Marches Undermanaged Woodland

Ground Truthing Survey

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A follow up survey exercise to the Marches Timber Study capturing information about the undermanaged woodland resource on the Marches. Funded by Forestry Commission England

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Executive Summary

This report provides confirmation of the extent and nature of the undermanaged woodland resource in the Marches and provides further information highlighting the potential for the creation of a Marches Woodland Enterprise Zone (MWEZ).

There are an estimated 28,000ha of undermanaged woodlands in the Marches, they consist of mostly mature and over-mature broadleaved trees. The volume of standing timber contained in these woods is estimated to be in excess of five million cubic metres and most of it is ideally suited to meet the growing demand for woodfuel – the renewable, locally sourced, low carbon alternative to fossil fuel.

An annual target to thin 5% of the undermanaged area amounts to 1400ha per year being brought into active management and this will produce an additional 77,700 cubic meters of timber per year.

Barriers exist which prevent this potential being delivered. Most of the barriers are associated with the skills, knowledge and objectives of woodland owners. The other main barriers are access related, and the current capacity of the woodland management and timber harvesting sector to mobilise this additional quantity of timber.

1. Introduction

1.1 The Marches Timber Study 2013 (MTS) by Martin Glynn FICFor assessed the untapped potential of undermanaged woodlands in the Marches. The MTS concluded that the undermanaged woodlands contained significant potential and made recommendations on how to develop the available opportunities.

1.2 The report was the first step in building an evidence base for the creation of a Marches Woodland Enterprise Zone (MWEZ). The Independent Forestry Panel Review and the subsequent Government Forestry and Woodlands Policy Statement (2013) both endorsed the creation of the MWEZ as a key development towards unlocking the economic, social and environmental benefits currently being held back in these under-utilised woodlands.

1.3 To validate the MTS conclusions the Forestry Commission contracted Heartwoods to undertake a field based assessment of the undermanaged woodland resource to further inform the evidence base for the MWEZ.

2. Objectives

The exercise had the following purposes:

2.1 Verification of MTS assumptions about individual undermanaged woodlands (management status, size, slope, terrain) affecting their potential to become managed and produce timber.

2.2 Provision of additional hard evidence from site visits to sample woodlands where timber mensuration and qualitative assessments were made (volume, species, timber quality and age class)

2.3 Analysis and provision of new information to support MWEZ project applications to potential funding sources such as the Marches Local Enterprise Partnership (LEP), LEADER Local Action Groups, the Growth Fund, and the Farming and Forestry Productivity Scheme (FFPS)

2.4 Engagement with, and motivation of, woodland owners by means of advising, signposting and brokering further woodland management activity in conjunction with the ongoing Heartwoods RDPE funded Woodfuel Champion delivery programme covering the West Midlands.

3. Methodology

3.1 The MTS baseline data (originally provided by FCE/NFI) identified 9990 individual undermanaged woodlands totalling 30,409ha and scored them 1-3 against size, terrain and access. Woodlands with the highest possible score of 9 therefore represented the areas with the most potential (larger areas on flatter ground close to road access) and this is where the ground survey work concentrated in order to ensure the new information captured was representative of the woodland areas most likely to be unlocked by subsequent events such as increased owner engagement, publicly funded intervention and improving timber markets.

3.2 There were a total of 49 woodlands with the highest possible score and all of these areas were included in the ground survey target area along with 10 additional lower scoring woodlands which were randomly selected. The 10 lower scoring woodlands were included to ensure any meaningful differences in the nature of these lower potential woodlands were

captured and reflected in the findings and conclusions. The 59 sample woodlands amounted to 1918ha or 6.3% of the estimated 30,409ha undermanaged woodlands in the Marches.

3.4 The site visits set out to capture the following information:

- Confirm the **undermanaged status** of the woodland
- Compare the MTS desk scoring on **size, slope and access** with the actual site visit scoring.
- Measure, assess and record detailed crop information where appropriate and possible to include: **species, standing volume and age class**. See appendix 1 for the sample plot/abbreviated tariff method used.
- Assess and record **timber quality** of the main species present. Timber quality assessment was carried out by visual assessment of the standing trees in each sample plot. The assessments were based on the three most likely end markets for the timber. For conifers this was small round wood, pallet and sawlog. For broadleaves the categories were wood-fuel, beam/2nd quality, and planking.
- Assess and record **physical barriers** to management and timber production such as terrain, waterways, way-leaves, access rights, and adjacent land uses affecting access.
- Engage where possible with the woodland owner or representative to establish **non-physical barriers** to management and timber production such as knowledge, past experience, competing interests and overriding objectives.

4. Findings

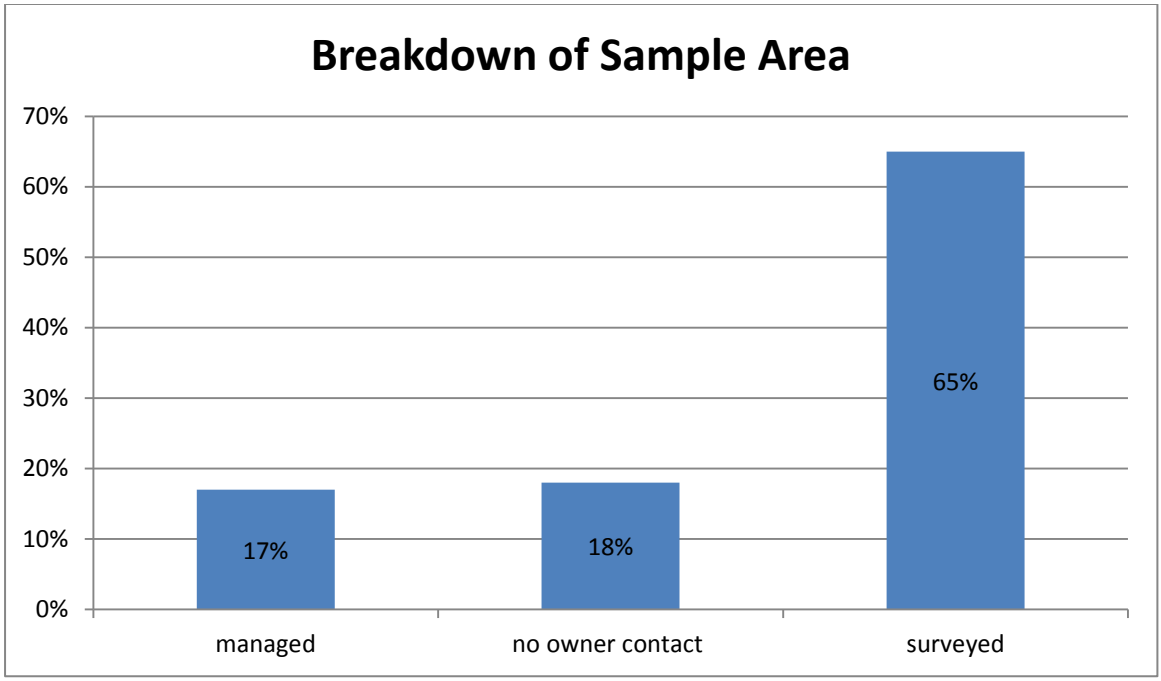
4.1 Levels of Management – As this exercise was all about the nature and potential of the undermanaged woodland resource it was important to recognise and record where clear evidence of productive management was apparent in the sample area. This accounted for 317 ha of the total 1918 ha (17%)

4.2 Owner Permission – Not all owners were traceable, contactable or agreeable to the ground survey work being carried out. This accounted for 342ha of the total 1918ha (18%)

4.3 Areas not surveyed – The above two reasons for not including the woodland in the ground surveys sometimes merged into each other i.e. some areas were clearly being managed productively and the owner was not contactable. In these circumstances a 'best fit' judgement was made to categorise the woodland for the purpose of this report. Generally this meant categorising such woodland as being managed if recent thinning activity on some or all the woodland was clearly evident from passing observation. 'Recent' in this context was defined as: within the appropriate past thinning cycle for the crop - 5 years for conifer and 10 years for broadleaves. There were also some minor mapping,

boundary and area discrepancies which were not resolved in detail due to resources, but these did not have a significant effect on the findings.

4.4 Areas Surveyed - Crop and site information was assessed on the ground in the remaining 1259ha (66%)



4.5 MTS 'potential' desk score compared to the site visit 'potential' score.

MTS desk scoring total 859

Site visit scoring total 780

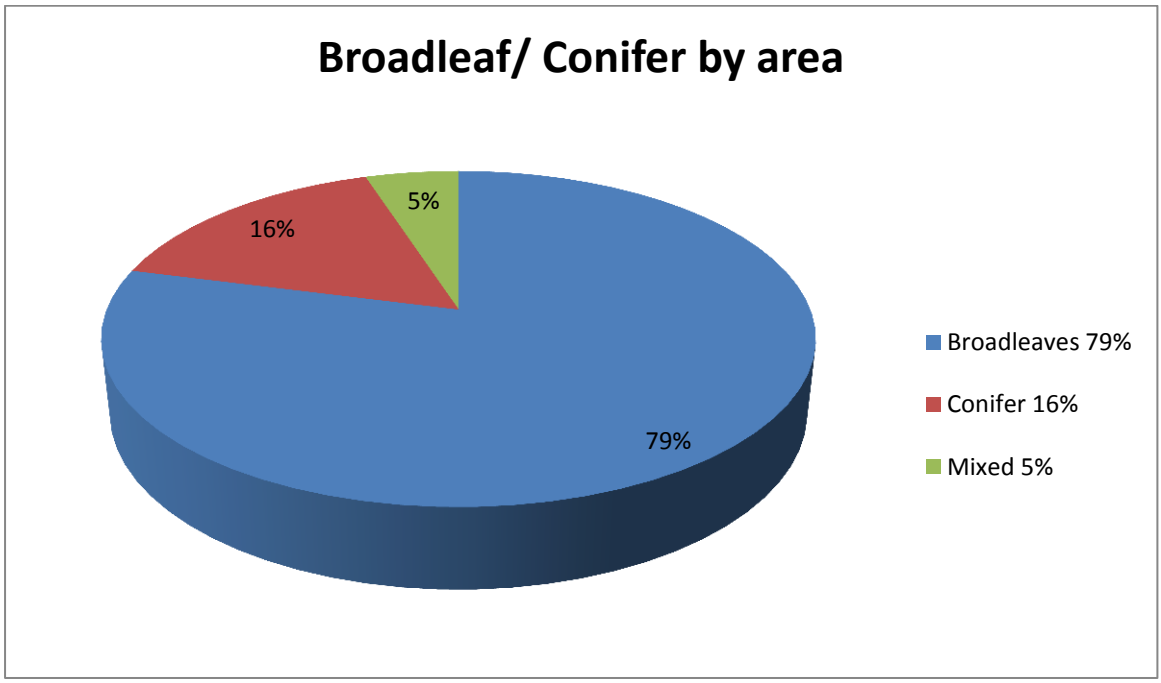
A number of sites were downgraded due to reasons such as, access restrictions despite being close to a road, and local-scale steep terrain which would not have been detectable from the desk based method of assessment.

In the 10 lower scoring sample areas 2 sites were upgraded because access was adjudged to be good despite the distance from a public road.

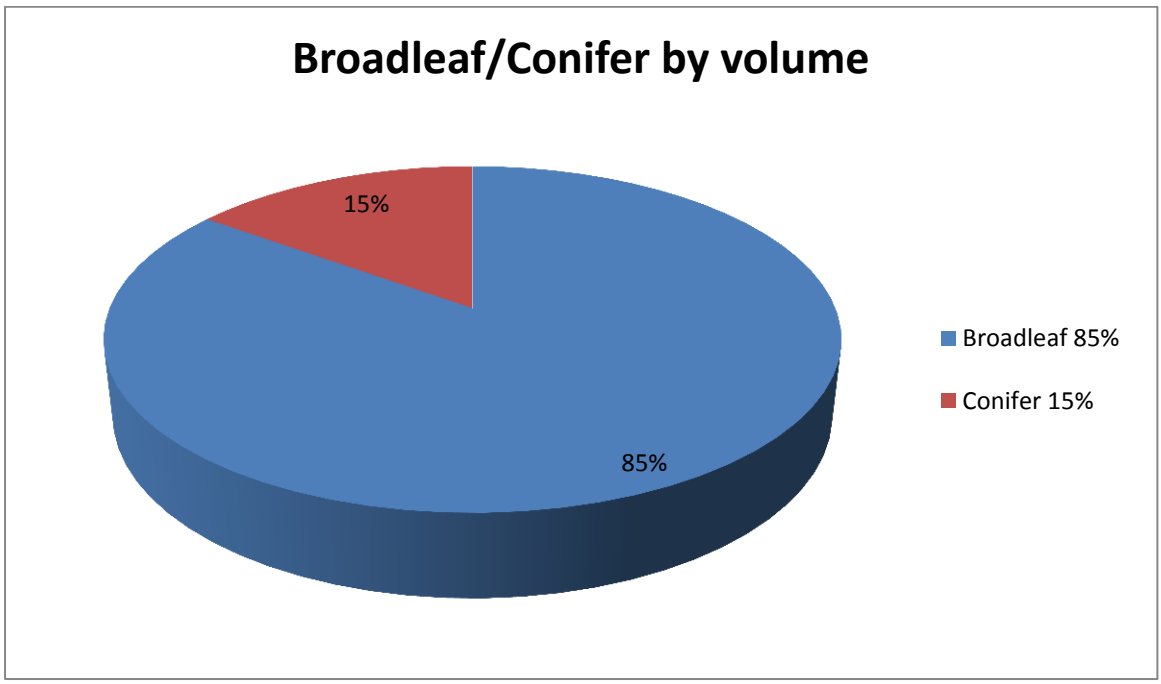
The findings indicate that the scoring system used in the MTS was a reasonably accurate desk based method of highlighting those undermanaged areas which hold the greatest potential for management and timber production.

4.6 Crop Information

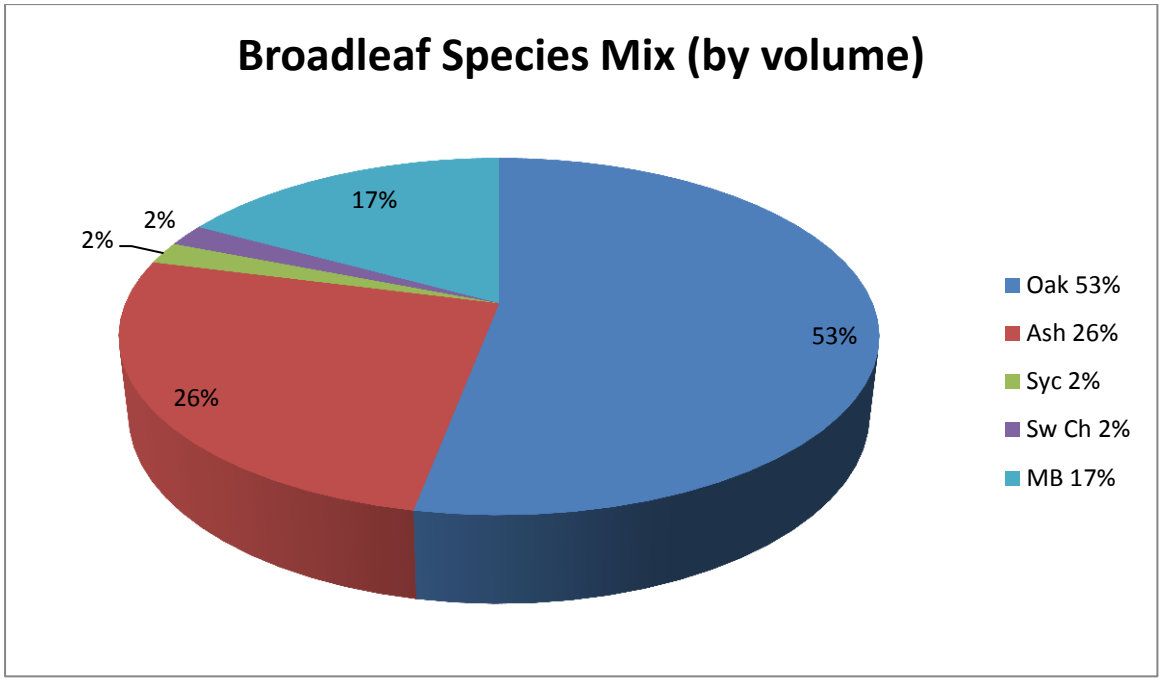
4.6.1 Broadleaf/Conifer by area



4.6.2 Broadleaf/Conifer by volume



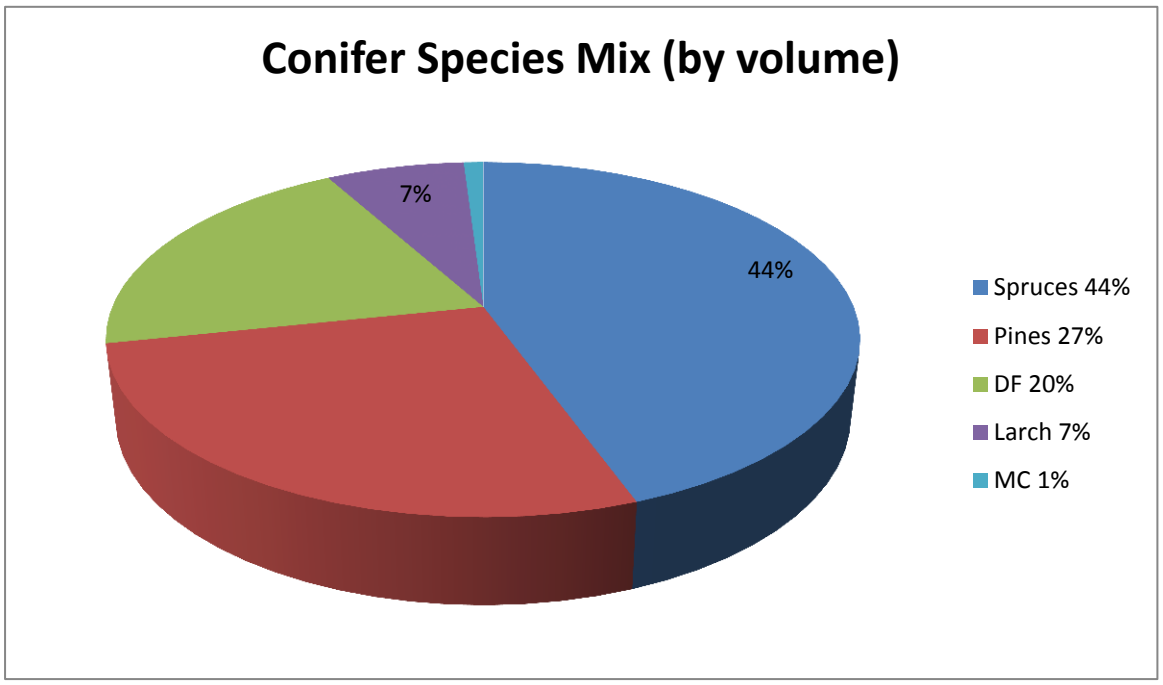
4.6.3 Broadleaves species mix by volume



Ash at 26% is significantly higher than the national and regional average. Ash accounts for approximately 14% of total broadleaved standing volume in both Great Britain and in the West Midlands (FC/NFI May 2013)

Oak at 53% is significantly higher than the national and regional average. Ash accounts for approximately 30% of total broadleaved standing volume in Great Britain and approximately 40% of total broadleaved standing volume in the West Midlands (FC/NFI May 2013)

4.6.4 Conifer species mix by volume



4.6.5 Standing volumes m3obs/gross ha

Combined total 232023m3 = 185m3/ha

Broadleaf – 181250m3 = 179m3/ha

Conifer – 50773m3 = 215m3/ha

4.6.6 Mean tree sizes for broadleaves (m3obs/tree)

Oak 0.92

Ash 0.43

MB 0.52

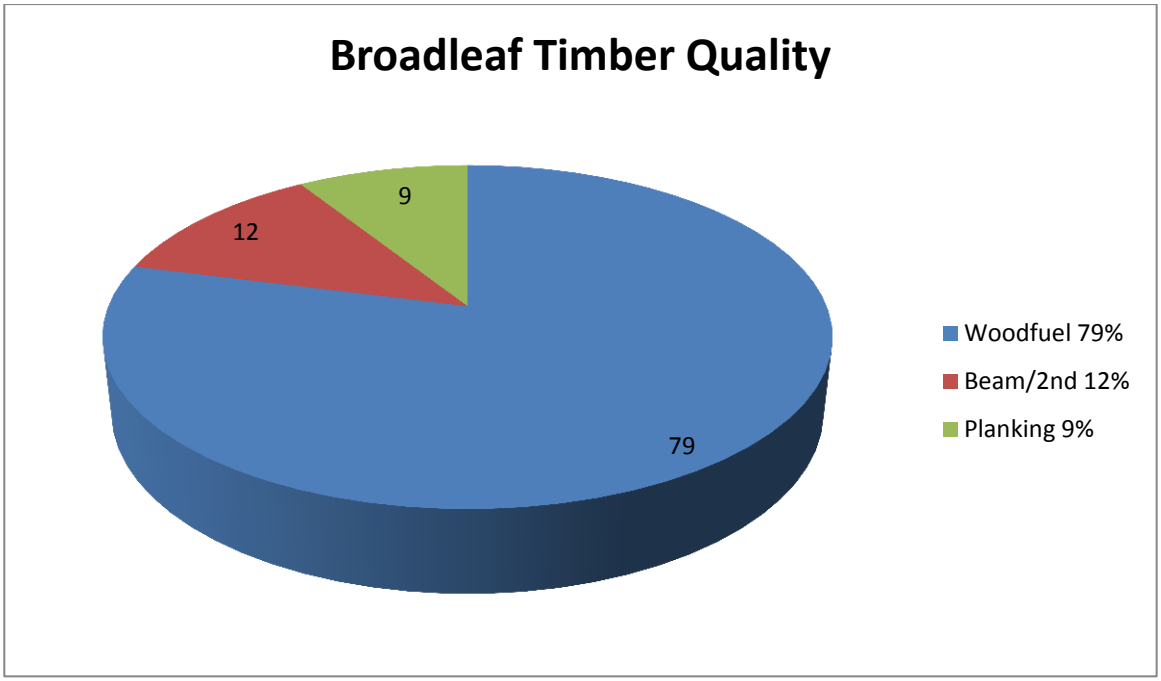
4.6.7 Mean tree sizes for conifers (m3obs/tree)

SS 0.74

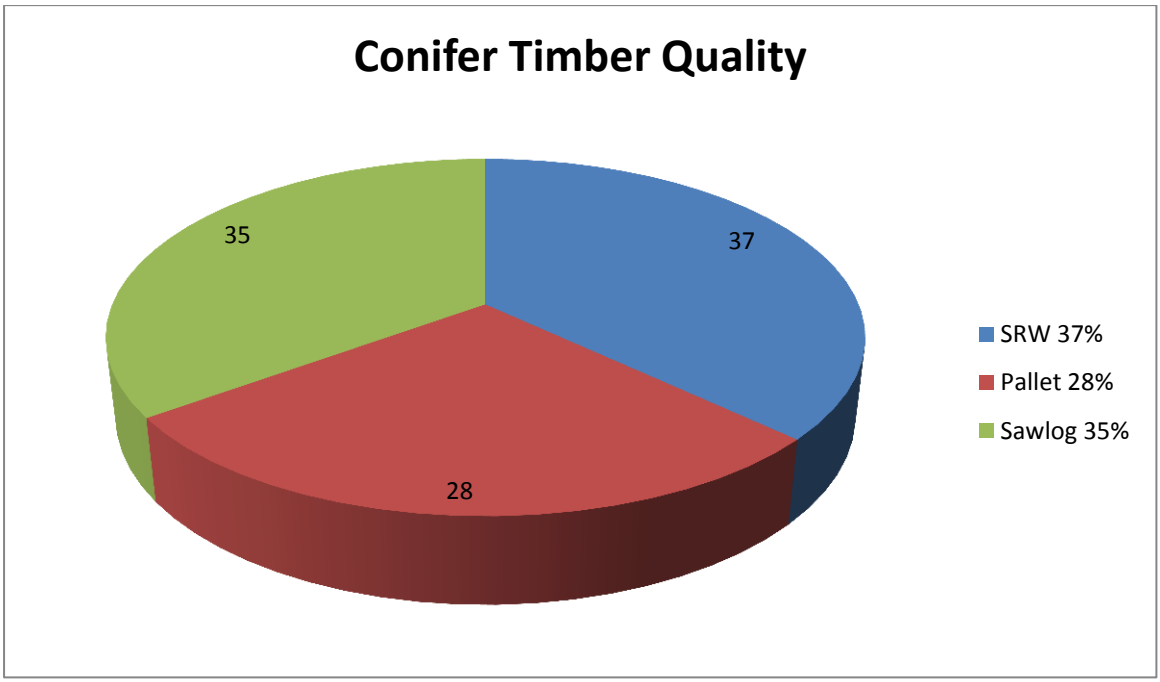
NS 0.31

DF 0.61

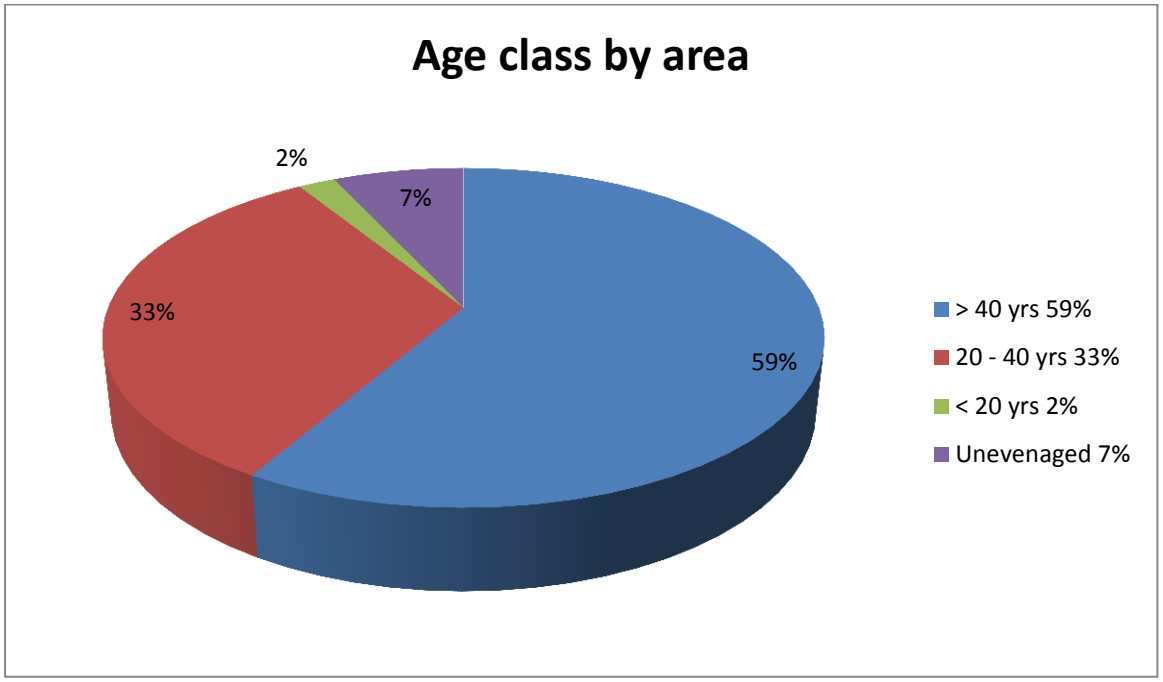
4.6.8 Broadleaf timber quality



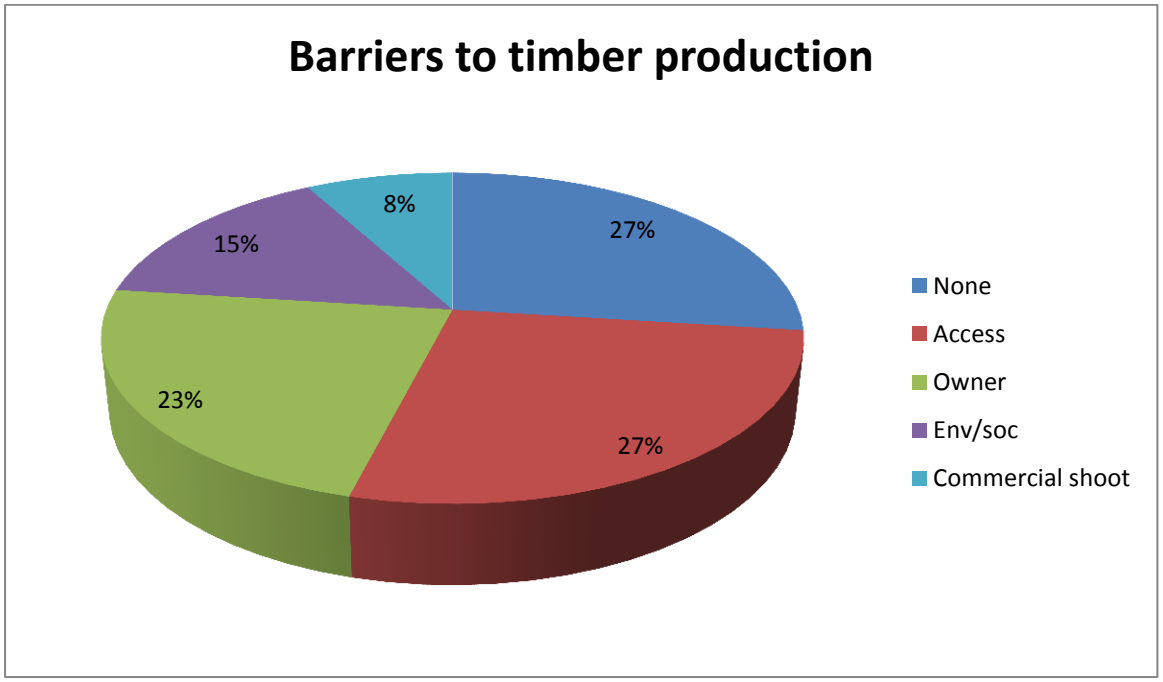
4.6.9 Conifer Timber Quality



4.6.10 Age class distribution



4.7 Barriers to timber management



Examples

Access – waterways, way-leaves, adjacent crops, steep ground, no tracks

Owner – interest level, previous negative experience, knowledge

Environment/Social – wildlife, education, close to housing

Shooting – included above where judged to be at a level affecting woodland management. It should also be noted that lower level shooting interests were encountered across 38% of sites surveyed.

5. Conclusions

5.1 Estimated area undermanaged/unproductive woodland in Marches

The previous MTS estimate of undermanaged woodlands in the Marches was 54% of the total woodland area (56300ha) or just over 30,000ha. This estimate can now be updated with the evidence collected during this exercise. The main source of evidence from which to revise this estimate is the amount of woodland found to be in productive management which hitherto was classified as undermanaged. It must however be remembered that the sample area strongly focussed on the woodlands with the highest potential for greater levels of management (those woodlands scoring 9) and because of this the active management discovered in these areas is unlikely to be replicated throughout the entire undermanaged woodland resource in the Marches. The results revealed an additional 307 ha (16%) being managed in the sample area. If an estimated uplift of 8% (half the increase in areas scoring 9) for the areas scoring 6, 7 and 8 points were applied along with a 4% uplift (half again) to those areas scoring 3, 4 and 5 points an additional 2127 ha would be reclassified as being managed.

Areas scoring 9 – 16% uplift (evidenced) = 307 ha

Areas scoring 6, 7 and 8 – 8% uplift (assumption) = 1440 ha

Areas scoring 3, 4 and 5 – 4%uplift (assumption) = 380 ha

Areas scoring 1 and 2 – no uplift (assumption) = nil ha

This additional area of 2127 ha being managed is close to an additional 4% of the total Marches woodland area. This would reduce the undermanaged area in the Marches to around 28,000ha or 50% of the total woodland area.

There are several factors thought to be responsible for the increased area in management and these are: the relatively blunt measures previously used to define ‘undermanaged’; the significant increase in the value of timber, particularly wood-fuel which has positively

affected the economics of thinning operations; and the enabling effect of various publicly funded interventions such as EWGS and the Heartwoods project.

The Government policy target of having 66% of woodlands (37,000ha) in management would thus be achieved by recruiting an additional 9,000 ha, or just over one third of the currently undermanaged area in the Marches.

5.2 The potential volume and market value of untapped Marches timber

A quick sum using the standing volume of 185m3 /ha over the 28,000 ha points to a total standing volume in these undermanaged woods in excess of 5 million cubic metres. The amount of timber, and its value, that could be produced from the undermanaged 28,000ha will be dependent largely on how much is harvested (thinning intensity) and the market price for the timber at the time of harvesting. Along with the survey findings certain assumptions have been used to provide a realistic and practical estimate for the volume and value potentially available:

Assumption 1. Areas will be thinned once in the forthcoming 10 year period

Assumption 2. 30% removal by volume during the thinning operation

Assumption 3. Current (2104) standing timber prices for this type of crop/woodland (£12/m3 for broadleaves and £20/m3 for conifers)

5.2.1 Volume

Broadleaves 85% = 23,800ha @ 179m3/ha x 30% removal = 1.278 million m3

Conifers 15% = 4,200ha @ 215m3/ha x 30% removal = 0.271 million m3

Total = 1.549 million m3 or 55m3/ha

5.2.2 Value

Broadleaves 1.278 million m3@£12/m3 = £15.336 million

Conifers .271 million m3@ £20/m3 = £5.42 million

Total = £20.756 million or £741/ha

5.3 The realisable potential

The above estimate of potential timber volume and value represents the entire undermanaged area of 28,000ha being thinned. It would not be realistic to expect woodland management levels of 100% and therefore a realisable figure needs to be estimated.

The amount of undermanaged woodland that will become managed and productive will depend largely on the economics of timber harvesting costs versus timber sales income but will also be affected by other factors which may influence an owners decision making process, these are: information and advice, woodland management grants and other public funding, taxation, regulation and the availability of contractors to carry out the thinning, extraction and haulage operations.

In the short term at least there is a healthily improving market for wood-fuel and the realistic prospect of further demand being created by the recent introduction of the domestic RHI scheme. It would seem sensible therefore to expect further market pull resulting in increased levels of management as more woodland is thinned to satisfy the growing demand. But this alone is unlikely to bring about the significant and spectacular increase needed to meet the 66% target.

Thinning 5% of the 28,000 ha undermanaged woods annually would cover 1400ha per year, taking 6.5 years to achieve an overall target of 66% of all Marches woodland in management. This is the additional 9,000 ha previously mentioned in 5.1 above, and the 66% is the 'high-bar' target for all woodland areas in England.

Thinning an additional 1400ha per year would provide an additional 77,700 m3 obs to timber buyers and processors every year with a standing value (income in excess of harvesting, extraction and haulage costs) to woodland owners of £1.025million per year.

To achieve this a sufficient number of willing owners would need to be engaged with each year and the capacity of the sector (woodland managers, harvesting contractors and hauliers) would need to be increased in order to physically mobilise the timber.

5.6 Resilience

The resilience of the undermanaged woodland area in the Marches to present and future tree health related threats (disease, pests and climate) is a matter of concern due to the low number of different of species. In particular the domination of oak and ash (79% of broadleaves combined) presents a real weakness in terms of resilience due to the very real and current threats posed by Acute Oak Decline and Chalara. Any efforts to increase levels of management in these areas should seek to broaden the spectrum of species by restock planting where appropriate. Even if natural regeneration was a possibility, restocking by planting with improved trees would also be desirable in order to improve the long term quality of the trees for higher value timber production.

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16/5/14

Acknowledgements

1. The author wishes to acknowledge the feedback and assistance provided by a challenge group consisting of private sector woodland managers, FC staff and Heartwoods staff which met twice during the survey exercise and provided valuable guidance, particularly on the assumptions and conclusions.

2. The woodland owners and their representatives who kindly gave permission for the survey work to be carried out and their feedback on questions over barriers to timber production.

2. The Heartwoods team members who carried out the survey work: John Powell, Harriet Wood and Will Tompkins.

Appendix 1

MTS Ground Truthing Survey Methodology

Background

The methodology for undertaking the ground truthing work for the Marches Timber Study employed the abbreviated tariffing method (B6) found in section 4.3.2 of the Forest Mensuration Handbook.

This method can be used in most situations however this method requires the assessment of the net area of the stand in order to derive results such as total volume from plot or point based examples.

Method B6 is simple and time efficient within uniform, even-aged stands and is particularly useful in very dense stands.

Plot area for the sampling was determined by the nature of the tree stand notably in terms of numbers of stems per hectare. Larger plot sizes are used where there are fewer tree stems per hectare.
For the purposes of this work a plot size of 5.6m or 8m radius were used dependent on tree stem density.

Practice

The wood was visually divided into roughly homogenous stands based on the nature of each area. Where the whole wood was of an even nature, by age class and species, then the wood was measured as one stand.

The number of plots used for each individual stand was determined largely on the stand area, taking into account the amount of species and structural variation within the stand. Table 3 page 43 was used as a guide to establish the number of plots per stand and this was followed as far as resources allowed.

Sample plots were located by selecting a compass bearing and marking plots at intervals of 20 – 30m on the bearing, depending on the size of the woodland. Further bearings were added, in a zigzag pattern depending on the number of plots required.

Each plot was assessed by species taking the three most common species and further categories of MC and MB where appropriate.

Once each plot was established several measurements were taken

1. Diameter at Breast Height (dbh) measured. Dead or dying trees within the plot were excluded but noted for future reference to wood fuel potential.
2. Top Height measured using a clinometer
3. Timber Height – this was measured where appropriate in order to inform the assessment of hardwood timber quality

4. Timber Quality – visual assessment of timber quality was taken to estimate the potential market end use by assessing the percentage falling into each of the following categories:
Hardwoods; Woodfuel / Beam (oak) / Planking.
Softwoods Sawlog/ Pallet and Fencing/ Small Round Wood

4. Small diameter woodfuel – A further visual estimation was made to quantify the volume of additional wood fuel material contained in the crowns and branches of mature hardwoods.

Volume Calculations

The total heights of the sample trees were added up and divided by the number of sample trees to give an estimate of the top height for the stand. This figure was used to estimate a tariff number by referring to Table 5 on page 203 of the Forest Mensuration Handbook.
The square of the total dbh classes were then added up and divided by the total number of trees to give a mean squared dbh. The square root of this result was then calculated to give the mean dbh. The tariff tables (Table 46, pages 283-293 were then used to calculate the volume per tree.

The number of stems per hectare was calculated by the average number of stems per plot
The total volume per hectare was calculated by multiplying the mean volume per tree by the number of stems per hectare.

John Powell 30.8.13