

A photograph of a forest landscape. In the foreground, a large, thick tree trunk with a gnarled base stands prominently. The ground is covered with tall grasses and some fallen logs. In the background, a dense forest of trees with green and yellowing leaves is visible. The lighting suggests a bright day with some shadows.

What is wood-pasture – its history and future value?

Jeremy Dagley, Chair of Wood Pasture & Parkland Network

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Defining and delimiting wood-pastures

Definitions of wood-pasture

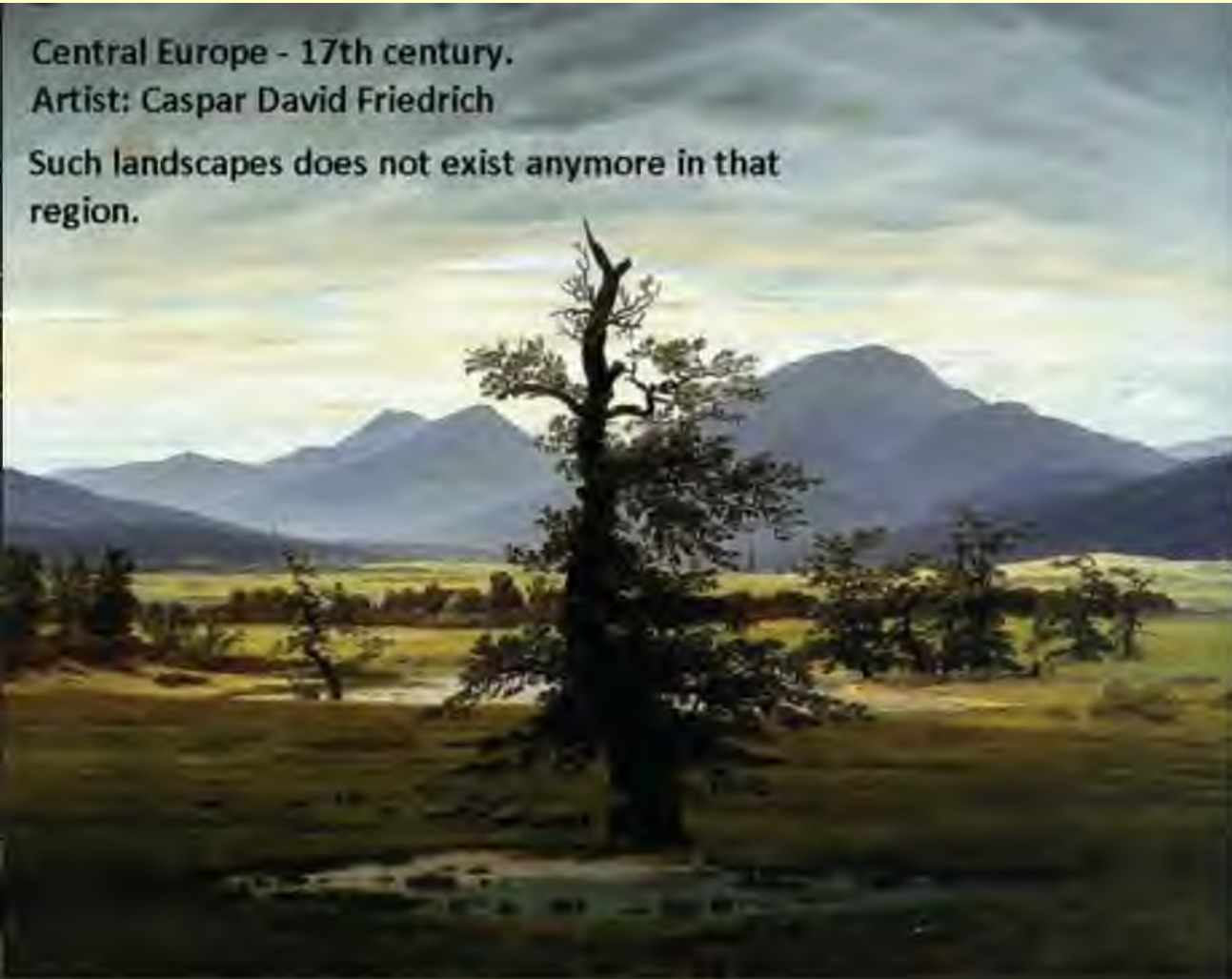
Wood-pastures and parklands are mosaic habitats valued for their trees, especially veteran and ancient trees, and the plants and animals that they support. Grazing animals are fundamental to the existence of this habitat.

..... and after 4 pages of description and further information.....

The extent and richness of the UK wood pasture and parkland habitats are outstanding in the northern European context and there is a need for further studies to assess UK habitats in relation to the continent, particularly eastern and southern Europe.

WP&P TAG 2011

Recognition of the importance wood-pastures



With thanks to **Professor Tibor Hartel** for this pair of images and for the insight



Transylvania



Extremadura



Anatolian plateau

Epping and Hainault Forests

still in their landscape of
ancient oaks >3m girth,
ancient commons and
ancient green lanes.

A recognisable framework
of existing natural capital
for landscape restoration
and biodiversity recovery



The wood-pasture template

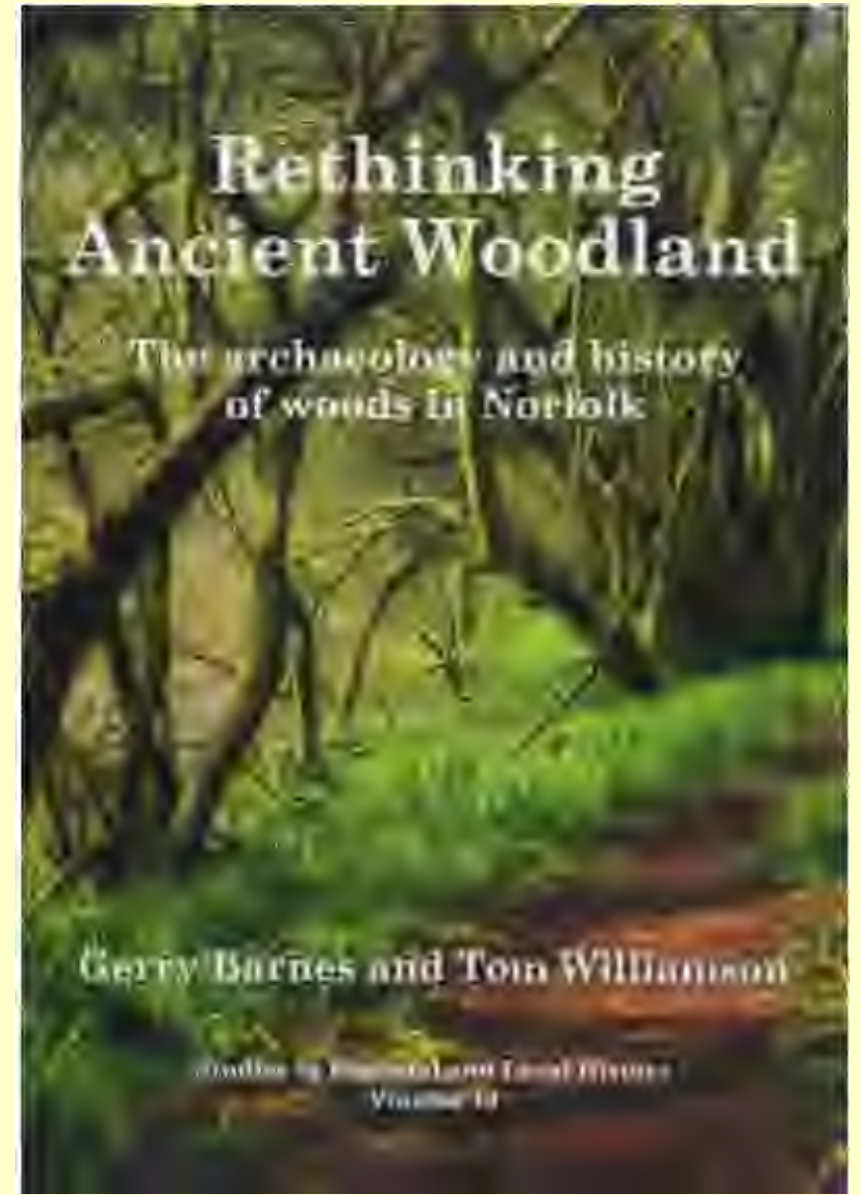
Barnes & Williamson 2015

Norfolk - an historical landscape approach

“the evidence makes it clear that in Norfolk at least the extent of wood-pastures.....in the medieval and post-medieval landscape has been underestimated.....

..... Before the later 17th Century grazed woodland of these kinds would have collectively covered a much greater area of ground than the enclosed, coppiced woods which we now usually think of as ‘ancient’ or ‘semi-natural’ woodland.”

“...all primary [ancient] woods must occupy land that was.....subject to grazing before it was enclosed and managed as coppice”



The wood-pasture template

Ian Rotherham 2017:

- Peak District - detailed studies showed modern-day heaths and moors in northern England began as extensive medieval wooded commons and wood-pasture
- Derbyshire – full of wood-pasture in Saxon times
252 Manors surveyed for Domesday Book –
188 with wood-pasture, only 35 with coppice woods

“Lost landscapes are wood-pastures in waiting”



Degraded wood-pasture



The Succession Paradox

Birds

Terrestrial breeding bird species

70 (74%) in grassland/scrub/savannah

25* (26%) in woodland/forest

*but many woodland/forest species also need grassland/scrub to feed such as Green Woodpecker, a species emblematic of w-p



Green Woodpecker and ant-hill

from Sutherland & Ockendon in <https://knepp.co.uk/vera-conference-1> *Freeing the landscape* conference 2017

Dung – let there be poop!



Importance of scrub and edges



Grassland - scrub mosaics



Lichens (... and lichenologists!) like glades:
lichen-rich woods need **GRAZING**, old-growth not enough

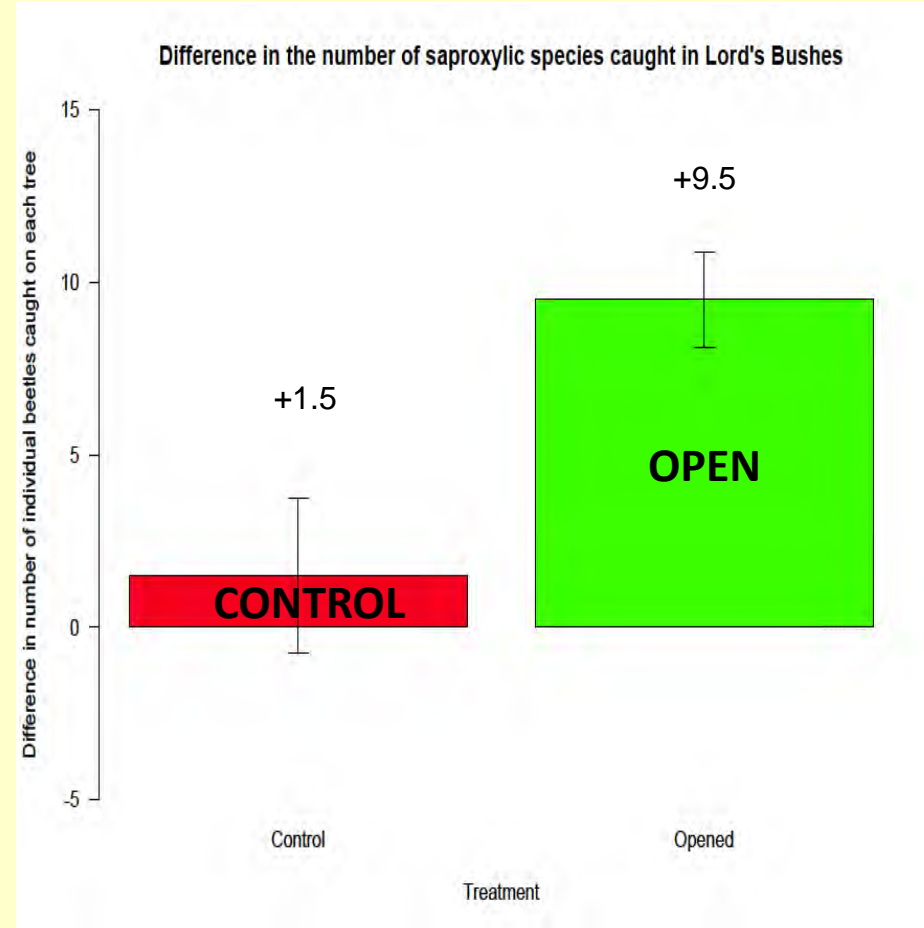
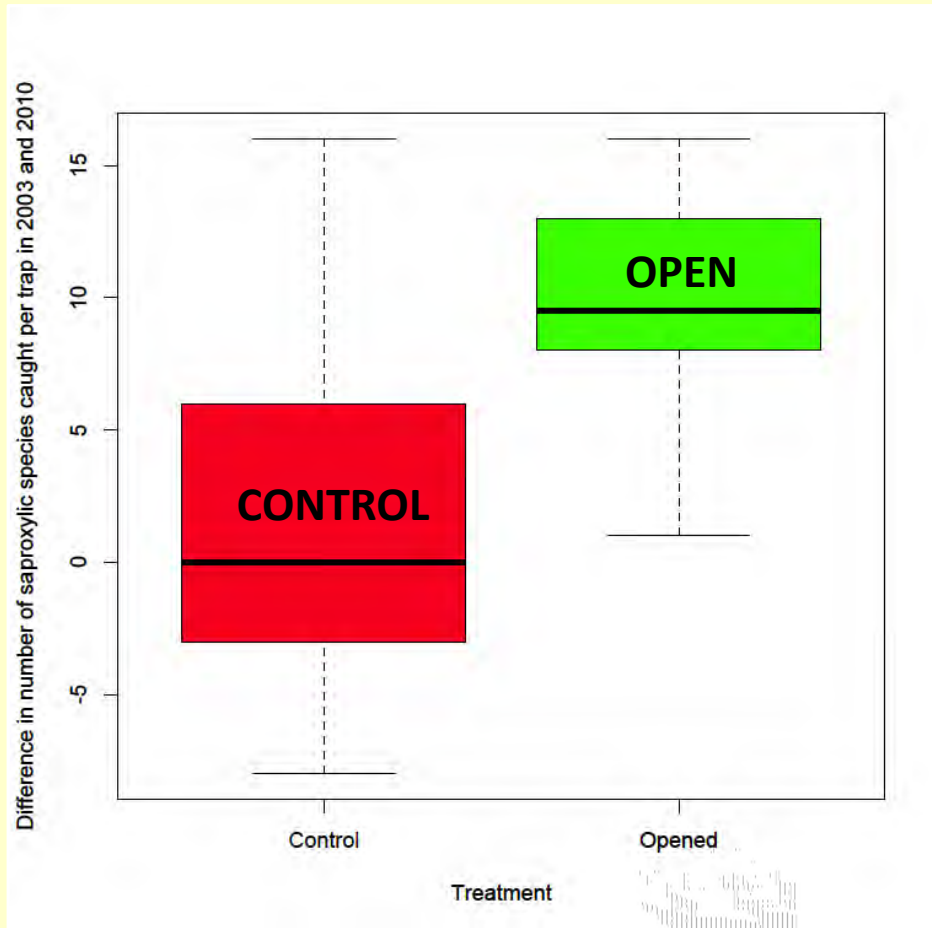


Light - let there be light!



CHANGE in *saproxylic* species numbers between 2003 and 2010 after clearing infill in Epping Forest

Two sample t-test (variances equal): $t = -3.0261$, $d.f. = 18$, $p = 0.0073^{**}$



A large, old tree with a thick, gnarled trunk and a wide, spreading canopy of green leaves. The tree is the central focus, with its base covered in moss. A dirt path leads through the forest, flanked by other trees. The ground is covered in brown leaves and moss. The background is a dense forest of green trees.

Large, old trees

“...these trees enormously increase the natural and cultural values of the wood-pastures.....”

Hartel 2018

WAGNER

Hollowing trees

Quantitative evidence from Beech trees

- Beetles trapped on 3 types of Beech tree
- 'vital', 'habitat' and 'hollow' (c.30 of each)
- 'habitat' – no hollows - but broken crowns, fungi fruit bodies, lost bark

- significantly ***
more important for
biodiversity than
mature 'habitat' tree



Mueller et al 2013



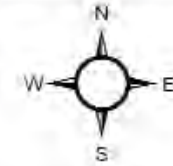
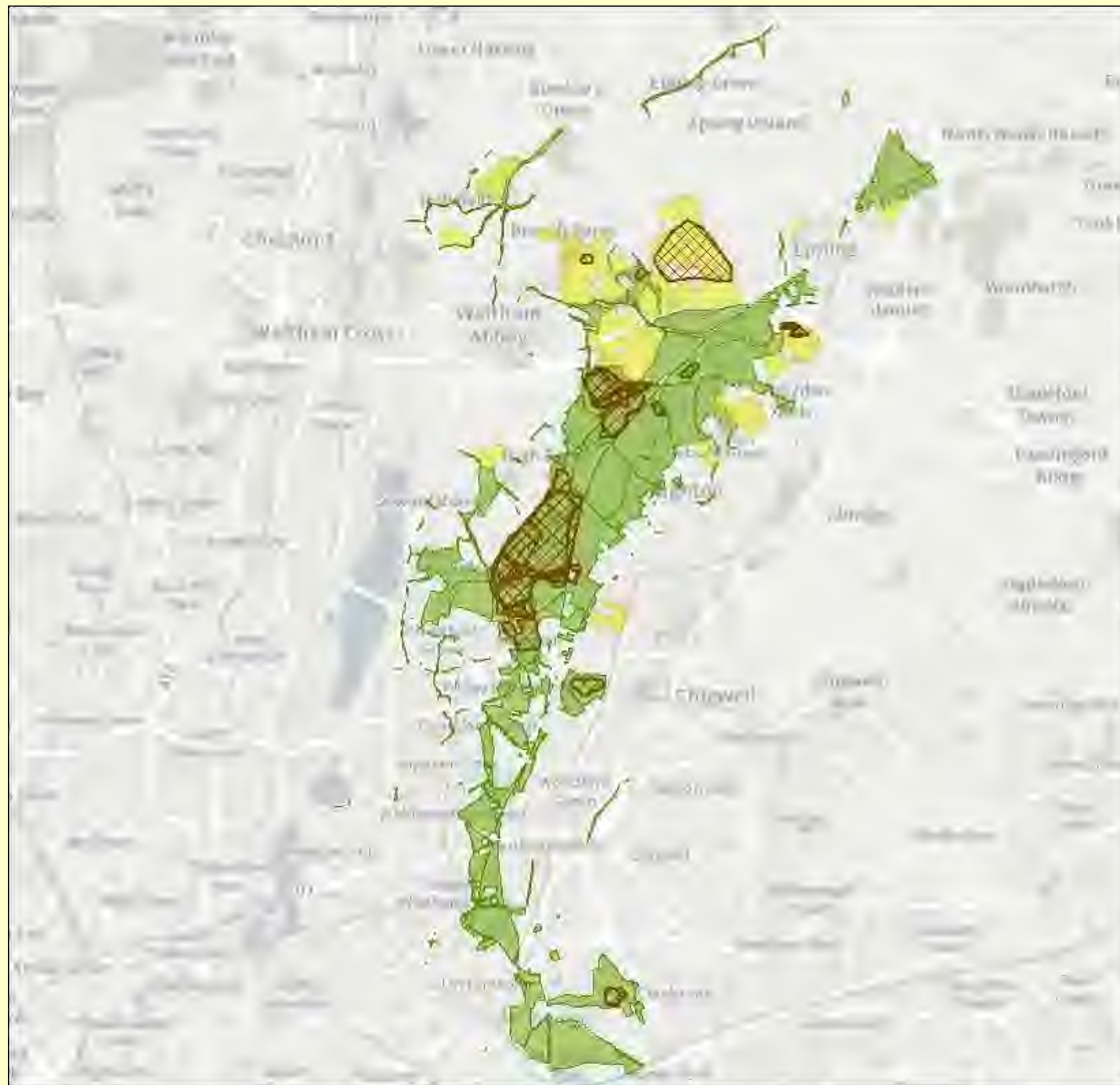


Collar based technology



GPS – based *NoFence* System

Grazing areas polygon record



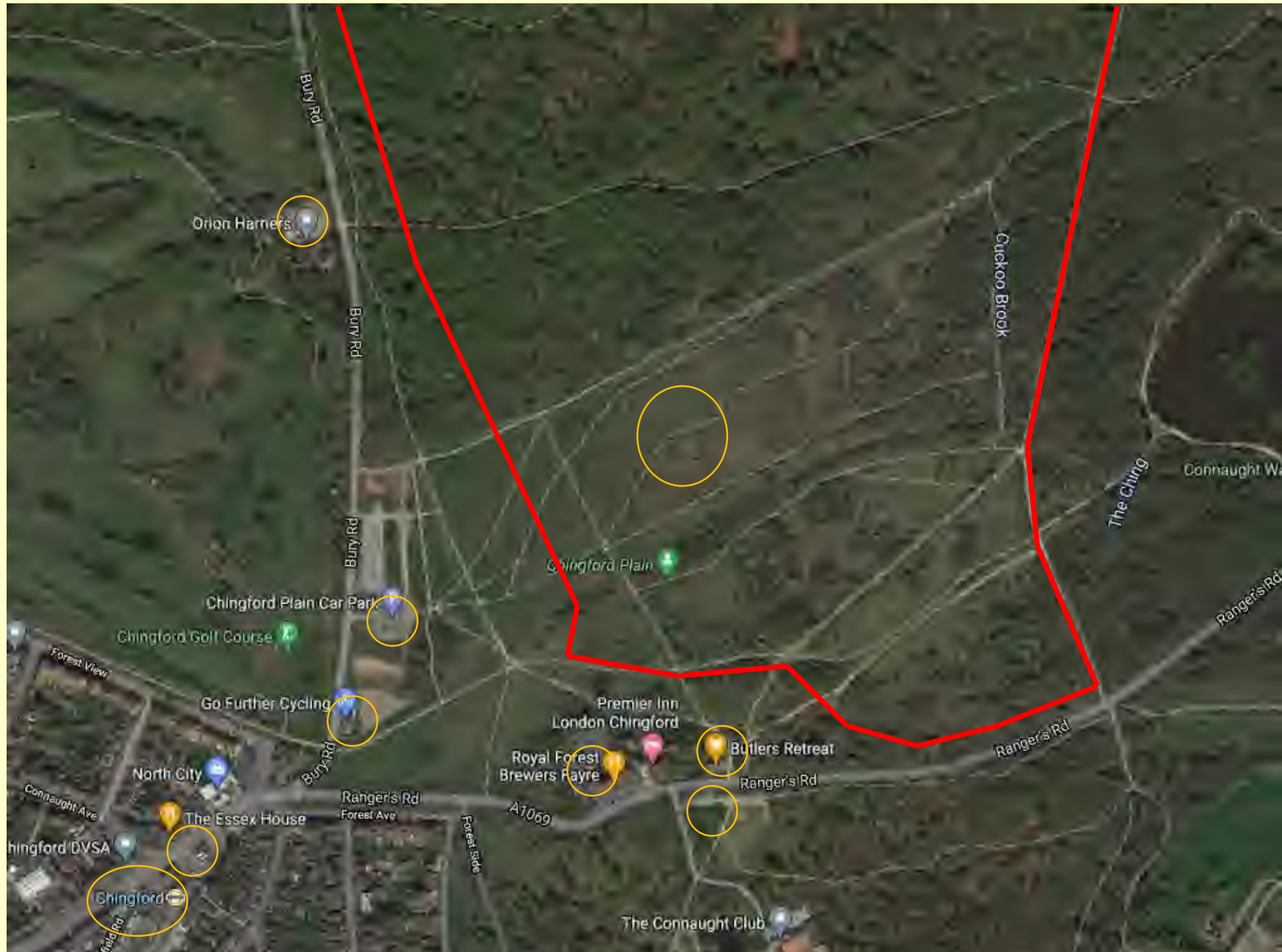
NoFence pastures in Epping Forest

-  Pastures
-  Buffer Land
-  Forest Land
-  Compartments

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Some immediate benefits for grassland...



...ant-hill mosaics

Importance of rapid, temporary or seasonal exclosures



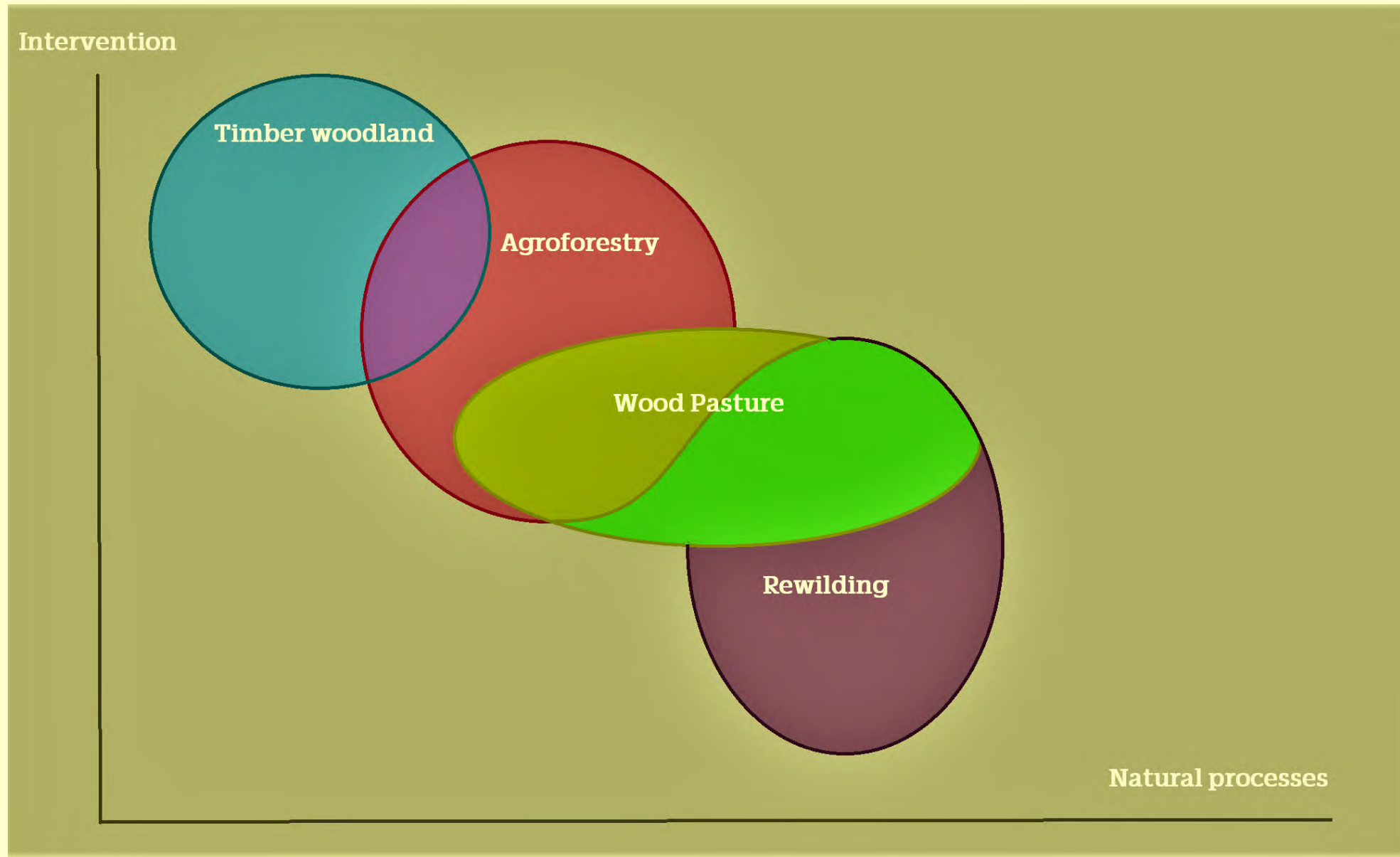
Lousewort – return from extinction



Lousewort – grazing adapted

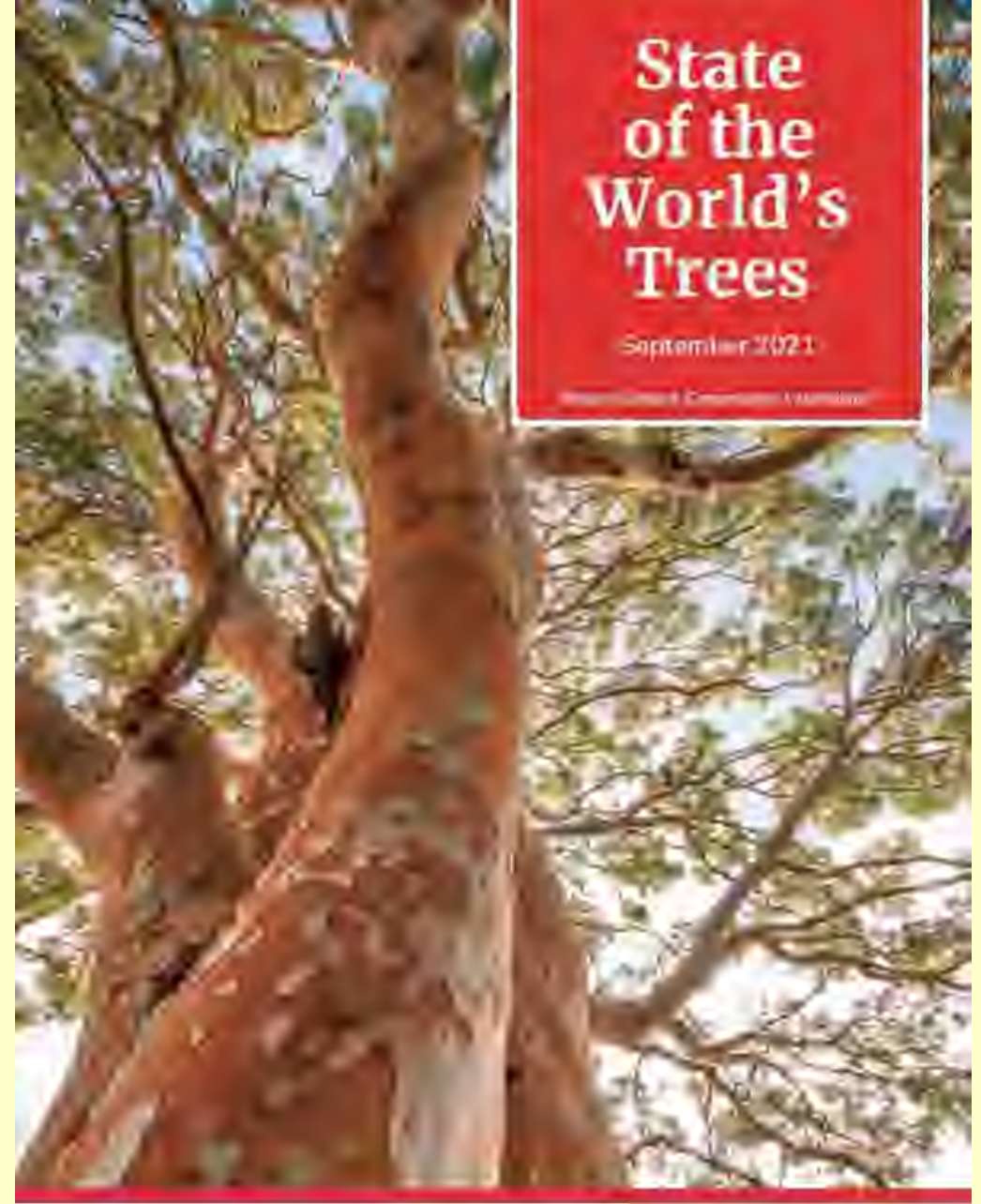


Wood-pasture – its future value?



Quality before quantity

“Youngering” of tree age classes – Jill Butler
Its not just species that face extinction





Moccas' Oaks – unique wood-pasture



Gaining recognition and making space for wood-pasture – ecologists have a vital role

The future value?



March of the new plantations – a trillion trees

Abandonment



AGFORWARD – 2014 - 2018

40 stakeholder groups across 13 European countries

Four priority research and development networks (PRDNs)

- Core high Nature value and Cultural sites
 - Agroforestry for high value tree systems
 - Agroforestry for arable systems
 - Agroforestry for Livestock
-
- 15.1 Million hectares of livestock agroforestry
 - 9% of EU agricultural area
 - Significant European land-use, although only 3% of UK agricultural land
-
- Field-test agroforestry innovations
 - Evaluate agroforestry designs and analytical tools
 - Policy development and dissemination



AGFORWARD – 2014 - 2018



Livestock network research:

- Tree fodder (UK, France, Netherlands)
– important for protein & micronutrients
- Tree presence – increase in earthworms, increase in biodiversity

Design of systems (Spain):

- mosaic landscape increased ecosystem services
- public access important for full cultural services

Modelling work:

- In UK, arable most profitable land-use in standard economics, but with GHG included and costed, silvoarable agroforestry more profitable
- FORAGE-SAFE model – tested in Spanish Dehesa – maximum net profit at 20% tree cover with cattle and pigs

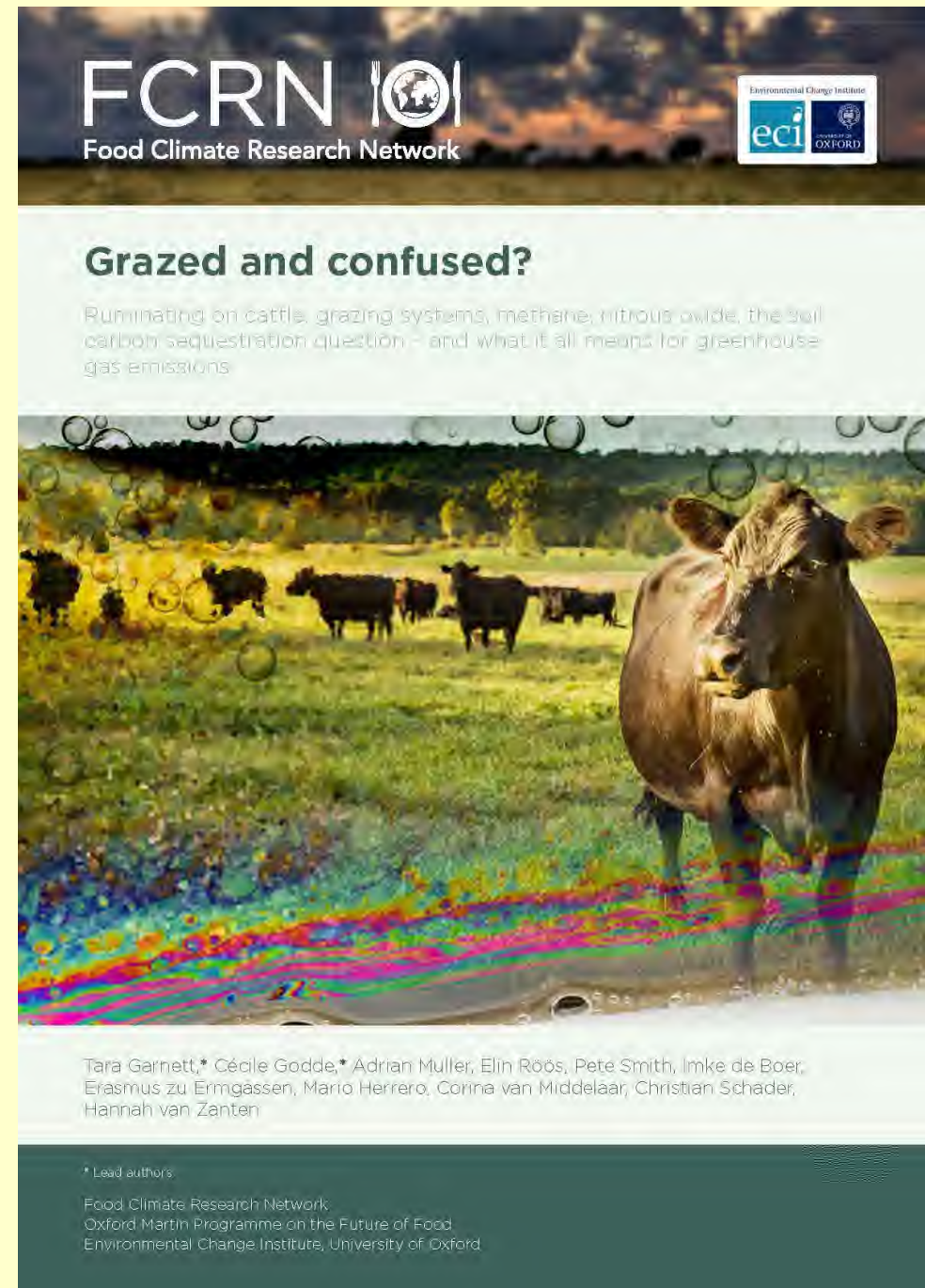
Climate chaos - grazing and carbon


- Equilibrium and reversibility
- Biomass stocks and soil stocks


Food Climate Research Network report 2017:

- Grasslands only studied – not silvopasture
- The sequestration potential from grazing management offsets only 20-60% of annual average emissions
- Good grazing management at right stocking rates can help protect and sustain carbon stores
- Concentrating on carbon storage on existing sites is more important to climate mitigation than sequestration

Garnett, T., Godde, C. et al 2017 *Grazed and Confused?* FCRN, University of Oxford



FCRN | 
Food Climate Research Network

Environmental Change Institute
eci | 
UNIVERSITY OF OXFORD

Grazed and confused?

Ruminating on cattle, grazing systems, methane, nitrous oxide, the soil carbon sequestration question – and what it all means for greenhouse gas emissions

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* Lead authors

Food Climate Research Network
Oxford Martin Programme on the Future of Food
Environmental Change Institute, University of Oxford

Climate chaos – carbon sequestration

Wood-pasture better than plantation

Beckert et al 2016: Aberdeenshire – 24-year old systems

- Similar carbon benefits to woodland but allowing other land-use
- Carbon stored more securely
- Scots pine wood-pasture – big carbon store and still functioning after 24years

Upson et al 2016: Bedfordshire – 14-year old expt

- Wood-pasture 5% better carbon capture overall
- “Carbon years” – greater carbon security



Epping Forest – Longhorn grazing

A national wood-pasture/agroforestry strategy





Thank you – any questions?