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The Future of Hedgerow Trees in the Malvern Hills AONB

A report for the
Malvern Hills AONB Partnership
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Executive summary

Isolated hedgerow trees are a key element of many of the landscapes of the Malvern Hills AONB, but despite their importance it is clear that their future is anything but secure. A recent hedgerow survey in the AONB found that of 195 isolated hedgerow trees recorded, only 0.5% could be described as 'young'. The vast majority of isolated trees in today's hedgerows are mature or veteran with the almost total absence of young isolated hedgerow trees exacerbated by the use of mechanised flails which are quicker and cheaper to use and which are now ubiquitous in cutting hedges.

The Malvern Hills AONB Partnership is aware of the issues, difficulties and costs involved in allowing young trees to flourish in hedgerows and wished to explore and try to address such issues at first hand.

This project, delivered between June 2011 and March 2012, worked with two landowners within the AONB to document their experiences of managing hedgerow trees on their farms and to explore issues which are preventing young isolated trees from establishing and thriving in appropriate hedgerows. The project supported the two landowners to each establish six new hedgerow trees on their land and researched ways in which the identified issues could be overcome. This resulted in the following recommendations for how the AONB Partnership might more widely encourage and support the establishment of new hedgerow trees:

Short-term

- Organise training events to raise awareness amongst landowners of their legal responsibilities with regards to tree safety management in order to encourage acceptance of new hedgerow trees into the landscape
- Make hedgerow tree tags freely available to landowners and offer a service to locate and tag existing suitable stems within the hedgerow to grow on into trees
- Promote the establishment of hedgerow fruit trees in appropriate locations by grafting onto rootstocks exposed during laying or coppicing operations
- Increase grant-giving for the purchase of hedgerow trees, hedgerow management works that stipulate the inclusion of hedgerow trees or the increased cost of hedgerow management due to newly planted or established trees

Medium-term

- Organise training events and provide guidance to hedgerow management contractors to increase their understanding of the importance of hedgerow trees to wildlife and to the landscape of the AONB and to raise awareness of the measures taken by those planting or establishing hedgerow trees to increase their visibility in the hedgerow
- Support and enable the local Tree Warden networks to play a greater role in raising awareness amongst landowners, recording existing hedgerow trees, tagging new saplings and providing management advice

- Deliver training in traditional hedgerow management practices such as coppicing and laying and support practitioners to be a source of good and trusted advice on hedgerow and hedgerow tree management
- Support the pilot initiative led by Kemerton Conservation Trust and Pershore College to replace lost elms with disease-resistant trees, appealing to a desire felt by many farmers to replace these lost landscape features

Long-term

- Provide a scheme in partnership with a local nursery that allows farmers to quickly and simply order and purchase new trees for planting into hedgerows
- Celebrate good boundary and hedgerow tree management within the AONB with an award scheme
- Work with Natural England to strengthen the promotion of hedgerow tree planting options or opportunities within the Environmental Stewardship schemes

Key lessons learned:

- You may only need to ask to encourage landowners to plant new trees - a prompt and a little bit of advice might be all that is required
- Location, location, location! Trees need to be positioned where they will cause the minimum inconvenience to farm management operations
- Time the approach / planting request with a view to fitting in with hedgerow management operations already scheduled to take place
- OR encourage and support landowners to undertake more hedgerow management operations, such as coppicing and laying, with a view to this being an opportunity for tree planting / establishment
- Focus plans for planting / establishment away from areas of higher risk i.e. the public highway and other public rights of way

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1. Introduction

'Isolated hedgerow trees are defined as those having a canopy not touching that of another tree, where the tree is within the line of the hedgerow or having the nearest part of the trunk less than 1m from the edge of the woody canopy of the hedgerow.'

Defra Hedgerow Survey Handbook

The importance of hedgerows and hedgerow trees to the English landscape and its biodiversity has been well studied and documented, with species-richness and increased wildlife value of a hedge often going hand-in-hand with great age and a long history of management. Hedges and their trees have provided, and continue to provide, a means of demarcating boundaries, containing stock, fuel, building timber, livestock fodder, shade, windbreaks, visual screening and more.

The hedgerow tree population is thought to have been generally declining since the mid-18th century. In the 1950s serious concerns began to be raised about the predominance of mature and over-mature trees within the hedgerows in Great Britain and that only around one sixth of the necessary saplings existed to create the next generation of hedgerow trees (Stokes and Hand, 2004). The loss of isolated hedgerow trees within the Malvern Hills AONB has been identified as a concern and a threat to the landscape character of the AONB within the current management plan published by the Malvern Hills AONB Partnership, reflecting the concern regarding the sharp decline in hedgerow tree numbers nationally. The Malvern Hills AONB Hedgerow Survey (Lashley, 2009) suggests that many of the remaining isolated hedgerow trees within the AONB are mature or veteran and that too few young trees are being planted or recruited from the shrub layer to provide for sufficient ecological continuity of the habitat, again reflecting the national trend.

The AONB Partnership commissioned this project to better understand the reasons behind the decline in the isolated hedgerow tree population and to investigate means by which the establishment and management of new hedgerow trees could be encouraged. Two landowners within the AONB were approached to become involved in the project. Their involvement provided an important means by which to explore some of the factors influencing survival, management and loss of isolated hedgerow trees within the AONB. In addition, both landowners were asked to consider whether there might be opportunities on their land for the immediate establishment of new isolated hedgerow trees.

The Malvern Hills AONB Management Plan's vision for 2030 identifies hedgerow trees as important components of the landscape and features of wildlife interest. The loss of hedgerows and hedgerow trees to fencing and a lack of new hedgerow tree planting are identified as key issues having a detrimental effect on landscape character and wildlife value of the countryside. The State of the Malvern Hills AONB 2009 report specifically highlights the loss of hedgerow trees or the ageing nature of the population of hedgerow trees as an indicator of declining landscape condition within 10 of the 30 Landscape Description Units within the AONB.

2. State of the isolated hedgerow tree population

Countryside Survey 2000 (CS2000) estimated a total of 1.8 million isolated hedgerow trees within Great Britain (1.67 million in England), although more recent data from Forest Research, in a Defra-funded project to model the extent of hedgerow tree decline, gives a revised figure of 1.6 million across Great Britain (Defra, 2010).

CS2000 figures for the isolated hedgerow tree population are currently used as the baseline for UK Biodiversity Action Plan targets for the ancient and/or species-rich hedgerows Habitat Action Plan (HAP), revised in 2006: 1.8 million trees for Great Britain and 1.6 million trees for England. The HAP includes targets to maintain this overall number of isolated hedgerow trees (table 1 - UK HAP target 2) and also to improve the condition of the hedgerow tree population by increasing numbers of young trees, defined as 1-4 years old (table 2 - UK HAP target 7). Target values for target 2 beyond 2010 have not been updated and at this point in time it is unlikely that they will be. Delivery of 2010 habitat targets are due to be reported on at a national level but no timescale has yet been notified for this.

Table 1: UK BAP - Ancient and/or Species-rich Hedgerows - Target 2

T2 Maintain the overall number of individual, isolated hedgerow trees (estimated by CS 2000 to be 1.8 million in Great Britain in 1998) and the net number of isolated veteran trees (to be estimated for the first time by CS 2007).

Target type	Maintaining extent	Units	Number of trees		
Target values (2005 values represent the baselines)					
Country	2005	2010	2015	2020	2030
UK	1811250	1811250			
E	1633410	1633410			
NI		tbc			
S	33530	33530			
W	144310	144310			

Table 2: UK BAP - Ancient and/or Species-rich Hedgerows - Target 7

T7 Improve the condition of the hedgerow tree population by increasing numbers of young trees (1-4 years) in Great Britain to 40,000 by 2010 and 80,000 by 2015. (Target does not include Northern Ireland.)

Target type	Achieving condition	Units	Number of trees		
Target values (2005 values represent the baselines)					
Country	2005	2010	2015	2020	2030

UK	15780	40000	80000		
E	15040	38000	76000		
NI					
S	450	800	1600		
W	290	1200	2400		

Target 7 sets a goal of increasing the number of young isolated hedgerow trees in the UK by over 400% from baseline value by 2015. Simply to stabilise the current isolated hedgerow tree population and prevent further decline in numbers requires a recruitment rate of 30,000 trees per annum (Defra, 2010). To meet the 2015 target would therefore require nearer 40,000 new isolated hedgerow trees per annum to be established across the UK. Research suggests that in reality the recruitment rate is currently only around 15,000 trees per year nationally (Defra, 2010).

The recruitment rate needed per year for a given area is estimated to be the total number of hedgerow trees present within the area with a Diameter at Breast Height (DBH) of 5cm or more divided by 100. This assumes that 100 years growth would be needed to replace any tree with a DBH larger than 5cm (Defra, 2007). To ensure sufficient recruitment of young trees to our hedgerows it has been estimated that within a given area 45% of trees need to be less than 20cm DBH at any one point in time (Defra, 2010).

In addition to the Countryside Survey, data on isolated hedgerow tree populations at a local level are collected and reported to Defra using the survey form and online database promoted by the Hedgeline partnership (www.hedgeline.org.uk). In previous years Defra has directly supported this by making monies available to local groups under the Local Hedgerow Survey grant scheme. The results of these local studies (carried out by groups from across the country) show that an average of just 19% of isolated hedgerow trees are 20cm DBH or less, with most trees recorded falling within the 20-60cm DBH size category. The Malvern Hills AONB Hedgerow Survey (Lashley, 2009) collected data from within eight 1 kilometre grid squares (monads) of the AONB (out of a possible 105) and found just over 25% of the isolated hedgerow trees recorded had a DBH of 20cm or less, slightly better than the national average but still well below the recruitment rate needed.

During the 2009 survey 99.05% of hedgerow trees recorded (193) were found to have a DBH of 5cm or more. Using the above formula this suggests a recruitment rate of 0.24 trees per year per 1km grid square or just over 25 trees per year within the AONB are needed simply to stabilise the hedgerow tree population at its current level, even before we factor in the replacement of trees lost and not replaced in the preceding decades.

3. Issues affecting survival and management of hedgerow trees

In terms of catastrophic hedgerow tree loss in central and southern Britain, the impact of repeated Dutch Elm Disease (DED) infections on the elm population must be acknowledged. The second, most virulent, outbreak of DED during the 1970s and early 1980s wiped out two thirds of the estimated UK population of 30 million elm trees according to Forestry Commission research. The disease is still prevalent within the landscape today with between 50-90% of young, suckering elm in some areas becoming infected once stems are large enough to support the beetle. Forestry Commission advice on conserving hedgerow elms is to keep them trimmed to reduce their prominence and visibility to the beetle within the landscape. Elm is a common shrub component within hedgerows in many parts of the AONB and both landowners taking part in this study reported losing all of the mature elm present on their farms during the 1970s. The loss of mature hedgerow elms must have made a significant contribution to reducing hedgerow tree cover throughout the AONB during this period, a fact recognised in the Malvern Hills AONB Management Plan.

The following issues were raised (presented in no particular order of importance) by the two landowners taking part in this study regarding their experiences of the presence, management and care of hedgerow trees on their farms:

- Trees close to power lines can be dealt with quite brutally by the utility companies when trimming is required
- Few contractors seem willing to take the time to cut hedgerows in anything other than a box shape, even when specifically requested by the landowner to do otherwise
- Hedgerow trees will shade out crops (includes orchard fruit)
- Cutting hedgerows by hand to aid establishment of new trees when young or appease contractors is time consuming
- Few trees are now managed for timber or fodder meaning new working trees rarely if ever get established (and old working trees are lost to neglect)
- Environmental Stewardship schemes don't always maximise available opportunities for establishing or selecting new hedgerow trees (*both landowners are in the Higher Level Scheme*)
- If laying, coppicing or planting a new hedgerow, the presence of trees will put back the growth/regeneration of the hedge underneath
- Trees vulnerable to storm events include those with shallow rootstocks or on wet clay soils (periods of waterlogging increases root instability)

- Contractors often have a blind spot when it comes to young trees in hedgerows, even if these are marked by posts or tags
- Certain species have spreading roots that interfere with crops and machinery (ash was mentioned specifically)
- More competitive tree species may eventually kill back the hedge underneath as they take most of the available light and water
- New trees around permanent pasture may need protecting from stock, adding to the cost

In addition, whilst not raised as an issue by the two landowners spoken to during this study, the Malvern Hills AONB Partnership has previously been made aware by local landowners of concerns over health and safety and the liability of the landowner in regard to trees on their property. The National Tree Safety Group has determined that the risk to the public from falling trees or parts of trees is around 1 in 10 million in a given year. Where there is an increased risk, for example from roadside trees, those next to public footpaths or on common land, this risk may be a particular concern.

The issues listed above appear to fall broadly into four categories:

1. The convenience or suitability of the tree's location
2. The level of communication with or level of awareness of other people who may be carrying out management to the tree or hedgerow
3. The time, money or effort needed to restore or manage a tree
4. The lack of direct incentives to establish or manage trees

A MAFF-commissioned report in 2000 (Britt *et al*) investigated farmers and contractors attitudes towards hedgerow management, using questionnaires and face-to-face interviews to gather data from 555 farmers and farm contractors in different parts of England. The study found that 72% of farmers and 94% of farm contractors had never received any training or advice on hedgerow management and managing hedgerows for wildlife benefit: we could assume that advice or training on hedgerow tree management has likewise not been widely received. Locally, the Malvern Hills AONB Hedgerow Survey questionnaire found that over 60% of farmers felt they needed better advice and information to improve their hedgerow management.

4. Case studies for new hedgerow tree planting within the AONB

In addition to being key consultees in looking at the range of issues associated with establishing and managing hedgerow trees, the two landowners taking part in this project were asked to consider planting additional hedgerow trees on their land. Both agreed to this and so as part of the project support was given to facilitate the planting. A total of three visits were made to each farm, one to discuss experiences of and issues with management of hedgerow trees, a second to complete a farm walk and identify suitable locations and decide on suitable species of new hedgerow tree and a third to provide planting and aftercare assistance.

Woodfields Farm, near Ledbury

The majority of the land at Woodfields Farm lies within the Principal Wooded Hills Landscape Type. This is an ancient wooded landscape and good representation of hedgerow tree cover provides connectivity and visual integration between irregularly shaped blocks of ancient woodland, although mature and veteran trees, particularly oak, now dominate the hedgerow stock. The Landscape Character Assessment Supplementary Guidance (SG) published by Worcestershire County Council in 2011 and the Landscape Character Assessment Supplementary Planning Guidance (SPG) updated in 2009 by Herefordshire Council both identify the strengthening of the wooded character of hedgelines as a priority for this Landscape Type. The Malvern Hills AONB Landscape Strategy and Guidelines (2011) promotes the maintenance and management of hedgerow trees to ensure a diverse age structure, recognising that many hedgerows within this Landscape Type lack the younger trees required to sustain the future hedgerow tree population.

Woodfields Farm is a mixture of arable and dairy farming with some land owned and some rented. The land has been in the Higher Level Scheme (HLS) of Environmental Stewardship for two years, a feature of which is hedgerow planting and restoration. There are a significant number of mature trees already in the hedgerows, including oak, ash, cherry, field maple and willows along a stream corridor. Some of the oaks are over-mature and have been pollarded in the past.

A number of hedgerows on the farm were due to be gapped up during the winter over which this project took place (2011/12) and this provided an ideal opportunity to plant some tree saplings in place of or alongside the hedgerow whips without having to remove existing sections of hedge.

Specific issues that needed consideration were:

- Making the presence of the trees unmistakable to hedge-cutting contractors
- Eliminating the need to hand cut the hedge around the trees whilst they were still small (in order to reduce competition from the hedgerow shrubs)
- Avoiding tree roots spreading into cropped fields and getting in the way of machinery

The landowners were inspired by a project co-ordinated by the plant nursery at Pershore College to grow clones of mature Field Elm (*Ulmus minor*) surviving within the landscape in Worcestershire and Warwickshire: there used to be a number of mature elm on the

farm, which were all lost during the 1970s. The decision was made to plant six new Field Elm saplings within three hedgerows across the farm (all on land owned outright) that each had existing gaps within them: this helped to reduce competition to the saplings as they became established and eliminated the need for hand trimming of the hedge either side of the trees.

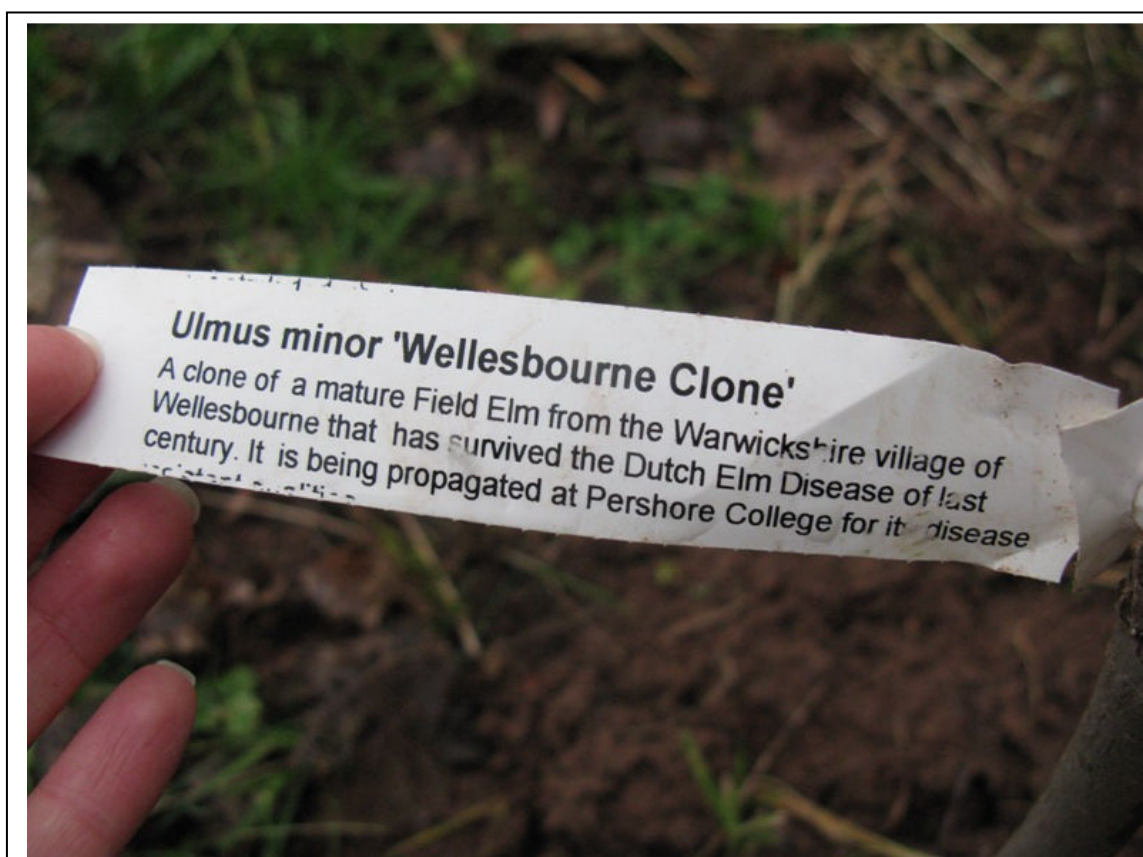
The trees were supplied by Pershore College and planted during the first week of February 2012 in three hedgerows that were all bordered on both sides by permanent pasture. This eliminated any future problems for both the trees and the landowner with regard to roots intruding into a crop. In one hedgerow two elm saplings were planted side-by-side where the existing gap was big enough to accommodate this: historically, elm trees were often found in pairs within the landscape. The remaining two hedgerows each had two well spaced elm planted within them. The planting was arranged to coincide with fencing work being carried out on the farm by contractors so that robust timber and wire cages could be constructed around the trees to protect them from livestock and from any accidental attentions from the flail. Tree Council Hedgerow Tree Tags were also put on the saplings.

Below and over the page: three of the Field Elm saplings planted at Woodfields Farm.





Below: the provenance of the Field Elm saplings



Old Country Farm, near Mathon

The majority of the land at Old Country Farm lies within the Principal Timbered Farmlands Landscape Type. The character of this landscape is heavily influenced by the strong hedgerow and hedgerow tree network where filtered views are created by a densely scattered pattern of hedgerow trees, dominated by lines of mature oaks. Maintaining this tree cover character and enhancing the age structure of the hedgerow tree stock are identified as priorities within both the Worcestershire Landscape Character Assessment SG and the Herefordshire Landscape Character Assessment SPG. The Malvern Hills AONB Landscape Strategy and Guidelines again promotes the maintenance and management of hedgerow trees to ensure a diverse age structure.

Old Country Farm comprises 220 acres of cider orchard, woodland, an inactive sand quarry and some permanent pasture that is mainly rented out to graziers. There are lots of existing hedgerow trees on the farm, predominantly oak and ash. The only hedgerows that are actively managed on a regular basis are roadside ones, cut by a neighbour, and one underneath a power line that is cut by the utility company. The farm is one-year into an HLS agreement.

Specific issues that needed consideration were:

- Undesirable to plant in the hedgerows around the orchards as this would shade the fruit
- Eliminating the need to hand cut the hedge around the trees whilst they were still small (in order to reduce competition from the hedgerow shrubs)
- Undesirable to plant in hedgerows that have recently been or are due to be laid as this might affect the regeneration of the hedge
- Trees need to be situated away from power lines to ensure the utility company do not take it upon themselves to cut them

The decision was made to plant four English Oak and two Field Elm. Like Woodfields Farm, Old Country Farm had also lost all of its elm trees during the 1970s and it was felt appropriate to replace a small number of these. All the trees were supplied by Pershore College and planted in January 2012 in two separate hedgerows, both bordered on one side by the road (and therefore managed by regular cutting) and the other by permanent pasture. The trees were all planted on the pasture side of the hedgerows, 1m from the base of the hedgerow: less extra cost will be incurred this way during hedge cutting operations as extra care will only need to be taken by the contractor on one pass of the flail rather than all passes made. One elm was planted singly and the remaining trees planted in a line along the second hedgerow approximately 15m apart. The trees were fenced (by the landowners at their own cost) to protect them from livestock: the landowners are prepared to move or remove the fence as necessary as the trees grow. Tree Council Hedgerow Tree Tags were put on all of the saplings.

Over the page: English Oak and Field Elm saplings at Old Country Farm.



Below: Hedgerow tree tags distributed by The Tree Council's Hedgerow Tree Campaign



5. Promoting establishment of new hedgerow trees within the Malvern Hills AONB

Each of the two landowners taking part in this project readily agreed to plant six new trees within their hedgerows when asked to consider doing so, despite the list of issues they had previously raised. Although obviously a very small sample, it is important to consider that landowners may not be replacing or planting new hedgerow trees simply because it has not occurred to them to do so or is very low priority on their list of farm management tasks to complete. As the issues raised demonstrate, there are numerous disincentives for a landowner to establish new trees on his or her own initiative. However, as shown here, just being asked directly to consider it, being provided with some guidance to find suitable locations and some assistance with sourcing the required species was enough to secure agreement for the planting of 12 new hedgerow trees. A very small amount of guidance could therefore be sufficient in some cases just to identify the right tree for the right location.

The following suggestions are steps that could be taken by the AONB Partnership to encourage and enable the establishment and management of new hedgerow trees within the AONB. The suggestions are divided into short, medium and long-term, according to how long they might take to plan and implement or deliver.

Short term

Raise awareness of landowner responsibilities and increase confidence in tree safety management

Concerns over public liability are often driven by uncertainty as to the legal responsibility held by the landowner with regards to their trees and a lack of awareness of the risk assessment process that should be followed to determine appropriate tree safety management.

Guidance published in 2011 is available from the National Tree Safety Group (www.ntsg.org.uk), led by the Forestry Commission, that outlines to householders and landowners their responsibilities and how these responsibilities should be fulfilled. These guidance documents are freely available online and could be provided to landowners within the AONB by post or email.

Training workshops or seminars on tree risk management are also available from a number of companies and consultancies, reputable examples (although by no means an exhaustive list) being:

- QTRA Tree Safety Management www.qtra.org.uk
- Treework Environmental Practice www.treeworks.co.uk

An event could be organised and offered to landowners within the AONB to raise awareness of responsibilities under the law, increase knowledge in addressing tree risk management and to increase confidence in accepting new trees into the landscape. Assistance given to landowners in identifying suitable locations for new trees (see below) should be sensitive to these concerns. Locations away from the public highway and from other public rights of way will place much less of a burden on the landowner with regard to risk assessment and risk management.

Offer a service to identify and tag suitable stems within the hedgerow

Where landowners have recently undertaken or are due to undertake new hedgerow planting or gapping up of older hedgerows there are opportunities to consider the selection of suitable stems to be left uncut or to include saplings in place of some of the hedgerow whips. A visit could be offered to provide advice in the selection of stems or positioning of new saplings, to fix visibility tags and place any marker posts that might be needed. Hedgerow tree tags are available free of charge (while stocks last) from the Tree Council (www.treecouncil.org.uk) or alternatively the AONB Partnership could produce its own.

Promote planting of hedgerow fruit trees

Where a hedgerow is being laid or coppiced, or where a landowner is not willing to dig a notch but might consider coppicing a notch into a hedge to accommodate a tree, it may be worth suggesting that they graft a fruit tree onto suitable rootstocks exposed by the management work. The rootstock would need to be suitably healthy and appropriately sized to take the graft, but if the graft is done well this method seems to be a reliable one for the recruitment of new, young fruit trees to the hedgerow as the roots are already well established.

Benefits of this approach are the establishment of a smaller tree (as opposed to oak and ash for example) and the opportunity to create connectivity of habitat in those parts of the AONB with an orcharding heritage. However, as with any tree planting, the consideration should be 'the right tree for the right place' and hedgerow fruit trees are not characteristic of every landscape.

Key to success of this method seems to be the availability of light to the grafted stem (see <http://tomtheappleman.wordpress.com/2010/08/26/hedgerow-grafting/>). Apple, pear and medlar can be grafted onto hawthorn rootstocks and stone fruit onto blackthorn (Chris Wedge, pers. comm.). Such an initiative could also be used as a vehicle for delivering training courses in grafting techniques.

Increase grant-giving for hedgerow trees

The grant could be standalone - i.e. provided solely for the establishment of hedgerow trees - or the inclusion of hedgerow trees could be specified if a grant is given for other, related, farm environmental management. Examples of grant schemes from elsewhere include:

- The Durham Hedgerow Partnership offers a Field Boundary Restoration Grant that promotes the inclusion of hedgerow trees within projects to plant or restore hedgerows: <http://www.durham.gov.uk/pages/Service.aspx?ServiceId=6406>.
- The specifications for the Landscape and Biodiversity Enhancement Grant offered by the Wye Valley AONB in 2010/11 include a requirement that hedgerow trees are left or established in all hedge laying or hedge planting work qualifying for a grant, in addition to hedgerow tree planting being eligible for grant in its own right. A higher rate of grant was also available for the restorative management of veteran trees.

As well as the cost of trees themselves, the AONB Partnership would also need to consider associated costs such as cutting notches into the hedgerow, visibility staking, protective fencing and possible replacement of hedgerow shrubs in the gap created once the tree is established. Landowners may - as seen in the case studies in this project - be willing to cover these costs themselves or alternatively the costs could be covered by the grant. As in the case of Woodfields farm, tree planting could be delivered in tandem with hedgerow restoration work being carried out under Environmental Stewardship, to maximise convenience to the landowner, and specific publicity could be done to promote this.

Grants could also assist with the added cost of hedgerow management resulting from the planting or establishment of new trees. This may be particularly important to landowners whilst the tree is young and hand-cutting is required or due to the extra care and time needed to manoeuvre machinery around hedgerow trees that are vulnerable because of their small size. The extra time required for hedge cutting is an added incentive for busy contractors to have negative perceptions of hedgerow trees and they do present an additional cost to the landowner: estimates are that each hedgerow tree takes the time equivalent of an extra 50m in cut length to manoeuvre around. Adding trees into your hedgerow will therefore undoubtedly increase your costs if employing contractors or, if

landowners cut their own hedges, the time and fuel needed to complete the work. Most landowners are also reluctant to hand-cut a hedge around a young tree to reduce the demand on the contractor as this is time consuming.

If employing a professional contracting company the National Association of Agricultural Contractors gives a guide price of £28.60/hour for cutting with a flail and £40.90/hour for cutting with a saw blade (2010 price averages). In the MAFF-commissioned study, Britt *et al* (2000) found a much more reasonable average rate of £12.40 per hour was being charged by smaller contractors for flailing, with the average cost for hedgerow trimming paid per year per farm being £706. Almost 70% of the farmers taking part in the MAFF study had their hedgerows cut by contractors, with flails widely regarded as the most practical, readily available and cost-effective option.

Medium term

Increase awareness of the importance of hedgerow trees amongst contractors carrying out works to hedgerows

There is a great deal of guidance available on best practice hedgerow management, the majority of which includes or makes reference to the desirability of establishing hedgerow trees. What appears not to be done so effectively is making sure that this guidance is received, understood and acted on by both landowners and hedgerow contractors. In particular, leaflets and guidance notes simply published on a website will generally only be found by the person actively searching for the information. The AONB Partnership could build a database of those people operating within the AONB who are offering hedgerow management services. These people could be targeted with a training and information programme that could encompass guidance notes, training courses or email bulletins. Examples of good management should be highlighted and praised.

Evidence from this and other studies suggests that many farmers have experienced problems of miscommunication or misunderstanding when giving instructions to contractors and that this is by no means limited to hedgerow management. This aside, however, if the contractor's knowledge and awareness of hedgerow trees and their importance meant he or she paid full attention to the possibility of encountering them and there was a willingness to take appropriate care then the risk of damage or destruction would be much reduced.

Whilst a tree is young, and more vulnerable to going unnoticed by a contractor if left unprotected, it needs to be made as visible as possible in the hedgerow. This could be done by:

- Painted timber posts that extend above the height of the hedge or that are situated just in front of the hedge (if a full cage cannot be constructed to give complete protection)
- Red Tree Council tags
- Cab cards marking locations of all hedgerow trees on the farm (landowners could be encouraged to make use of this service: <http://www.cabcards.org/index-high.php>)

Addressing awareness and knowledge needs about the importance of hedgerow trees needs to focus on their ecological and landscape significance, but be targeted directly at those who are likely to be cutting hedgerows or contracting in hedgerow cutting services.

Encourage community responsibility for hedgerow trees

The Tree Warden scheme is a national initiative founded by The Tree Council that aims to enable volunteers across the country to play an active role in conserving and enhancing their local trees and woods. The Tree Warden network could (and should) be an important tool in a campaign to raise awareness with landowners and amongst communities of the urgent need to begin replenishing the native hedgerow tree stock. Tree Warden networks are usually co-ordinated within county or district boundaries and so the Malvern Hills AONB Partnership is in a position to promote a collaborative cross-border project that would engage, train and support Tree Wardens to record hedgerow trees, encourage and facilitate landowners to plant or establish more, tag hedgerow saplings and provide advice on management. Tree Wardens could also offer a service to hand cut around young hedgerow trees where this was requested by the landowner. This could be done on a volunteer basis or profits from a nominal charge put back into tree planting or hedgerow management schemes.

There are county-wide Tree Warden networks in Herefordshire and Worcestershire. There is currently no Tree Warden network covering the Forest of Dean District in Gloucestershire and it appears that there never has been an active network: the AONB Partnership could consider taking on administration of or encouraging the establishment by others of a Tree Warden network that includes the Gloucestershire parishes covered by the AONB.

Contacts for local Tree Warden networks:

Herefordshire - James Bisset, 01432 260250, jbisset@herefordshire.gov.uk

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Support traditional hedgerow management practices and practitioners

The questionnaire accompanying the Malvern Hills AONB Hedgerow Survey in 2009 showed that nearly 70% of landowners would be more likely to carry out hedgerow management activities if there was a greater availability of skilled labour. Over 60% of landowners returning the questionnaire also felt that they needed better advice and information on hedgerow management, an obvious source of which could be skilled and knowledgeable hedgerow management practitioners. The survey of agricultural contractors by Britt *et al* (2000) in the south-west, East Midlands and Yorkshire, found that only 6% of respondents had received formal training in hedgerow management and 71% had never received any advisory publications. The vast majority of 'management' carried out by respondents was trimming with a flail. The contractors also reported that they 'frequently' had some influence in how the hedgerows on any particular farm were managed and this was confirmed by the responses given by farmers to their version of the questionnaire in the same study. Clearly, agricultural contractors are in a position both to give trusted advice to farmers as well as carrying out quality hedgerow management, if they are given the skills and information to enable this.

The AONB Partnership should be encouraging coppicing, laying and re-planting of gaps in hedgerows as this provides an ideal opportunity to also establish new hedgerow trees. This requires a pool of skilled labour and the AONB Partnership could commission the delivery of training courses or provision of advice targeted at those carrying out hedgerow management operations within the AONB, or those who wish to enter the trade.

Appeal to a desire to restore lost landscape features

Both landowners taking part in this project, and in this author's experience many others, have a strong sense of nostalgia for the mature elms lost from the landscape during the 1970s. The initiative begun by Kemerton Conservation Trust and now led in Worcestershire by Pershore College, and mirrored at various other nurseries and by other tree enthusiasts around England, to grow clones of surviving mature Field and English Elm has proved to capture the imagination of landowners and the media alike (see <http://www.kemerton.org/relic.htm>). Although in terms of DED infection timescales this initiative, named RELIC (Replanting Elms in the Countryside), is in its infancy, the AONB Partnership could consider promoting a pilot project within the AONB for testing the true disease resistance of the clones. Even with the caveat of a 15-20 year period until survival can be assumed, landowners with an interest in landscape history and memories of how their land looked 40+ years ago may not take much persuasion.

Similar projects elsewhere in the country are reporting successful results with good survival rates:

<http://www.telegraph.co.uk/earth/wildlife/7808445/New-British-tree-resistant-to-Dutch-Elm-Disease.html>

Long term

Provide a scheme for the purchase of hedgerow trees

Where desired species are not already present or not present in a suitable state within the hedgerow shrub layer, the AONB Partnership could offer to landowners a scheme for the ordering and purchase of new trees in partnership with one or more local nurseries. This could be run along the same lines as the Fruit Trees for Worcestershire scheme offered each winter by Worcestershire County Council -

<http://www.worcestershire.gov.uk/cms/countryside/advice-and-support/fruit-tree-scheme.aspx>.

The Fruit Trees for Worcestershire scheme works well as it offers a changing selection of local varieties each year, which is popular with householders looking for a small number of trees, for a very competitive price. A single local nursery, specialising in the organic production of fruit trees, undertakes to make available a set number (approx. 10) of varieties each year. The nursery grows on a sufficient scale to be able to guarantee meeting all the orders received.

The launch of a hedgerow tree scheme would need to be done in partnership with a similarly large enough nursery operation to ensure orders could be met. By establishing a formal partnership for supply of all trees within the scheme and by submitting orders in

bulk the AONB Partnership may be able to offer landowners very competitive prices. A leaflet sent to landowners at a suitable time each year, with delivery by the nursery of the desired species to be co-ordinated for the optimum planting time, may be the hassle-free direct invitation many landowners need to prompt them to action.

Celebrate good management

Celebrating good management of hedgerow boundaries and hedgerow trees through a local award scheme could be a way to focus attention on these habitats and generate a sense of pride amongst landowners in managing their hedgerows and hedgerow trees well. A few examples of award schemes include:

- Durham Hedgerow Partnership - annual Field Boundary Award to recognise the skills of those working to preserve the area's dry stone walls and hedges
<http://content.durham.gov.uk/PDFRepository/FieldBoundaryAwardsEntryForm2012.pdf>
- Northumberland Coast AONB - Farming and Land Management Award
<http://www.northumberland.gov.uk/Default.aspx?page=10869>
- CPRE East Riding Hedgerow Awards - recognising and celebrating good hedgerow planting and management practice
<http://www.eastyorkshirecpre.com/hedgerow-awards.php>

Promote hedgerow tree establishment through Environmental Stewardship

It is crucial that the Environmental Stewardship schemes capitalise on opportunities for establishing new hedgerow trees when hedges are planted or placed under a management option. Clearly the drawing up of an ES agreement involving hedgerow management is an ideal opportunity for expanding the hedgerow tree population. All Natural England farm advisors and those carrying out visits to draw up maps and provide agri-environment advice should be promoting this to landowners.

Current agri-environment scheme provisions relating to hedgerows and / or hedgerow trees are:

ELS options attracting points:

- EB1 Hedgerow management on both sides of a hedge: 22 points per 100m
- EB2 Hedgerow management on one side of a hedge: 11 points per 100m
- EB3 Enhanced hedgerow management: 42 points per 100m
- EC23 Establishment of hedgerow trees by tagging: 1 point

HLS Capital items

- HR2010 Hedgerow restoration including laying, coppicing and gapping up: £7.00/m
- PH Hedgerow planting - new hedges: £5.00/m
- TSP Tree and shrub - whips and transplants plus planting: £1.60 each
- TT Tree tube and stake: £0.50 each
- STT Standard parkland tree/hedgerow tree and planting: £7.50 each

The ELS handbook is a little unclear as to whether it is permitted to allow new hedgerow trees to develop from whips in a newly planted hedgerow (to which management options are eligible to be applied). This could discourage landowners from considering doing this for fear of falling foul of their agreement conditions, and certainly it is a missed opportunity to promote the establishment of hedgerow trees. The Worcestershire Natural England Land Management Team were contacted for clarification and it was confirmed that there would in most cases be no restrictions on a landowner selecting stems from a hedgerow or adding saplings into a hedgerow that is being planted or restored as part of an environmental stewardship scheme where the planting of trees has not already been included within the scheme provisions. The only possible conflict would be hedgerows surrounding a breeding wader site where it is desirable to keep the hedgerow low: there are unlikely to be many places within the AONB where this would apply. Natural England also confirmed that farm advisors will in fact specifically request that landowners leave stems to grow on as trees where this would be in keeping with the local landscape character or where the presence of particular species, such as Brown Hairstreak butterfly, makes it desirable.

The HLS handbook is much more explicit in its promotion of the value of hedgerow trees: here we find clear reference to the importance of hedgerow trees to wildlife in general and also to particular species and the desirability of targeting hedgerow tree planting to appropriate areas within the landscape to achieve gains for biodiversity. The option of including hedgerow trees as part of the capital expenditure within HLS is also very clear in the handbook.

On the next occasion of the ELS handbook revision the text explaining options for boundary features could be improved to make it clear to landowners that establishment of new hedgerow trees under ELS is permitted and encouraged. In addition, the paltry one point currently given under ELS for tagging new hedgerow trees will also likely not encourage landowners to give much consideration to this option, when their goal is presumably to get the necessary points per hectare in the minimum number of options possible. Natural England should be encouraged to also review this in due course.

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<http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=14823>

Durham Hedgerow Partnership: guidance on hedgerow management and information on the Field Boundary Restoration Grant.
<http://www.durham.gov.uk/pages/Service.aspx?ServiceId=6406>

Forest Research information on Dutch elm disease in Britain:

<http://www.forestry.gov.uk/fr/HCOU-4U4JCL>

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