Initial Stakeholder Meeting Report
Wood pasture and parkland in the UK

Work-package group 2: High Nature and Cultural Value Agroforestry
Specific group: Wood Pasture and Parkland in the UK
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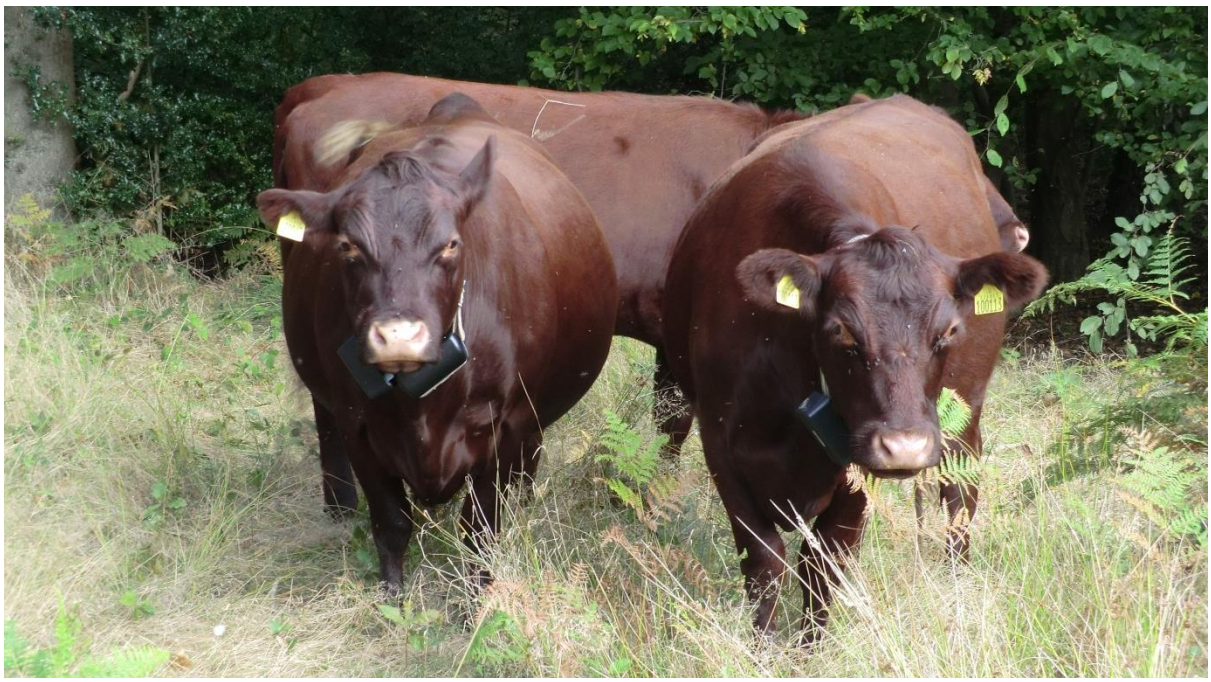

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1. Context

The AGFORWARD research project (January 2014-December 2017), funded by the European Commission, is promoting agroforestry practices in Europe that will advance sustainable rural development. The project has four objectives:

1) to understand the context and extent of agroforestry in Europe,
2) to identify, develop and field-test innovations (through participatory research) to improve the benefits and viability of agroforestry systems in Europe,
3) to evaluate innovative agroforestry designs and practices at a field-, farm- and landscape scale, and
4) to promote the wider adoption of appropriate agroforestry systems in Europe through policy development and dissemination.

This report describes one of about 40 initial stakeholder workshops to address objective 2. Further details of the project can be found on the AGFORWARD website: www.agforward.eu

2. Description of system

Wood pasture and parklands (WPP) are traditional land uses in the UK which tend to have their origins in medieval hunting forests, wooded commons, or treed pastures. Some of these sites were incorporated or established as parks, particularly in the 19th century, and in general they are home to a range of native species (Maddock 2011). Key features of WPP are the presence of open-grown ancient or veteran trees (often pollarded), grazing livestock, and an understorey of grassland or heathland. The veteran trees typically have characteristics of large girth, cavities and hollowed stems and branches, water pools, decay pockets, standing deadwood in various states of decay, epiphytes, fruiting bodies from fungal decay organisms (Read 2000).

There is no reliable statistics on the area of wood pasture and parklands in the UK, but the UK Biodiversity Steering Group reports an area of 10,000 to 20,000 ha in “working condition” (Maddock 2008).

3. Participants

Before the main initial meeting, Cranfield staff visited the wood pasture and parkland at Woodhall Park Estate in Hertfordshire, just north of London (Figure 1a and 1b). This historic parkland included veteran oak (*Quercus* spp.) and hornbeam (*Carpinus betulus*).

The first stakeholder meeting was attended by seven stakeholders at Epping Forest on the border of Greater London and the county of Essex. The host for the meeting was Dr Jeremy Dagley (head of Conservation at Epping Forest). One of the invited attendees was Dr Keith Kirby, a woodland ecologist who has worked for English Nature and then Natural England. Another attendee was the Chairperson of the UK Wood Pasture and Parkland Technical Advisory Group, and there were attendees from the National Trust and the Woodland Trust. Stakeholders were predominantly from the South of England, and therefore the focus tended to be on lowland WPP systems. Follow-up meetings with at least three practitioners involved in managing WPP systems are planned during October 2014 to include more viewpoints of those directly involved in the day to day management of WPP.

Figure 1. Historic parkland interspersed with veteran oak (*Quercus* spp.) and hornbeam (*Carpinus betulus*) at Woodhall Park estate (a and b, September 2014) in Hertfordshire. Red Poll cattle grazed at wood pastures in Epping Forest (c, September 2014), and regrowth from recently re-pollarded hornbeam in the wood pasture at Epping Forest (d, September 2014).

4. Meeting and site visit

Paul Burgess (Cranfield University) gave an introduction to the AGFORWARD project and placed the meeting and the formation of a UK AGFORWARD wood pasture and parkland stakeholder group into the broader context of the project. Participants then introduced themselves. Several of the participants knew each other either from the UK Wood Pasture and Parklands Technical Advisory Group (TAG).

Following introductions, Jeremy Dagley led a visit into the historic wood pastures of Epping Forest. Epping Forest which is managed by the City of London Corporation includes an extensive forest of which about 800 ha designated as agricultural land; overall it is the largest "green space" in London and Essex. Part of the site is in London and it receives about 4.5 million visits per year.

Cattle have been grazing at Epping for over a thousand years, and along with the cutting of firewood was a right of commoners for 800 years following the Norman Conquest in 1066 (Woodhouse et al. 2004). This has resulted in a distinctive wood pasture home to around 50,000 veteran pollarded trees, and recognition as a Site of Special Scientific Importance (SSSI) and a European Special Area of Conservation (SAC). Remarkable among forested areas in the UK, Epping Forest has a very clear mission statement of providing 'an open space for the recreation and enjoyment of the public', as set out by the Epping Forest Act 1878 (Woodhouse et al. 2004).

Traditionally commoners had grazing rights in the forest from about mid-April to mid-November, whilst grazing rights during the winter were restricted to the City of London Corporation. Following

the foot and mouth crisis in the UK in 2001, grazing on the site was reintroduced in 2002. The City of London Corporation has a contract with a grazier, which is partly funded by the receipt of EU single farm payments from the agricultural area. The grazier manages a "suckler beef" system, where beef cattle are grazed in the wood pasture and parkland during the summer. They are housed indoors during the winter. The cows are typically calved in the autumn, and the young calves are not allowed into the field until they are older than 3 months to minimise problems with dogs. The use of veterinary products includes the use of Ivermectin in February to prevent liver fluke, before the animal are returned outdoors.

The visit included a discussion with the stockman (Neil Henderson), who is employed by the contract grazier (Figure 2). In the field, the animals are checked daily, and those in forested areas are checked twice daily. Although the number of cattle is relatively low, there are plans to increase it to about 150 animals. The stockman has access to real-time GPS data from a suckler beef herd of 35 red poll cattle so within a large area, he was able to direct us to the place where the cattle were ruminating beneath hornbeam (*Carpinus betulus*) trees (Figure 1c). This is one of two herds being grazed at Epping at present, the others being longhorn cattle.

Figure 2. Field site discussion about wood pasture and parkland grazing with the stockman Neil Henderson.

Because the area includes widespread public access for recreation, traditional electric fencing is inappropriate. Instead an interesting innovation being used at Epping is **'invisible fencing',** a new barrier-less fencing system (Dagley et al, 2014). Instead of placing an electric wire above the ground, an insulated electric wire (maximum length of 2000-3500 m) is placed in the ground and each animal is fitted with a collar (Figure 3) housing an electric sensor. It follows the same concept as dog fences developed and used in the USA and Europe. The system was first installed in 2011 and the cost of each unit was about £270. This sensor issues an audible warning, and failing that, a mild electric shock if the animal approaches the wire. In this way, the wire can be used to demarcate areas for

grazing or exclusion. The wire is buried at a depth of about 150 mm. A small LED on the sensor allows the stockman to determine if the batteries powering the sensor are working.

At Epping Forest each animal is also fitted with a GPS unit, which sends an hourly 'ping' with the animal's location which can be accessed for an immediate update. The cost of each unit was about £175. The existing data shows that the animals soon develop a sense of the position of the invisible fence is, and alter their behaviour to avoid it.

Figure 3. Red Polls grazing at Epping. Note the bulky sensors for the 'invisible fence' and GPS units on collars.

During this visit, the work of Ingvild Austad, which has included the use of tree fodder, and management practices for wood pastures in Norway (Austad & Hauge 2006) was highlighted. The Vetree project (2012-2014) which focused on 'Vocational Education and Training on Veteran Trees' was indicated as a potential source of relevant information (http://www.vetree.eu/).

The group then visited an area of wood pasture which has recently been put back into the a pollarding cycle (Figure 1d). One of the issues that faces Epping, is that the pollarding cycle has lapsed in many places, creating badly overstooled trees that risk becoming structurally unstable (and potentially unsafe to the public) unless managed. It has been possible to re-institute the pollarding cycle for many of the hornbeam trees since this species tends to respond better to the treatment (and some trees may only just be out of cutting cycle having been cut in 1948 and 1954) (Dagley 2006). Beech (*Fagus sylvatica*) and some oak pollards have been left out of rotation for too long to make continuation of the cutting cycle feasible without risking loss of the, hence these trees have been managed by crown reduction as a means of mitigating the risk of tree failure.

Dr. Dagley noted that a major expense at Epping is the removal of wood following cutting of pollards. Chippings from these arising has been sold in the past to biomass powerplants, however in general the amount produced was too small for this to be a viable option. We discussed possible for making firewood production a viable business.

5. Oral comments

After the field visit, an open discussion was held on what participants considered to be some of the key challenges facing WPP systems in the UK. A mind-map of the discussion is shown in Figure 4.

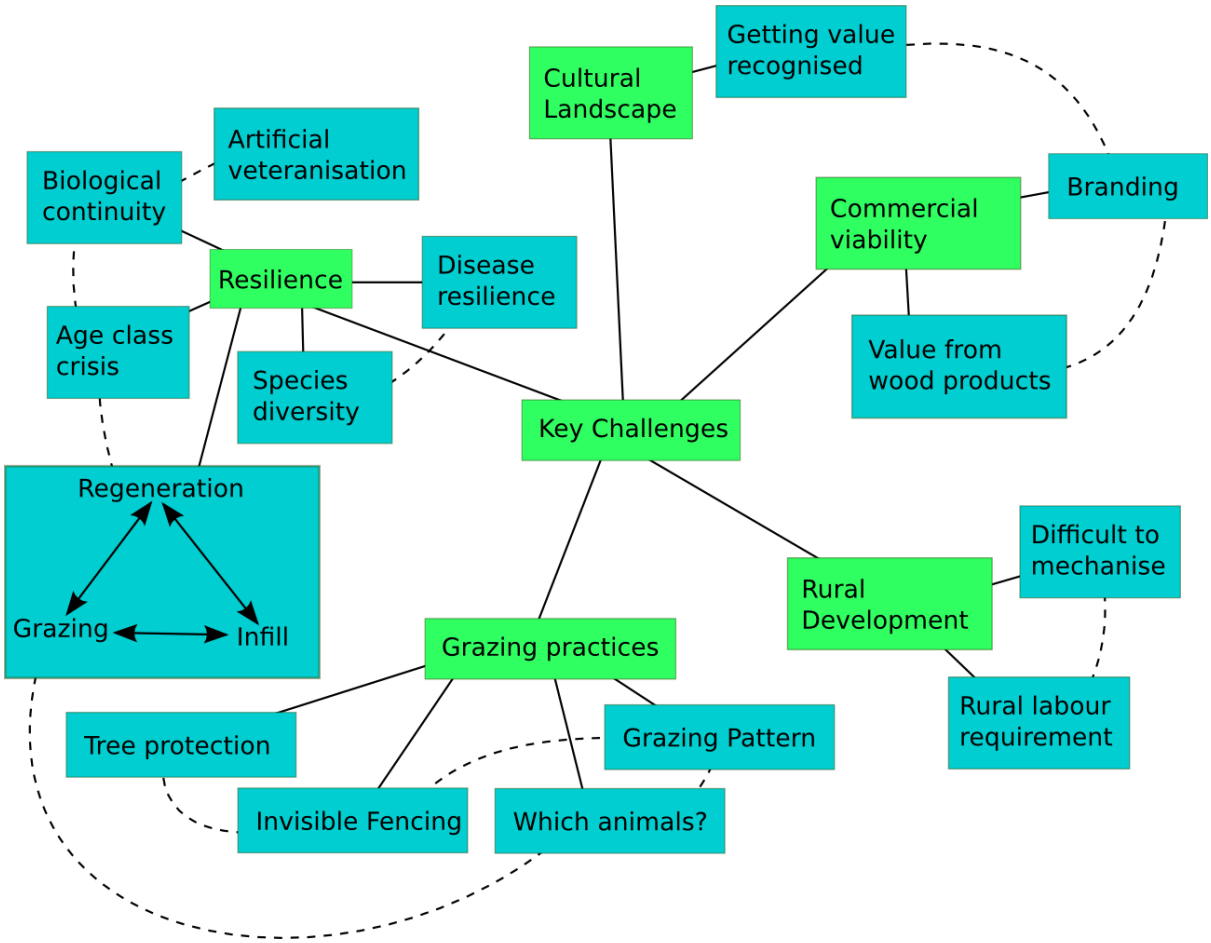

Figure 4. Mindmap of issues raised in the initial discussion

The key issues discussed included resilience, commercial viability, the impact of such systems on rural development, and the details of grazing practice.

Resilience: a number of issues relating to the resilience of the system were raised. These varied from maintaining the biological continuity of the system in terms of ecological niches, but also in more broad terms – ensuring the continuity of a tree population. This was characterised by one participant as the 'age class crisis'. One respondent asked "in 200-years, where will be the new wood pastures?" Striking the balance between natural regeneration, infill of the pasture with trees, and the intensity of grazing were raised as issues.

The question of whether it may be appropriate to artificially encourage veteran features among younger trees (by deliberate wounding) was raised. Resilience from tree diseases and appropriate species choices to achieve this was raised.

Cultural landscape: one participant in the discussion commented that wood pastures and parklands are a cultural landscape, and that this term can be used almost disparagingly among conservation circles, where (the appearance of) 'naturalness' may be prized. This fed into comments about getting the value of WPP systems recognised at policy and grassroots level. One respondent commented that the system "fell between forestry and agriculture; we have spent a life time compartmentalizing systems". Those from a forest background sometimes felt that wood pasture

and parklands were "degraded woodlands". It was noted that although the botanical value of WPP may not be the greatest, the invertebrate and fungal diversity was significant.

Commercial viability: one respondent raised the issue of commercial viability, and intimated that the key to ensuring the continuity of WPP systems is in ensuring their commercial viability. It was noted that some parkland owners were "asset rich but income poor". The importance of branding products from particular WPP systems was raised. One respondent asked if it was possible to develop small-scale wood pasture systems where people have a clear vested interest, which could be replicated widely. Could wood pastures offer an alternative to "re-wilding"?

However it was also noted that if cattle were not used, the maintenance of the biodiversity value of wood pasture and parklands often required mechanical flail mowing to control ground vegetation. Sustainable WPP systems required a balancing act between slipping to either a forest or an open grazing system, which meant that system stability was important

***Rural development*:** some discussion was had on the question of how agroforestry systems might impact rural development. It was noted that many of the management operations required in a WPP systems are difficult to mechanise, and therefore require specialised, rural labour skills.

Grazing practices: understanding appropriate grazing practices was highlighted as in important question: which animals should be grazed, the pattern of grazing, and how trees could be protected. Invisible fencing was discussed as a positive innovation.

There was some discussion about the role of sheep in wood pasture and parkland systems. Some participants were particularly negative about the prospect of using sheep in WPP systems of particularly high conservation value. It was explained that sheep can reduce habitat heterogeneity by creating a uniform sward height, and cause soil compaction.

6. Ranking of positive and negative aspects of woodland pasture and parklands

The participants were asked to complete a brief questionnaire which sought to highlight the key positive and negative aspects of wood pasture and parkland systems. Of the six respondents who chose to complete the questionnaire, five were completed in a consistent way. Results from this questionnaire are presented in Table 1 and Table 2.

Positive aspects: most respondents considered "biodiversity and wildlife habitat" to be the principal positive aspect of the system, which may not be surprising given the interests of the participatory group. Other important aspects included animal health and welfare, and landscape aesthetics.

Negative aspects: the most negative issues were seen as the complexity of work, the management costs, and the inspection of the animals. Interestingly these three issues were also identified as the three most negative issues for the "grazed orchard" stakeholder group (Burgess, 2014). One participant also identified cash flow as the key issue.

Table 1. Positive aspects of wood pasture and parkland system as ranked by five participants.

Positive aspect	**Ranking by 5 respondents**				
	1	**2**	**3**	**4**	**5**
Biodiversity and wildlife habitat	1	2	3	1	1
Soil conservation			1	2	
General environment		1		4	
Landscape aesthetics	4		2	5	5
Animal health and welfare	5		4		2
Climate moderation	2				
Run-off and flood control				3	4
Diversity of products		5			3
Carbon sequestration	3				
Farmer image		3			
Subsidy and grant eligibility		4			
Marketing premium			5		

Table 2. Negative aspects of a wood pasture or parkland system as ranked by five participants.

Negative aspect	**Ranking by 5 respondents**				
	1	**2**	**3**	**4**	**5**
Complexity of work		1	4	1	1
Management costs	4		1		3
Cash flow	1				
Inspection of animals		2	3	2	2
Disease and weed control			2		4
Profit	2	5	5		
Project feasibility	3				
Administrative burden		3			
Regulation		4			
Animal production	5				

7. Qualitative written responses

Six respondents gave a written answer to the question: “What key problems are faced in wood pasture and parkland systems? T he themes broadly matched those given orally.

Lack of awareness: several respondents highlighted a lack of general awareness of WPP systems and their benefits. It was noted that these systems are complex, and that they fall between simpler forestry/agriculture definitions, and can be marginalised as a result.

Productivity: several respondents mentioned productivity in a number of ways. The difference between agricultural and WPP productivity was highlighted as a potential issue, as was the lack of 'proven' sustainably productive WPP systems. Finding and keeping markets for products, especially tree products was highlighted by two respondents. One respondent remarked that in the UK, WPP systems are considered to be largely a conservation concern.

High costs: the high management costs and complexities of the system were highlighted as potential problems by two respondents.

Management: getting the right mix of grazing species, and balancing tree regeneration with infill were listed as challenges.

Six respondents gave written responses to the question: "What kind of solutions or research themes would you propose to solve these problems?"

Understanding: five of the six respondents indicated that an important research theme was to increase understanding of the optimum combinations of trees and livestock and the potential benefits arising from these combinations, and to make this information available to practitioners and policy makers. One respondent suggested developing an understanding of the spectrum of systems from mainly conservation based to those which offer a sustainable commercial return.

Demonstration: building on the above point, three respondents indicated that a key solution would be to produce good cost/income data for WPP systems, to provide evidence for the potential profitability of sustainable WPP systems. One respondent indicated that developing new demonstration sites (ideally as an extension of existing sites) would be beneficial.

Branding and markets: a key issue that came out of five out of six of the responses was the need to develop the branding of WPP systems and products. This was linked with developing a wider public and policy appreciation for WPP systems. Furthermore, developing a commercial return without grants and developing markets for WPP products, particularly products derived from trees was seen as a priority.

Invisible fencing and GPS monitoring: two respondents indicated that invisible fencing and GPS monitoring technologies were a key innovation.

Pests and diseases: two respondents felt that it was important to understand the potential impact of new tree diseases on WPP systems. Within the oral discussion, oak mildew was cited as a disease affected the success of oak pollarding.

8. Next steps

Each of the six respondents to the qualitative questionnaire indicated that they were willing to support research into WPP systems. From the AGFORWARD project perspective, the plan is to identify such researchable issues before the end of 2014, and to take forward potential research themes in concert with European partners (where appropriate) in 2015.

9. References

Austad I, Hauge L (2006). Hauge Pollarding in western Norway. In *1er colloque européen sur les trognes*. Vendôme: City of London, London, pp. 1–9.

Burgess PJ (2014). Initial Stakeholder Meeting Report: Grazed Orchards in the UK. Cranfield: Cranfield University. 7 pp.

Dagley J (2006). Pollarding in Epping Forest. In *1er colloque européen sur les trognes*. pp. 1–7. Available at: http://www.maisonbotanique.com/dyn/15acte_6_dagley.pdf.

Dagley J, Beecroft R, Vandermarcq B, Hartup M (2014). The invisible fence project. *Conservation Land Management* 12(2): 14-19.

Maddock A (Ed) (2008). Wood-Pasture and Parkland. In *UK Biodiversity Action Plan; Priority Habitat Descriptions*.

Maddock A (Ed) (2011). Wood-Pasture and Parkland. In *UK Biodiversity Action Plan; Priority Habitat Descriptions*.

Read H (2000). What are veteran trees and why are they important? In: *Veteran Trees: A Guide to Good Management*. Natural England, pp. 13–24.

Woodhouse Y, Hayns S, Dagley J (2004). Epping Forest Management Plan 2004 - 2010: A Summary, London: City of London, London.

10. Acknowledgements

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