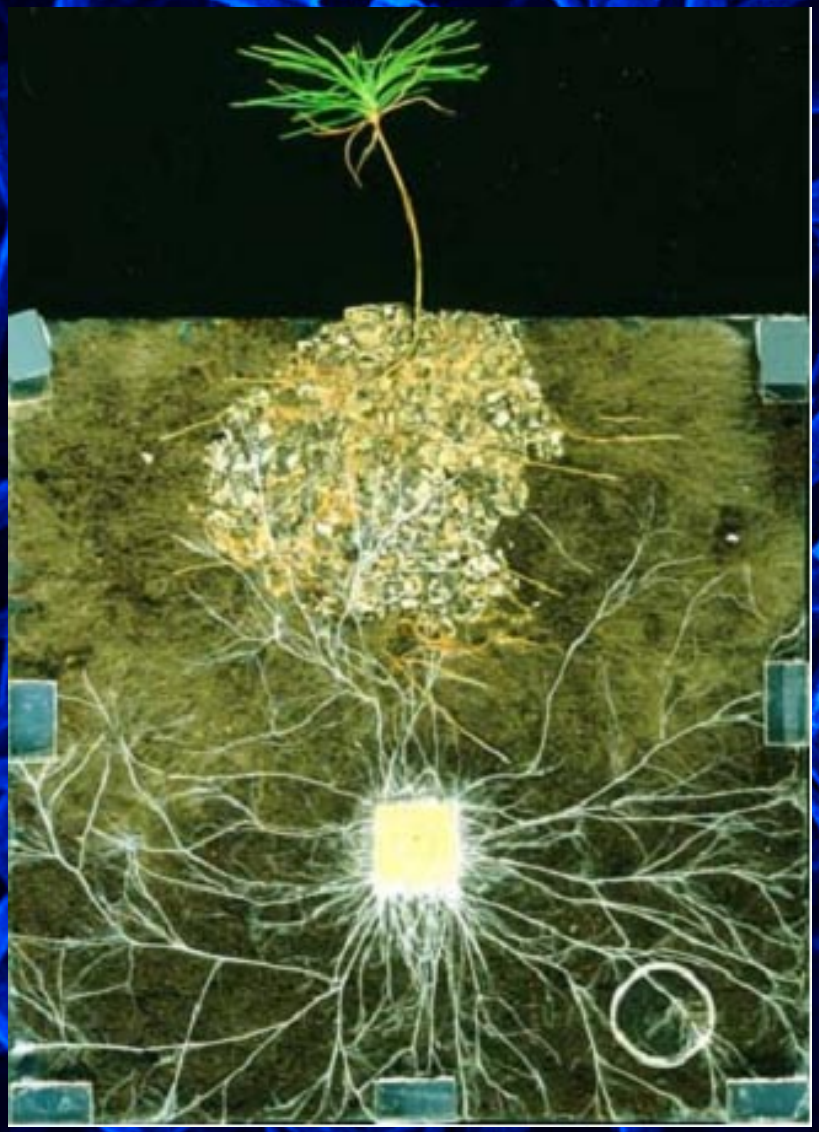
- 20m from oak with small crown

(Ted Green)

>37,000 ‘bits’ per year from one mature tree

6 x leaves (=flowers, pollen, seeds..) on a mature **open grown** oak compared to plantation oak.

Saprotrophic <> Mycorrhizal relationships



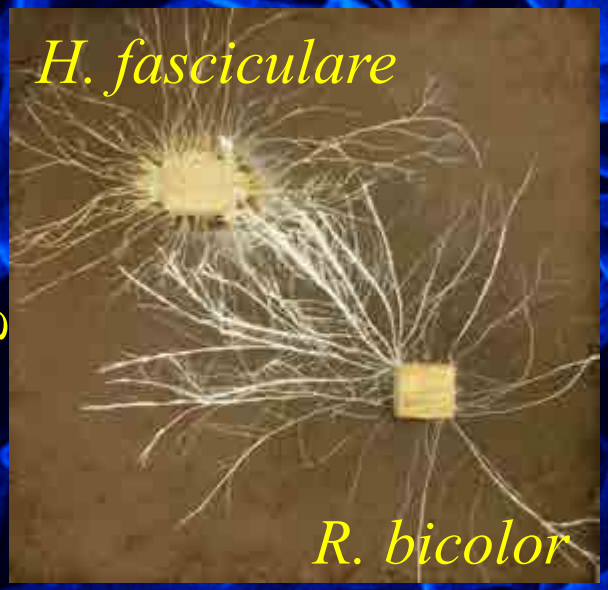
Wood decay fungi battle with mycorrhizal fungi

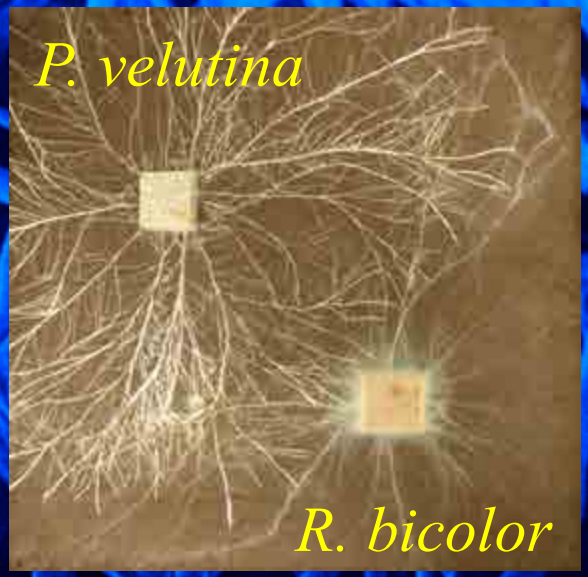
Damian Donnelly

Different fungus-fungus-grazer effects

ungrazed

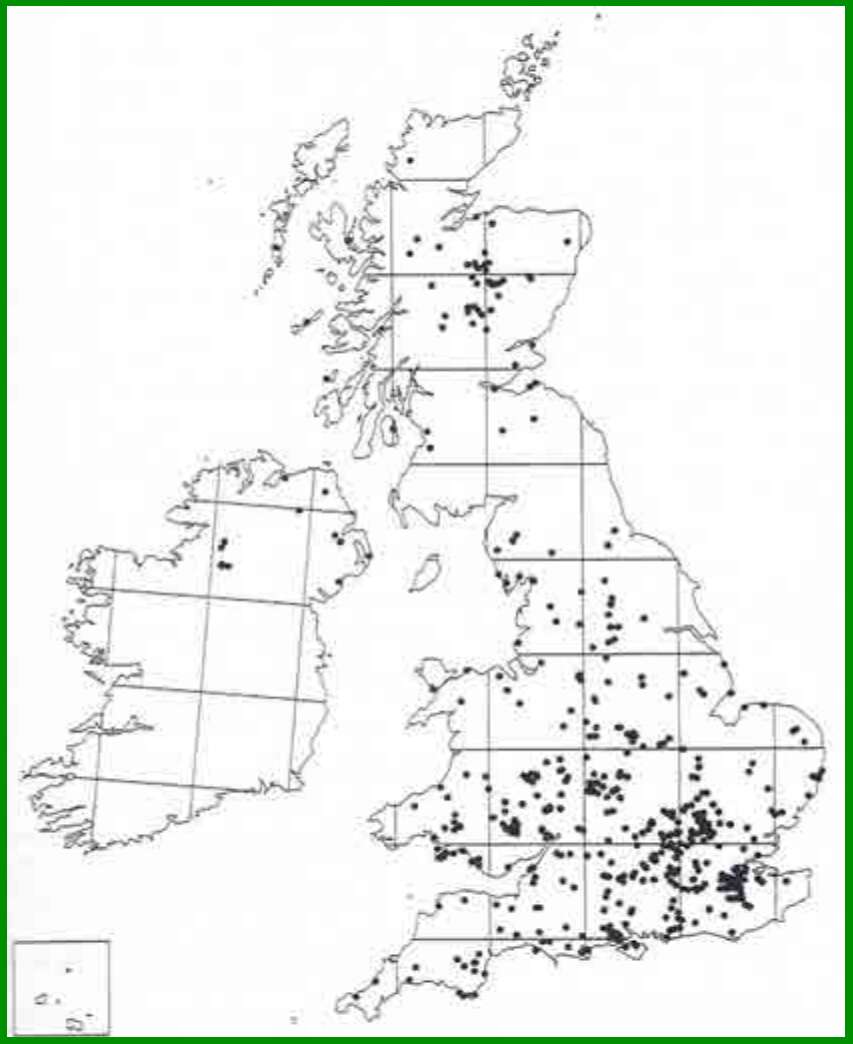
grazed



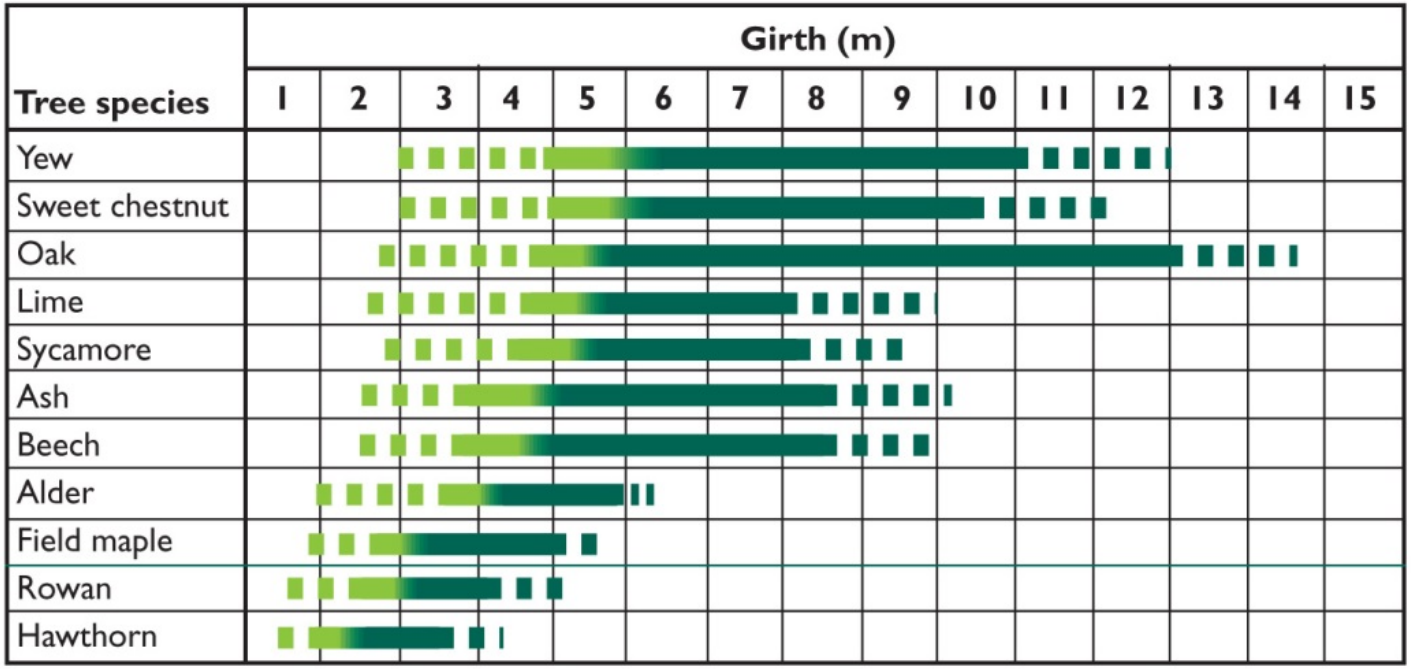


Crowther *et al.* (2011) *Ecology Letters,* 14, 1134-1142

Important Fungus Areas



- Soil history / landscape history have an important impact on the diversity of soil microflora. Conserve most valuable – ancient trees as indicator.
- High diversity sites eg Windsor Great Park and Forest, New Forest, Moccas Park – have big ancient tree populations.
- Diverse soil microfloras will have impact on decomposition, ecosystem functioning and services. Soil “reserves”



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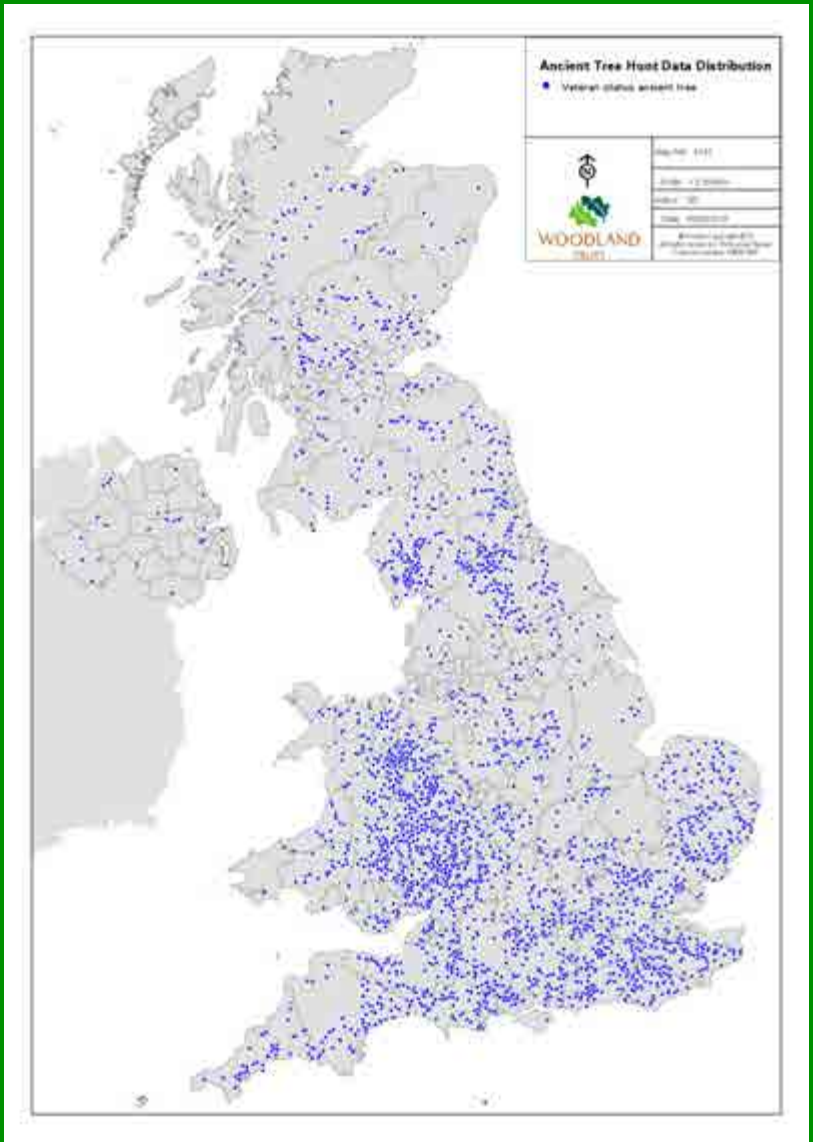
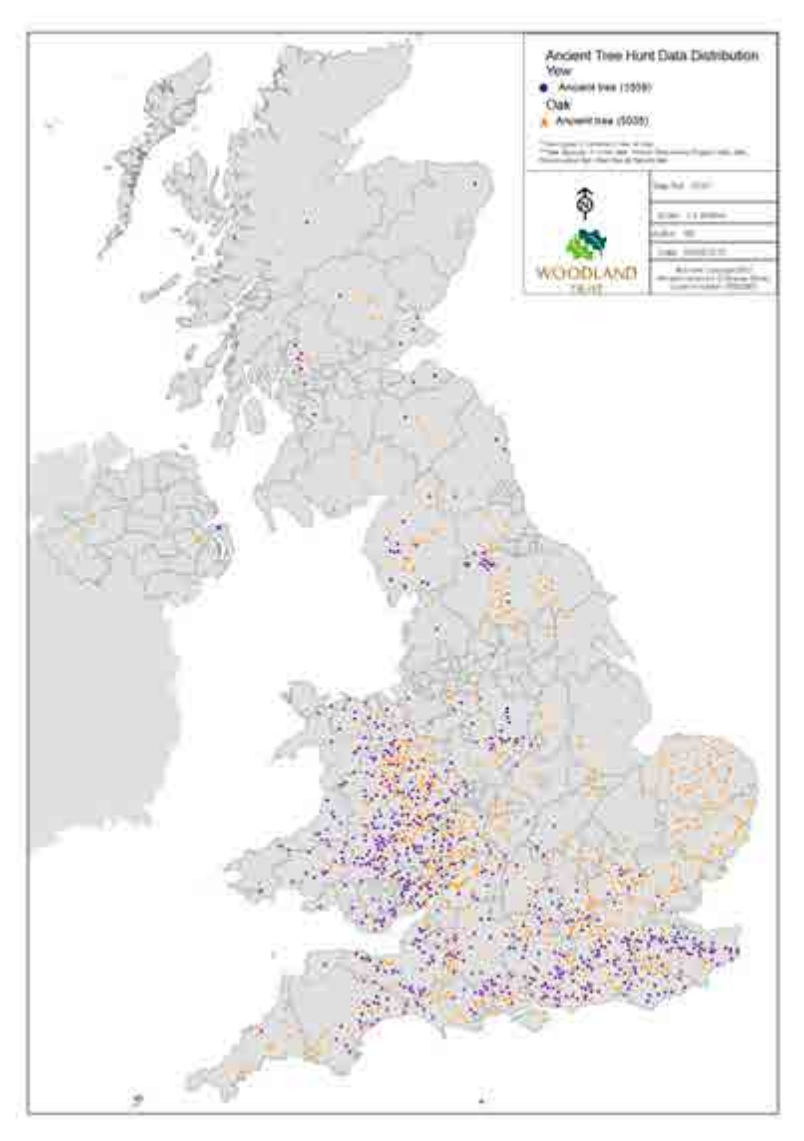
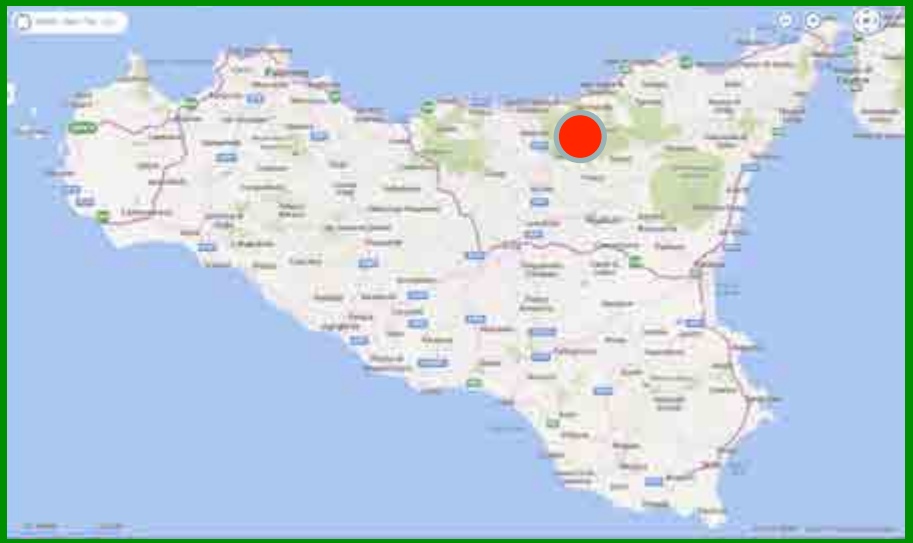


Distribution all ancient trees

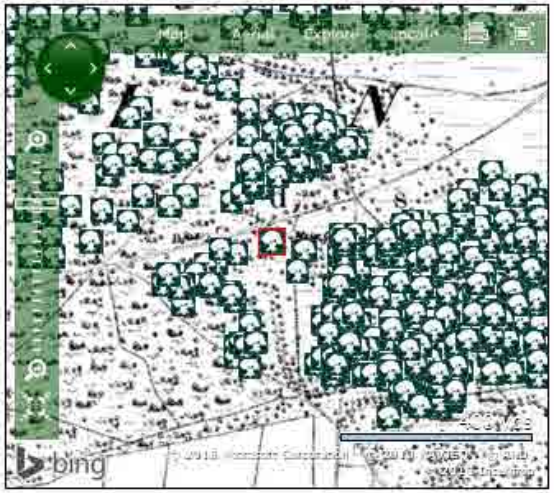


Distribution ancient yews and oaks ie oldest trees



Ancient beech and holly pollards in Sicily

Pedunculate Oak at SK6205367902



Tree number	1
Tree record status	Verified
Verified by	Katherine Owen
Verified on	31/03/2007 11:15
Original Recorder	
Grid reference	SK6205367902
Date of survey	1 January 2006
Country	England
County	Nottinghamshire
Tree species	Pedunculate Oak
Girth	10m 66cm
Height of girth	0m 90cm
Local/historic name	Major Oak, Queen Oak, Cockpen Tree, Robin Hood's Oak

Record a tree
Clusters of fat old trees
Recording more than one tree
Tree Blogs

Print this page
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Identifying and protecting Britain's ancient trees

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Pictures

Upload an image for this tree

View all images for this tree

Have you...?

Have you visited this tree? Add your name to the list of those who have and become a part of this tree's history!

I have visited this tree

29 people have visited this tree

Tree Blog

In 1906 Elwes and Henry visited the MAjor OAk and recorded its girth. In 2006 the Ancient Tree Hunt Team visited the Major Oak and also recorded its girth. In 2007 this tree is the first to be verified on the live Ancient Tree Hunt web site. Now for the remaining 100,000

Posted by Jill Butler on 06 February 2007

Add a comment about this tree

View all comments about this tree

Conclusions

- Observe
- Collect more data
- Share information
- Further research
- Precautionary principle –
  larger minimum RPAs/ Tree Ecosystem Areas for A3, B3 (BS5837) trees.
- Soil reserves

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My thanks to:

Neville Fay
Prof. Lynne Boddy
Ted Green
Caroline Davis
Sharon Hosegood
Jerry Ross
Vikki Bengtsson
Jon Hartill
Luke Steer
Paul Melerange

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