

National Forest Inventory statistics for England and aligned areas

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England and the aligned areas

Map 1 Map of aligned areas in England

The map shows shortened names for some of the aligned areas. The short names and their full equivalents are to be found in **Appendix A**.



Key findings for England

England has a land area of 13,027,866 hectares with 10% woodland cover. Some 17% of the woodland is under Forestry Commission ownership or management.

Sitka spruce is the most commonly occurring of the conifer species whether assessed by stocked area (26%), standing volume (22%) or number of trees (37%).

Oak is the most commonly occurring of the broadleaved species when assessed by stocked area (18%) and standing volume (22%). Hazel is the most commonly occurring of the broadleaved species when assessed by number of trees (13%).

Some 23% of standing coniferous volume is beyond the age of maximum mean annual increment (or above terminal height of 25m in higher windthrow risk areas). The harvesting assumptions applied in the forecast assume that a proportion of this volume will be felled over a period of time from the start of the forecast. Some 34% of conifer and mixed broadleaf/conifer sections (PS only) show evidence of thinning.

Overall 53% of standing broadleaved volume is beyond the age of maximum mean annual increment (or above terminal height of 25m in higher windthrow risk areas). Some 15% of broadleaved sections (PS only) show evidence of thinning.

Across England:

- Ash is estimated as 10% of total stocked area (14% of broadleaved stocked area), 11% of standing volume (17% of broadleaved standing volume) and 9% of the number of trees (11% of the number of broadleaved trees).
- Oak is estimated as 14% of total stocked area (19% of broadleaved stocked area), 20% of standing volume (30% of broadleaved standing volume) and 8% of the number of trees (10% of the number of broadleaved trees).
- Sweet chestnut is estimated as 3% of total stocked area (3% of broadleaved stocked area), 3% of standing volume (5% of broadleaved standing volume) and 3% of the number of trees (4% of the number of broadleaved trees).
- Larch is estimated as 3% of total stocked area (13% of conifer stocked area), 5% of standing volume (14% of conifer standing volume) and 2% of the number of trees (10% of the number of conifer trees).

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Introduction

National forest inventories are carried out by the Forestry Commission to provide accurate, up-to-date information about the size, distribution, composition and condition of the forests and woodlands in Great Britain (GB). This information is essential for developing and monitoring policies and guidance to support sustainable forest management.

The current National Forest Inventory (NFI), which began in 2010, is a multipurpose operation that has involved the production of a forest and woodland map for Britain and a continuing programme of field surveys (the first cycle of field surveys completed in late 2015) of the mapped forest and woodland areas.

Information and data collected by the National Forest Inventory is being used for a number of purposes, including estimates and 25-year forecasts of forest metrics such as:

- standing volume
- timber availability
- tree growth and increment
- carbon stocks
- biomass

Estimates of aspects of the biodiversity and social value of forests and woodlands will also be provided by the NFI.

This report brings together key woodland information for England previously published across the range of NFI thematic reports. Within the NFI programme, results are presented by the NUTS 1 boundaries^{*}. This report heads a series of reports where the woodland statistics are broken down by aligned area. The data sources and methodology covering the suite of reports are described in this report.

^{*} See <http://ec.europa.eu/eurostat/web/nuts/overview> for a description of the Nomenclature of territorial units for statistics (NUTS) classification system.

Part 1 – introduction and methodology

How the estimates are prepared

Sub-compartment database

The sub-compartment database (SCDB) in Britain is a record of all land managed by the Forestry Commission and Natural Resources Wales (NRW). Each stand of trees is represented spatially, together with information on individual stand characteristics (e.g. species, planting year, spacing and yield class) which is periodically updated. As new surveys of stands are conducted (e.g. for operational purposes), survey results are also recorded against the stands. In addition, the database contains details of how the stands are planned to be managed – in particular, the planned frequency and type of thinning and a date for felling. These prescriptions are recorded in the FC/NRW forest design plans. Forest design plans are prepared and maintained by FC/NRW staff throughout Britain. These plans form the basis of the harvesting regimes used to derive the estimates for the FC/NRW forecasts.

National Forest Inventory

The National Forest Inventory is composed of two elements: a woodland map and a field survey. The woodland map covers all forests and woodlands of over 0.5 hectare with a width of 20 metres and a minimum of 20% canopy cover (or the potential to achieve it), including new planting, clearfelled sites and restocked sites. It is based upon interpretation of 25 cm resolution colour aerial photography for England and Scotland and 40 cm resolution aerial photography for Wales. The map was validated and updated using satellite imagery (available up to 2014), which gave an independent crosscheck of woodland present. Satellite imagery was also used to identify areas of recently felled forests and woodland. Particular attention was paid to identifying areas of woodland loss verified as being due to the establishment of wind farms or the restoration of habitats.

Field survey work was then used to refine the map-based estimates of woodland and clearfelled areas and to measure detailed aspects of the forest. Field surveys carried out between 2010 and 2013 were used to estimate standing volume (and other forest metrics). This involved the ground surveying of 1 hectare sample squares that were partially or entirely covered by forest, including clearfelled areas, according to the woodland map.

In the course of the field survey work some 4,655 sample squares were surveyed in England (9,594 in Britain) of which 3,375 were located in Private sector woodland in

Part 1 – introduction and methodology

England (7,192 in Britain) and the resulting data have been used to produce the results in this report. These surveyed sample squares are a sub-sample of a planned 15,000 statistically representative squares covering all woodland in Britain that has been surveyed during the first cycle of the National Forest Inventory field surveys (completed in late 2015).

At each sample square, the area was stratified into forest and non-forest and the forested area was further stratified into different woodland types or stands, where information on species, age, management and a range of other parameters was collected. Typically, sample squares covered parts of different forest stands, resulting in 14,625 stands being assessed in England (27,490 across Britain). Within each stand, field-based computer systems were used to locate two or three randomly located 100 m² (0.01 hectare) circular plots, within which all trees of greater than or equal to 4 cm diameter at breast height (DBH) were mapped, species and age identified, stocking assessed and diameters measured. A total of 215,990 trees were measured in England (366,000 across Britain). For 61,182 of these trees in England (105,000 across Britain), additional measurements of tree height and crown dimensions were taken for yield class assessment and for other purposes. The resulting data were used to estimate the standing volume of the trees that provided the initial values of timber present in the stand from which forecasts of future timber availability were projected. All squares were marked on the ground with metal pegs and GPS data of their location were recorded for checking and future measurement. All measurements were subject to office-based checks and 7% were re-measured in the field by an independent quality assurance team to ensure consistency and high standards of data quality.

The results for individual surveyed squares were aggregated and scaled up to the areas identified by the woodland map, using standard statistical survey methodology, to produce the estimates in this report. Along with these estimates, associated sampling standard errors have also been calculated and reported. The sampling standard error will account for random variation arising from the selection of the sample, and random measurement errors, but not from any systematic biases in the field measurements. However, because of the quality assurance process it is thought unlikely that any substantial biases of this nature are present in the survey data. The sources of error that are not accounted for in the reported standard errors will be those deriving from use of empirical models to estimate standing volumes from the recorded survey data and, in some cases, the use of Forestry Commission growth and yield models (where these are used to project the results from an earlier survey to 31 March 2012 – the reference date used for the figures in this report).

Further details can be found in the NFI reports published on the [NFI web pages](#).

Part 1 – introduction and methodology

Derivation of woodland area statistics

These estimates are based on the National Forest Inventory (NFI) definitions of woodland. In the NFI, woodland is defined as areas with a canopy cover of 20% or more (or the potential to achieve this), a minimum area of 0.5 hectares and a minimum width of 20 metres. Areas of less than 0.5 hectares of open space within woodlands are included as part of the total woodland area, being considered as an integral part of the woodland ecosystem. Integral areas of greater than 0.5 hectares of open space are excluded.

The term 'Assumed woodland' refers to areas under woodland grant scheme or areas of FC new planting for which evidence of tree or ground disturbance cannot be interpreted from the latest aerial imagery.

'Low density woodland' refers to the area mapped as woodland in the National Inventory of Woodland and Trees (NIWT) which was excluded from the original NFI map as the canopy density was too low. Such areas were further investigated and if archive aerial images prove that there had been a higher density of woodland canopy cover than at present, they were included in the woodland map as low density woodland. The presumption behind this is that such sites may have included seed tree sites or group felling and that they may revert to the threshold canopy occupancy for woodland in time.

The estimates in this report are based on the NFI woodland map with a reference date of 31st March 2012.

Orchards and nurseries are not included in the woodland area estimates.

Interpreted Forest Types and Interpreted Open Areas (IOAs)

Within each distinct woodland, internal parcels with a minimum area of 0.5 hectares have been classified as a single Interpreted Forest Type (IFT). Similarly, parcels of open space are classified as Interpreted Open Areas (IOAs). Definitions of the IFTs and IOAs can be found in **Appendix B**.

Derivation of estimates of current stocks

This report provides estimates of the net area under canopy (referred to as stocked area), the standing volume, the number of trees, the biomass and carbon stocks in live trees in England's woodlands.

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Stocked area

The National Forest Inventory (NFI) woodland map provides information on the spatial location and extent of woodland. Summing the areas of woodland defined in the map provides a gross estimate of woodland areas in GB, countries and regions. Which includes clearfell sites, assumed woodland area (according to grant scheme records), and integral areas of open space of less than 0.5 hectares.

Estimates of stocked area represent the area of woodland currently covered by trees of the relevant species or group of species. Total stocked area across all species (inclusive of both conifer and broadleaves) will therefore differ from total woodland area as estimated from the woodland map, since it will not include current areas of clearfell and most areas of open space of less than 0.5 hectares. On the other hand, it may include estimates derived from areas of woodland located outside the NFI woodland map.

Care needs to be taken in the interpretation of stocked areas of individual species, since many woodlands contain an intimate mix of species, and in such cases procedures are used to allocate the total area covered by the woodland into the areas occupied by its constituent species. The total stocked area of a given species does not therefore represent discrete areas of land covered by pure stands of the species, but may represent the sum of shares of areas of mixed woodland allocated to it by these procedures.

Standing volume

Standing volume is defined as the live stemwood and useable branchwood to a minimum of 7 cm top diameter. It excludes roots, below-ground stump material, small branches, foliage and deadwood. It is reported in cubic metres overbark standing.

Standing volume in trees in woodlands of less than 0.5 hectares in extent is not included.

Standing volume is the baseline for the forecasts of softwood and hardwood availability presented in this report.

Numbers of trees

Estimates are provided in this report of the current numbers of live trees in England's woodland. In order to compile such estimates, a minimum tree size needs to be defined. Due to the nature of the data available on the two forest sectors, the estimates for FC woodland and private sector woodland in this report differ with respect to these cut-off sizes. For the private sector, a live tree is considered countable once it has grown to a

Part 1 – introduction and methodology

size at which its diameter at breast height (DBH) has reached at least 4 centimetres, while for the FC estate, the estimates represent trees that have achieved a minimum size of 7 centimetres dbh. Therefore, for the FC estate, the estimated numbers do not include trees in the size range of 4-6 cm dbh. Windblown trees are included in these estimates, but not standing dead trees.

For the purposes of this report, measurable stems arising from coppice stools are counted as separate trees when calculating the estimated tree numbers. The use of this definition varies from the convention of regarding a single coppice stool with many measurable stems as a single tree. This will not impact upon the stocked area and standing volume estimates, but will affect the estimates of tree numbers for those species that tend to be coppiced, such as sweet chestnut and hazel.

Biomass stocks

The biomass estimates in this report are for total biomass in living trees in stands that have achieved a mean diameter at breast height (DBH) of 7 centimetres or more. The estimates do not therefore include biomass in young stands that have not grown to this minimum mean diameter, nor, for example, in stands of coppice in which stems are harvested before reaching this minimum diameter. The estimates incorporate both above- and below-ground parts of the tree, including major roots, stump, stem, branches, twigs and foliage. Included in the estimates are all trees within areas defined by the National Forest Inventory as areas of woodland. This definition of woodland excludes trees in small copses, hedgerows, and individual isolated trees.

The geographic scope of the estimates is Great Britain, comprising of England, Scotland and Wales, and the report provides breakdowns of total biomass estimates for each individual country and for regions within each country. Breakdowns of the total estimates are provided for the FC estate and the private sector estate, for conifers and broadleaves separately, and for principal species growing in Great Britain.

Carbon stocks

Carbon is defined in this report as carbon stored in all living plant material in both the above and below ground parts of trees (including major roots, stumps, stems, branches, twigs and foliage) in stands with a mean diameter (at breast height) of 7 cm or more. The estimates do not include carbon in young stands that have not grown to this minimum mean diameter nor, for example, carbon in the stems of coppice that are harvested before reaching this minimum mean diameter. Also excluded is carbon in standing dead trees, growing saplings and seedlings, shrubs (except shrubs growing with the morphology of trees), other ground layer vegetation, lying deadwood, litter, soil,

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harvested wood products and substitution effects (e.g. avoided emissions by using timber in place of steel).

Estimates of current stock for the FC estate

Information from the sub-compartment database was used to estimate standing volume and other attributes of stands at the reference date of 31 March 2012 on a stand-by-stand basis. For each stand, if an operational survey had been carried out close to the reference date, information from that survey was used to estimate the state of the stand at the reference date. Otherwise, an estimate was made of the state of the stand, normally involving the application of standard Forestry Commission growth and yield models that take into account the past management of the stand. These data formed the basis of the estimates of current stocks for each of the metrics described above.

Estimates of current stock for the Private sector estate

The estimates of current stocks for each of the metrics described above were calculated for individual surveyed squares and then aggregated and scaled up to the areas identified by the woodland map, using standard statistical survey methodology, to produce the estimates in this report. Along with these estimates, associated sampling standard errors have also been calculated and reported. The sampling standard error will account for random variation arising from the selection of the sample, and random measurement errors, but not from any systematic biases in the field measurements. However, because of the quality assurance process it is thought unlikely that any substantial biases of this nature are present in the survey data. The sources of error that are not accounted for in the reported standard errors will be those deriving from use of empirical models to estimate standing volumes from the recorded survey data and, in some cases, the use of [Forestry Commission growth and yield models](#) (where these are used to project the results from an earlier survey to 31 March 2012 – the reference date used for the figures in this report).

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Derivation of the existing woodland management information and economic viability data

These estimates are taken directly from the assessments made in each stand within the sample squares. For a stand to register an activity that activity must have occurred within the NFI sample square, not the woodland as a whole.

Levels of management activity

Levels of past management can give an indication of how stands will be managed and harvested in the future. This uses the assumption that if stands have been in the hands of owners who were, or are, currently active in managing and thinning their stands, then they are more likely to continue to do so. Such information can be used to assess what proportion of stands may be thinned and harvested in future and is presented in the following figures.

The criteria used for assessing management covers most forest management activities, such as establishment, thinning and clearfelling, and as active management for recreation. For a stand to register an activity that activity must have occurred within the NFI sample square, not the woodland as a whole. The activities assessed in the survey are listed in the Interpreting NFI Timber Volume Forecasts (2012) report. The results presented distinguish between recent activity (less than 3 years ago) and older activity (greater than 3 years ago).

Harvesting constraints

The National Forest Inventory has measured some of the factors that will help to determine if some stands can be harvested or not, or if they are less likely to be harvested. Many factors affect whether a stand can be physically harvested including slope, access and roading and these areas are reported in the following figures. However it cannot be fully determined on this information whether owners will choose to harvest these 'difficult' stands or not.

The survey does not assess if there are restrictions on such roads for timber haulage, which will be the case for a proportion of these roads.

The assessment criteria set for surveyors when gathering this information is:

- 'can a harvesting vehicle get on site?'
- If not, 'can a skyline be used or is it not possible to get any sort of mechanised harvesting on site?'

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This is assessment considers site conditions regardless of the tree cover. Sites are categorised as:

- Wheeled vehicle on site possible – this category includes any mechanical harvesting: wheeled harvesting vehicles, tracked harvesting vehicles and skylines
- Wheeled vehicle on site impossible - tracked vehicles or skylines only can be used
- Sky line site – the site is such that only skylines can be used to harvest the site (e.g. for steep slopes where it would be dangerous or impossible for tracked or wheeled vehicles to operate)
- Mech. Harvesting Impossible
- Not Possible to Assess (this option is allowed when a surveyor cannot access the site)

Distance from square to road

This is the distance, as the crow flies, to the nearest category 1A road (able to take a 32 ton timber lorry) or better. 'CAT 1A' roads within the forest are defined as:

- principal timber haulage route on a long-term basis;
- constructed to high specification;
- maintained to a high standard;
- all year but not all weather;

These can be assessed either as a map exercise or by field assessments. Distances are recorded as:

- <200m
- 200 – 400m
- 400 – 600m
- 600 – 800m
- 800 – 1000m
- 1000m
- Not Possible to Assess

As noted, the survey does not assess if the roads identified are restricted from timber haulage, or if the road accessed by the stand only leads to roads that could not support timber haulage.

A transport route is assessed and mapped as a linear feature regardless of its length and size within the sample square. The open space associated with the feature will *also* be mapped and assessed as a separate area as long as it meets the area criteria of ≥ 0.05 ha within the square.

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Types of access

- Public Road - A road over which the public has the right of access. Also includes Private roads.
- Forest Road sealed surface - A road through the forest for use by the owner and workers – bituminised
- Forest Road unsealed surface - As above but metalled not bituminised
- Ride sealed surface - Rides are often vegetated, un-metalled or un-surfaced corridors often giving access to or through a forest. They also include de-classified category 1A roads that are no longer maintained but still surfaced.
- Ride unsurfaced - Rides are vegetated, un-metalled or un-surfaced corridors often giving access to or through a forest.
- Extraction rack: Dozed - A path/corridor constructed by bulldozer through the forest that is used to extract timber (Linear Feature assigned to the main Rack only)
- Extraction rack - A path/corridor through the forest that is used to extract timber (assign Linear Feature to the main Rack only)

The results show that most coniferous timber could be harvested if owners chose to do so. Most stands are physically thinnable or manageable in terms of wind risk, and slope and access do not appear to form substantial restricting factors across the private sector stands. However, a much higher proportion of stands show no physical signs of thinning and management. This difference probably reflects that owner choice and economics play a larger part in determining rates of harvesting than physical constraints. This roading assessment however does not take account of any restrictions that local authorities may place on the use of roads and in some areas this can be significant. It should also be noted that the surveyor assessment of haulage capacity is based upon a visual assessment of the load-bearing capacity of the road. In some cases the actual underlying construction and condition of the roads may not support sustained timber haulage.

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Yield classes

The mean yield class estimates for the private sector are based on the top height / age relationship measured in the NFI sample squares. Young stands are excluded from this assessment. The estimates for the FC estate are derived from the top height / age relationship where possible, however the majority of yield classes are taken from the values recorded in the sub-compartment database.

How volume forecasts are derived

Forecasts of softwood availability are derived by assessing:

- woodland area
- woodland characteristics (e.g. age, species) within this area
- how quickly the trees are growing (yield class)
- when the trees will be harvested

Timber is defined in this report as the volume of stemwood to 7 cm top diameter in m³ overbark standing (obs), including stump (above ground) and usable branchwood (of minimum 3 m length and 7 cm top diameter). It should be noted that, in this report, the forecast of timber availability is the potential amount of timber that could arise and any reference to volume, production or availability should be taken in that context.

Forecast estimates for the FC estate in England

Information from the sub-compartment database was used to estimate standing volume and other attributes of stands at the reference date of 31 March 2012 on a stand-by-stand basis. For each stand, if an operational survey had been carried out close to the reference date, information from that survey was used to estimate the state of the stand at the reference date. Otherwise, an estimate was made of the state of the stand, normally involving the application of standard Forestry Commission growth and yield models that take into account the past management of the stand. These data formed the basis of the volume forecasts.

Forestry Commission growth and yield models were then used to 'grow' the stands, based upon inventory data and yield class estimates. The stands were grown taking account of harvesting events that either thinned or felled a stand over the forecast period, producing the standing volume, increment and production volumes projected by the forecasts. The timing and scale of thinning and felling events was taken from FC forest management plans, which set prescriptions for harvesting across productive forest area on the FC estate. This was then aggregated to produce the estimated total

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production across a defined geographic area for particular types of stand (classified, for example, by species, age or size class). The stands were then restocked according to country-level prescriptions (details on restocking can be found in the section on assumptions used in the forecast). The FC production forecast is an output of this stand modelling process.

Because the resulting estimates are based on a full record of data from the sub-compartment database, there is no sampling error involved in the estimation process, therefore no sampling standard error is calculated. However, the nature of the estimation process within each individual stand does introduce estimation error, with variable contributions from stand to stand, due to the type, age and accuracy of the information held in the sub-compartment database. These estimation errors have not been quantified in this report.

Forecast estimates for the Private sector estate in Britain

The inventory data for the Private sector estate was run against the headline scenario described in the *50-year forecast of softwood timber availability* (2014). Under this scenario, Private sector forests are managed under a regime designed:

- to maximise productivity (biological potential), within which it is assumed that timber will be harvested in the year of maximum Mean Annual Increment (MAI);
- to take account of thinning and wind constraints with stands being thinned unless they are assessed with a DAMS (Detailed Aspect Methodology Score) score of 16 or greater in which case they are treated as no thin and a top height at clearfell of 25 m is applied;
- to harvest a proportion of overdue stands (i.e. stands that have exceeded the prescribed age for felling according to the scenario), where overdue stands are handled according to overdue timber allocation option 1 described in Table D2 in the *50-year forecast of softwood timber availability* (2014);
- to restock stands which are currently felled and to restock any stands felled within the forecast period according to the country-level restocking options described in **Appendix C**.

This scenario, selected after consultation with Private sector woodland owners and timber processors, aims to maximise timber production in a way that involves relatively straightforward and transparent management prescriptions.

This report concentrates on the headline scenario. Alternative harvesting scenarios and their impact on timber availability are explored in the *50-year forecast of softwood timber availability* (2014).

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The forecast results for individual surveyed squares were aggregated and scaled up to the areas identified by the woodland map, using standard statistical survey methodology, to produce the estimates in this report. Along with these estimates, associated sampling standard errors have also been calculated and reported. The sampling standard error will account for random variation arising from the selection of the sample, and random measurement errors, but not from any systematic biases in the field measurements. However, because of the quality assurance process it is thought unlikely that any substantial biases of this nature are present in the survey data.

There are four classes of error or uncertainty that are not accounted for or contained in the quoted sampling standard errors:

1. Errors in standing volume estimates arising from random variation about, and systematic bias in, the empirical models used to estimate standing volumes from mensuration data. It is not thought that this will contribute a large source of additional error.
2. Random variation about, and biases in, the growth and yield models used to project the future growth of stands. It is known that biases exist in these models, some of which have recently been quantified, and both these biases and annual random variation about the growth model projections will contribute accumulating errors in the longer term forecasts such that errors contributed by these sources will eventually become a larger source of error than sampling error.
3. The forecasts are conditional upon future conditions of growth being equal to those experienced in the past. The quoted sampling standard errors do not therefore take account of any major sudden events that significantly impact upon the tree stock, such as meteorological conditions of a type not experienced in the past, or of more gradual deviation from past conditions, such as the possible accumulating impact of climate change. These sources of error will impact more heavily on forecasts further into the future rather than on short-term forecasts.
4. It is important to also note that in the statement above that the forecasts are 'conditional upon the underlying assumptions'. This means in effect that it is assumed that every stand is managed in the future exactly as prescribed by the future management scenario being analysed. In practice there will be considerable uncertainty and variation in the future management of forest stands. This is a major source of future uncertainty and therefore another major source of error in longer term forecasts.

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Incorporation of these unaccounted sources of error in future forecasts would require a different forecasting model that is beyond current capacity to implement. The effect would be that the magnitude of standard errors fully accounting for all sources of variation in the forecasts would be close to the sampling standard errors for short-term forecasts, but would then continuously expand for forecasts further into the future. However, the advantage of the semi-deterministic forecasts used in this report are that the comparative effects of alternative management scenarios on future production and state of the woodland resource can be easily identified, even if the forecast values themselves are subject to increasing uncertainty the further they project into the future.

Assumptions used in this forecast

Management prescriptions

The timing and scale of thinning and felling events was taken from the approved forest design plans compiled by local planning foresters in Forest Enterprise in England, and sets out the prescriptions for harvesting across the productive forest area on the FC estate.

Ownership

Forests and woodlands are harvested differently under different ownership types. Given that forecasts are largely based on the assumptions made about harvesting prescriptions, the rate of change of ownership is important. In the *25-year forecast of softwood timber availability* (2012) assumptions were made about changes in future forest ownership and thus how stands would be harvested over the forecast period. For simplicity, this current forecast assumes that there will be no future transfer of ownership.

Restocking

Both the softwood and hardwood forecasts restock currently clearfelled land; in addition the softwood forecast reduces the stocked area at restock, as well as altering the species mix. The softwood forecast assumes that 5% of conifer stocked area is converted to broadleaved stocked area at time of restock this assumption has an impact upon the hardwood forecast.

These assumptions do not impact greatly within the first 25 years of either forecast, but in the second half of a 50-year forecast the impacts are evident. As there are around 9,800 hectares of currently clearfelled sites in the private sector and thousands of hectares of future conifer clearfell sites generated by the forecast, this has the effect of adding a significant amount of broadleaved stocked area over time and will thus increase hardwood production potential in the long term.

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The prescriptions for which tree species will be replanted during restocking of woodland felled within the forecast period are described in **Appendix C**. The same prescription applies to restocking currently clearfelled land. They also set out the assumption for the reduction in net conifer stocked area as a percentage of current net stocked conifer area.

This restock scenario is only one of many possible future scenarios for restocking.

Currently clearfelled areas

The assumption used for restocking precludes the restocking of the areas classed as clearfelled at 31 March 2012. This is similar to the approach taken in the 25-year forecast of softwood availability (2012), in which areas that were in a clearfell state at the start of the forecast period were not restocked, but differs from that applied to the 25-year forecast of softwood timber availability (2016).

Overdue timber

In the forecast, overdue timber is timber contained within stands that, at the start of the forecast period, are already over the age prescribed for felling according to the management scenario used for the forecast.

Softwood

All areas felled as overdue were restocked in the forecast according to the restock scenario, in common with any other stand felled during the forecast period. This approach will not materially affect the forecast timber volumes as the replacement stands are unlikely to mature within the forecast period. This will depend on species, yield class and the length of the applied rotation.

Hardwood

These 'overdue' stands represent a significant area of land and volume of hardwood timber, which will impact on a longer term timber forecast, and special provision has now been made for them.

The prescriptions for handling overdue timber were developed in consultation with the private sector and are set out below.

The overdue timber prescriptions take into account tree species, age of stand in relation to age of maximum MAI and current market practice in harvesting:

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- For oak and beech stands above maximum MAI but below 80 cm mean dbh, intermediate thin until fell at 80 cm mean dbh.
- For oak and beech stands between 80 cm and 100 cm mean dbh, clearfell evenly over a 20 year period with intermediate thinning.
- For oak and beech stands over 100 cm mean dbh, fell evenly over 10 years.
- For ash and other species beyond maximum MAI, fell evenly over ten years if mean dbh is less than 60 cm, or fell immediately if greater than 60 cm dbh

These prescriptions were formulated with particular reference to mean stand dbh per species, with different species achieving optimal commercial value at different sizes.

All areas felled as overdue were restocked in the forecast according to the restocking prescription, in common with any other stand felled in the forecast period. Subsequent restocking of these stands is carried out according to the like-for-like scenario.

Impact of harvesting on standing volume

The level and frequency of thinning and felling will have an impact on standing volume and increment over time. If removals exceed increment then standing volumes will be reduced and vice versa.

A large determinant in the forecast for total standing volume in Britain is the underlying age class structure of the forests in England, where the majority of broadleaves are less than 100 years of age and most are less than 40 years of age. This is evidently due to the reestablishment of broadleaved woodland after the devastation of woodland that occurred during the two world wars and the preceding centuries, which seriously depleted GB woodlands. This has driven a broadleaved resource that is in 'recovery', one which has developed from a largely unstocked phase through to a current predominantly immature phase that is in the process of development into a more mature phase. This history is reflected in the age class structure of broadleaves found by the NFI and previous surveys. The forecasts presented in this document show that, without a significant increase in removals in the future, standing volumes of broadleaves will be expected to almost double in the forecast period.

This contrasts with forests of a more evenly distributed age found in most other countries, which result in a more even evolution of total standing volume, increment and production through time. Any comparisons of level of cut to increment should account for this. It should also be noted that the core 50-year forecast of this report is a limited projection of standing volume of broadleaves through time, focussing on a 50 year period, which represents a fraction of the life cycle of GB forests.

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Impact of future events

In addition to the impact of harvesting decisions, there are other unpredictable external factors that are likely to have an impact on all production over the period of the forecast. For example, pest and disease outbreaks, economic factors, severe weather events (windthrow), changes in land use (wind farms and habitat restoration) and changes in government policy (affecting for example grants and regulation, land sales and forest management) will all have impacts.

The forecasts in this report make no assumptions about the impact of pests and diseases. The volumes set out in the main reports assume no impact on availability or production occurring from current or potential outbreaks of pests and diseases. This 'neutral' approach was taken since reliably predicting the rate of spread and impact of the pests and diseases currently of concern was considered to be impractical at this time.

Estimates of the current stocks within England's woodlands of four susceptible tree species are in the plant health section.

Hard to harvest sites

Whether timber on hard to harvest sites will come to market will depend on the economic viability of the harvesting at that point in time, which in turn will depend upon the technology of the time, the cost of harvesting and the value of timber at that time. These are all difficult factors to predict over a long forecast period; historically, ease of harvesting has alternated between making notable to little impact on production. The 2012 25-year forecast assumed that almost all coniferous timber within woodlands would come to market at some point, irrespective of ease of harvesting or site access. Figures on the proportion of 'difficult' sites to harvest are provided, so users of the forecast can make their own estimate of what proportion of that timber would never come to market due to these factors.

Derivation of tree health estimates

The tree health estimates provide estimates of the current stocks within woodland for four current risks:

- *Hymenoscyphus fraxineus* (*Chalara fraxinea*) affecting ash
- Oak processionary moth (*Thaumetopoea processionea*) affecting oak
- Oriental chestnut gall wasp (OCGW) affecting sweet chestnut
- Phytophthora affecting larch

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Note on the estimates

The values in the tables have been independently rounded, so may not add to the totals shown. In some breakdowns of Private sector estimates, the estimates in the body of the table may not sum to the quoted total because each individual value, including the total, has been independently generated by the estimation procedure used for results from the NFI sample survey. Sampling standard errors attached to Private sector estimates are expressed in relative terms (%) to the right of the relevant estimate and as \pm error bars in the figures. Percentages in the pie charts may also not sum to 100 due to rounding.

Due to biological and sampling constraints, for example where there is a very small population of a species within a particular region, the estimates may have a high associated standard error. Since this indicates a high level of uncertainty around those estimates then caution should be used when drawing any conclusions from these values as the estimate may not be representative of the real population. Such estimates have been 'lowlighted' in the tables.

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Woodland area statistics

Woodland area by woodland type

Figure 1 Woodland area by woodland type

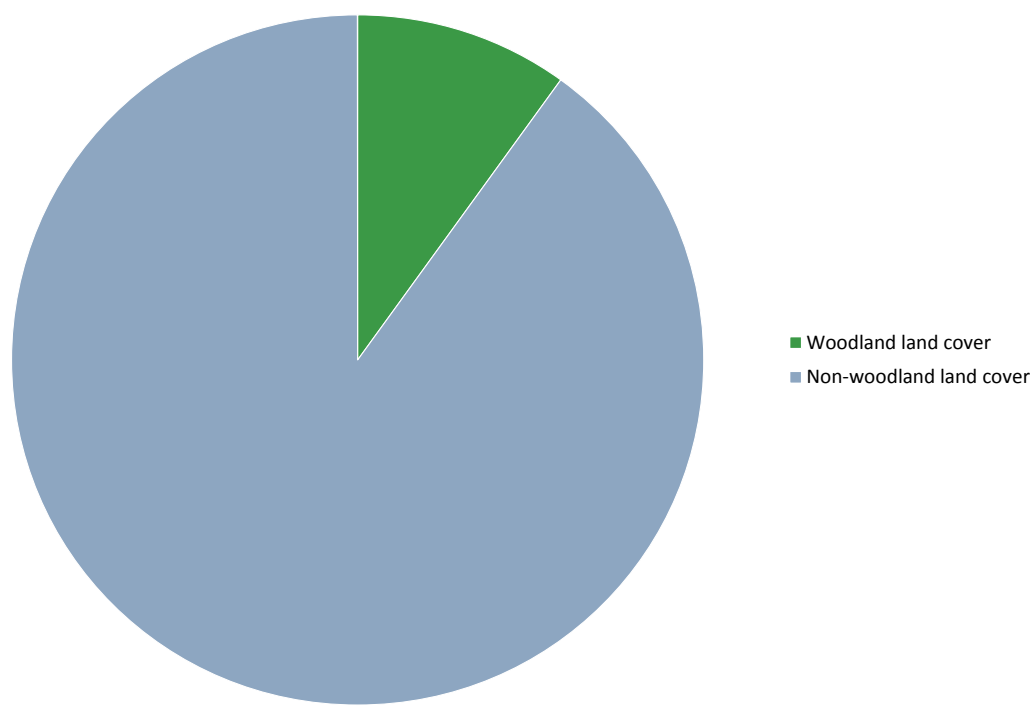


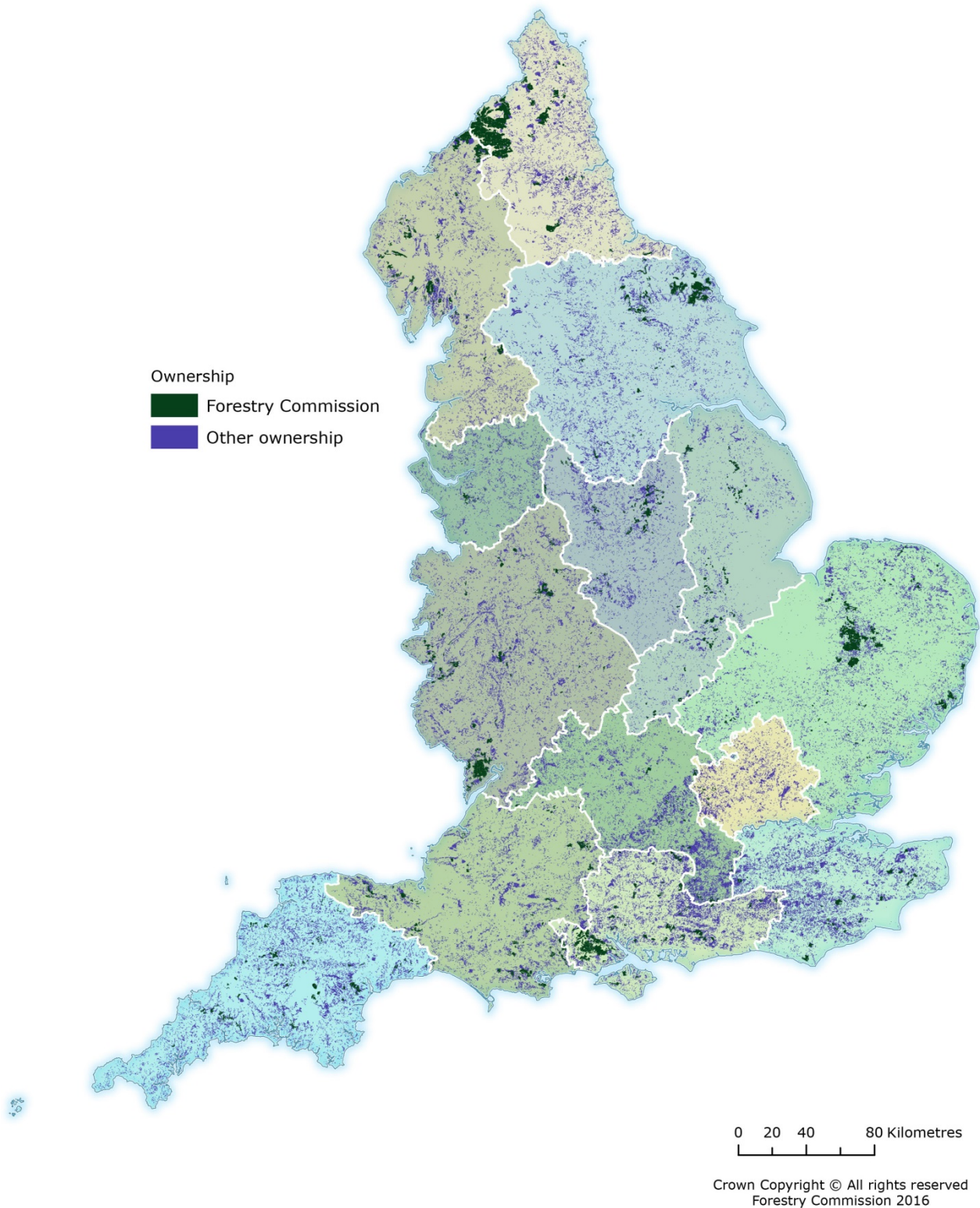
Table 1 Woodland area by woodland type

Woodland Type	Area (ha)	%
England		
Woodland	1,265,774	98%
Assumed woodland	27,792	2%
Low density	4,100	0%
Total mapped woodland	1,297,666	100%
Non-woodland area	11,730,201	
Land area	13,027,867	
Woodland land cover		10%
Non-woodland land cover		90%

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Woodland area by ownership

Map 2 Woodland by ownership



Part 2 – what our woodlands are like today

Figure 2 Woodland area by ownership

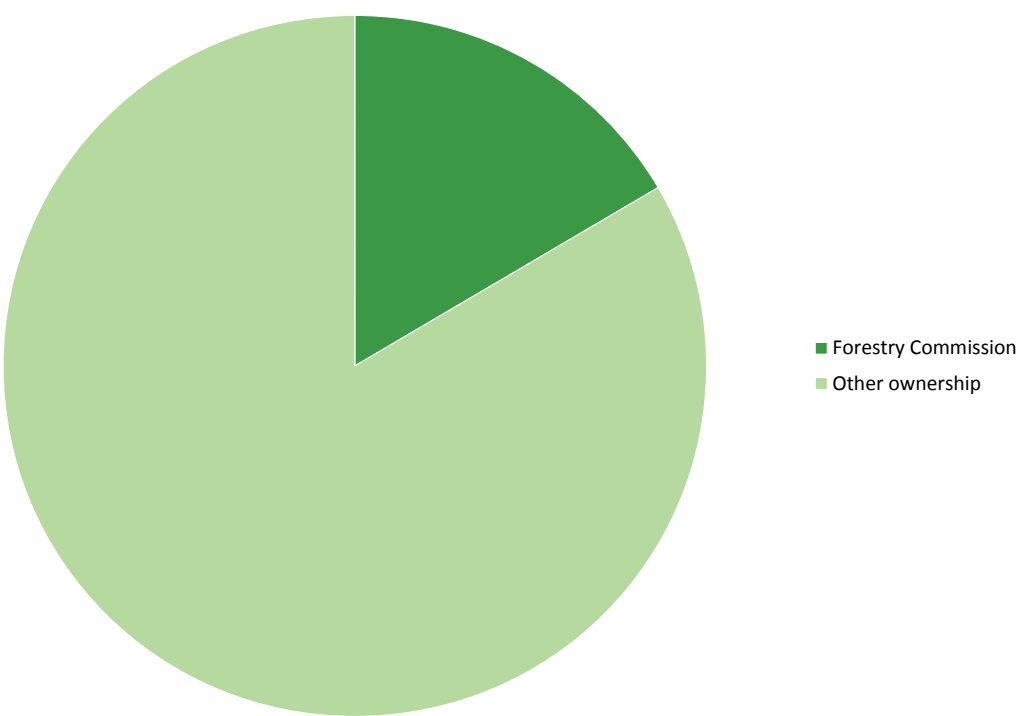


Table 2 Woodland area by ownership

Ownership	Area (ha)	% Woodland
England		
Forestry Commission	214,420	17%
Other ownership	1,083,245	83%
Total area of woodland	1,297,666	100%

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Figure 3 Woodland area by ownership – aligned area summary

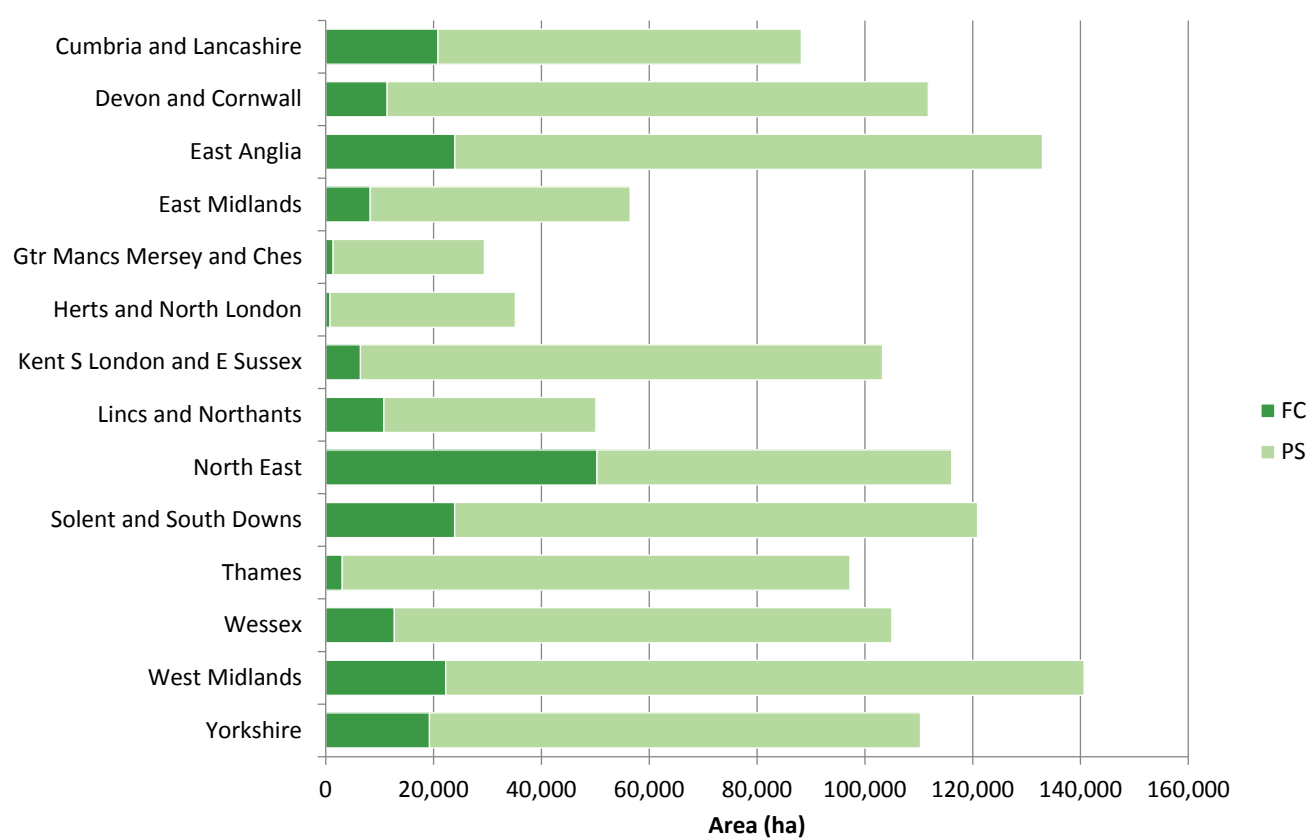
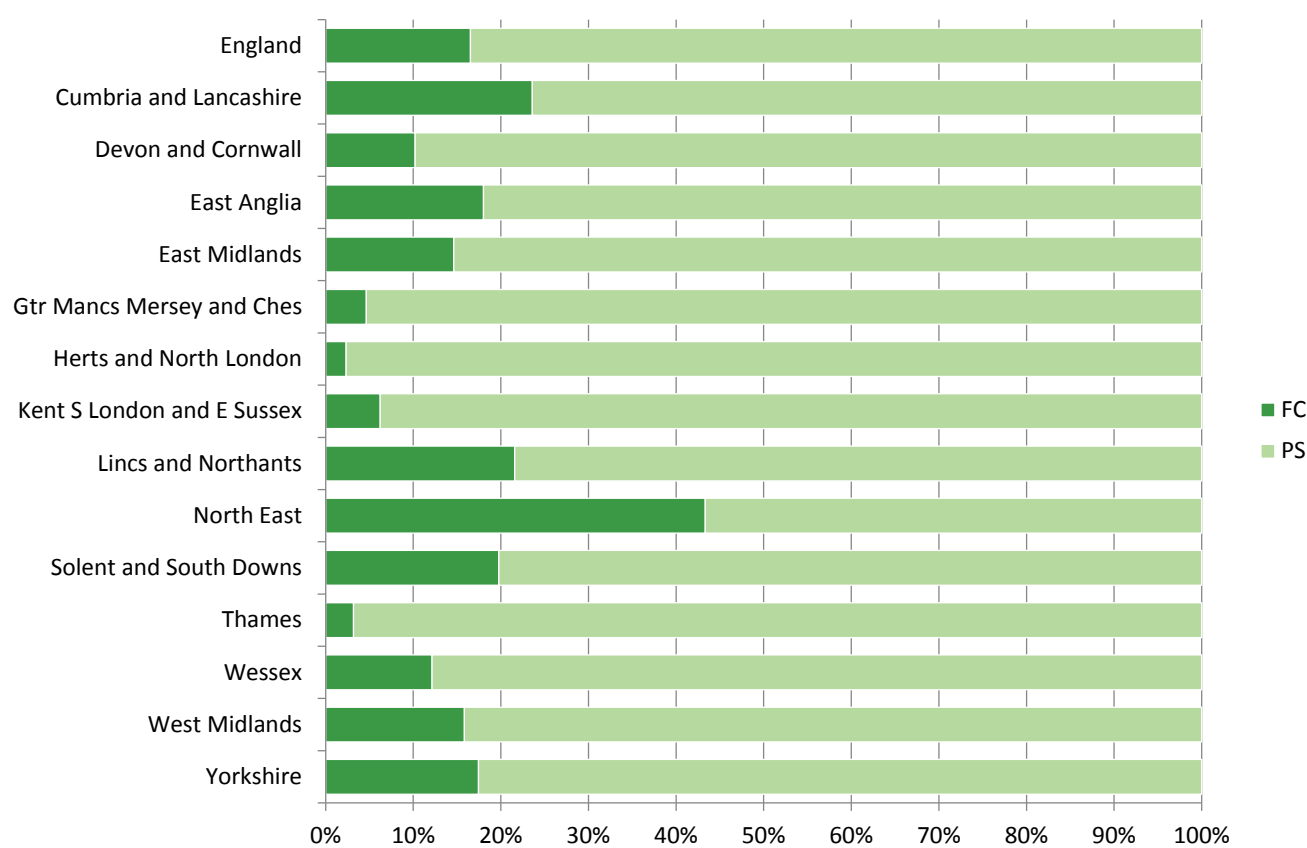


Figure 4 Proportion of woodland area by ownership – aligned area summary



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Figure 5 Proportion of woodland area by ownership – ordered by aligned area

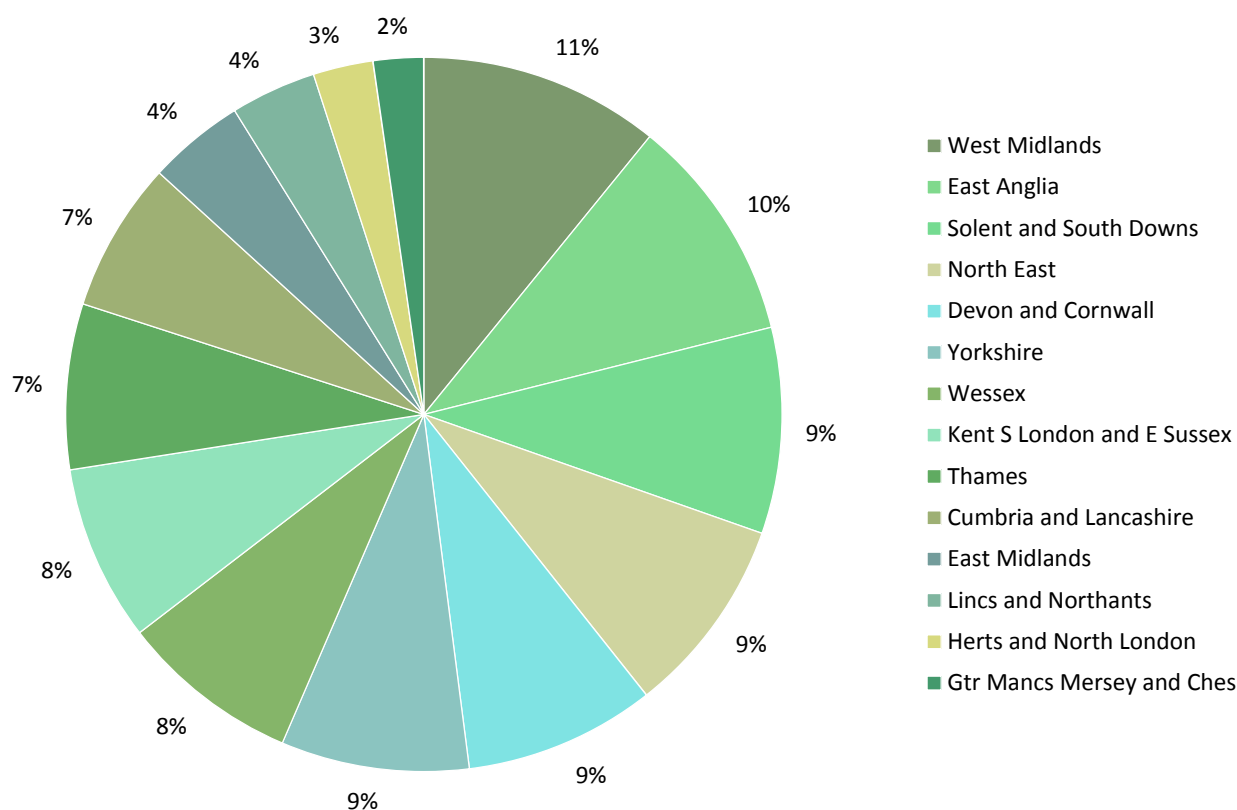


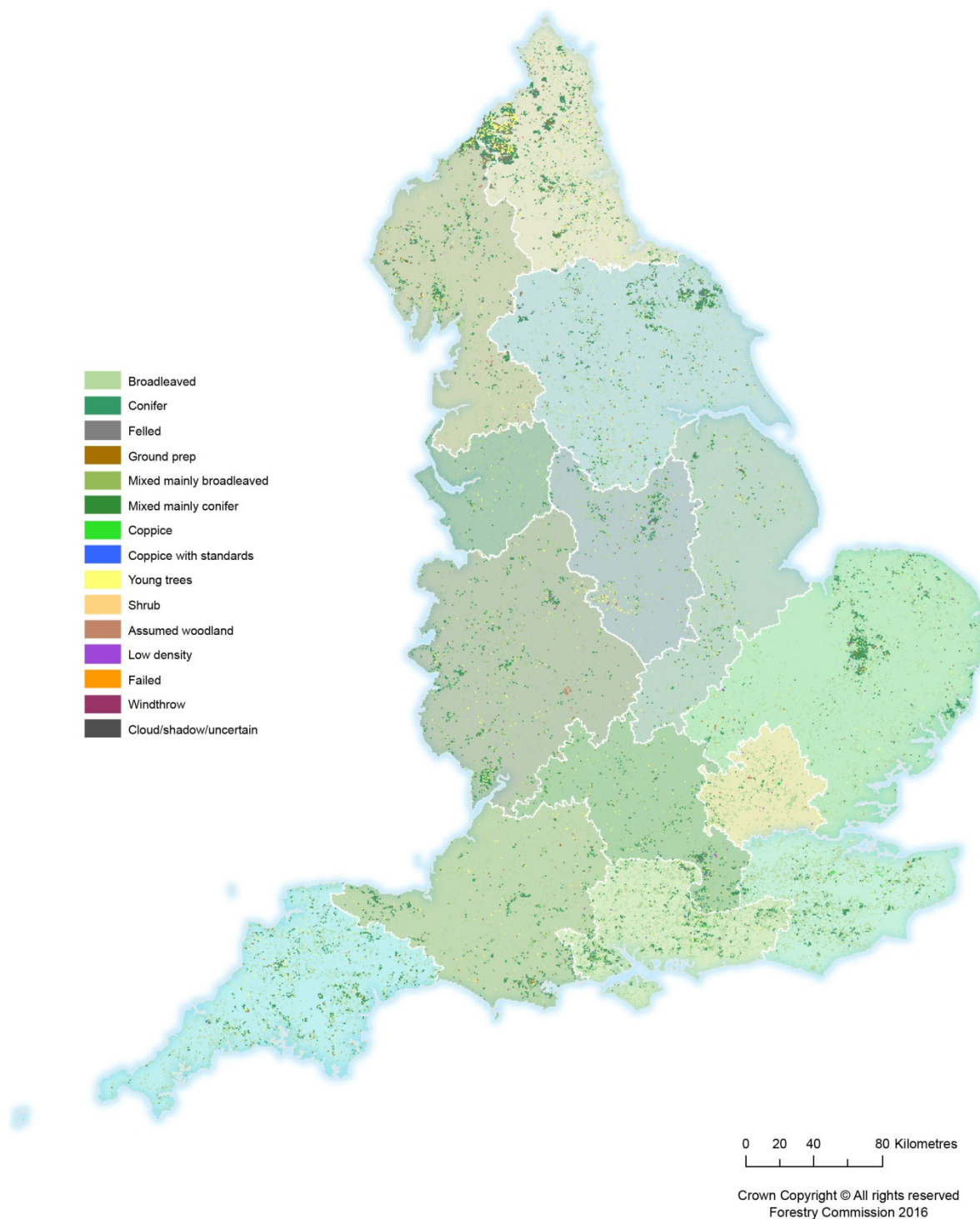
Table 3 Woodland area by ownership – aligned area summary

Ownership	FC		PS		Total
	area (ha)	%	area (ha)	%	area (ha)
England	214,420	17%	1,083,245	83%	1,297,666
Cumbria and Lancashire	20,805	24%	67,415	76%	88,220
Devon and Cornwall	11,420	10%	100,357	90%	111,777
East Anglia	23,939	18%	109,001	82%	132,940
East Midlands	8,259	15%	48,225	85%	56,483
Gtr Mancs Mersey and Ches	1,369	5%	28,080	95%	29,450
Herts and North London	826	2%	34,345	98%	35,172
Kent S London and E Sussex	6,439	6%	96,826	94%	103,265
Lincs and Northants	10,811	22%	39,303	78%	50,114
North East	50,311	43%	65,819	57%	116,130
Solent and South Downs	23,908	20%	96,978	80%	120,886
Thames	3,086	3%	94,158	97%	97,244
Wessex	12,743	12%	92,266	88%	105,009
West Midlands	22,285	16%	118,379	84%	140,664
Yorkshire	19,256	17%	91,057	83%	110,313

Part 2 – what our woodlands are like today

Woodland area by interpreted forest type

Map 3 Woodland by interpreted forest type



Part 2 – what our woodlands are like today

Figure 6 Woodland area by interpreted forest type

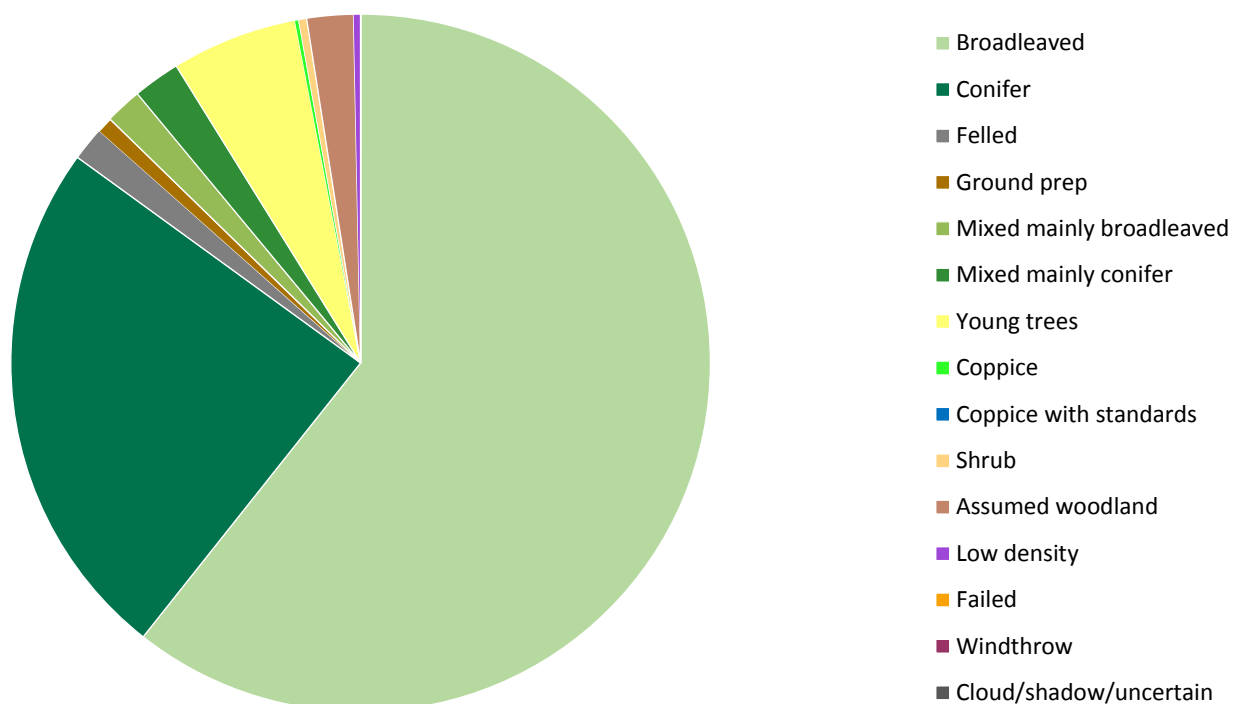


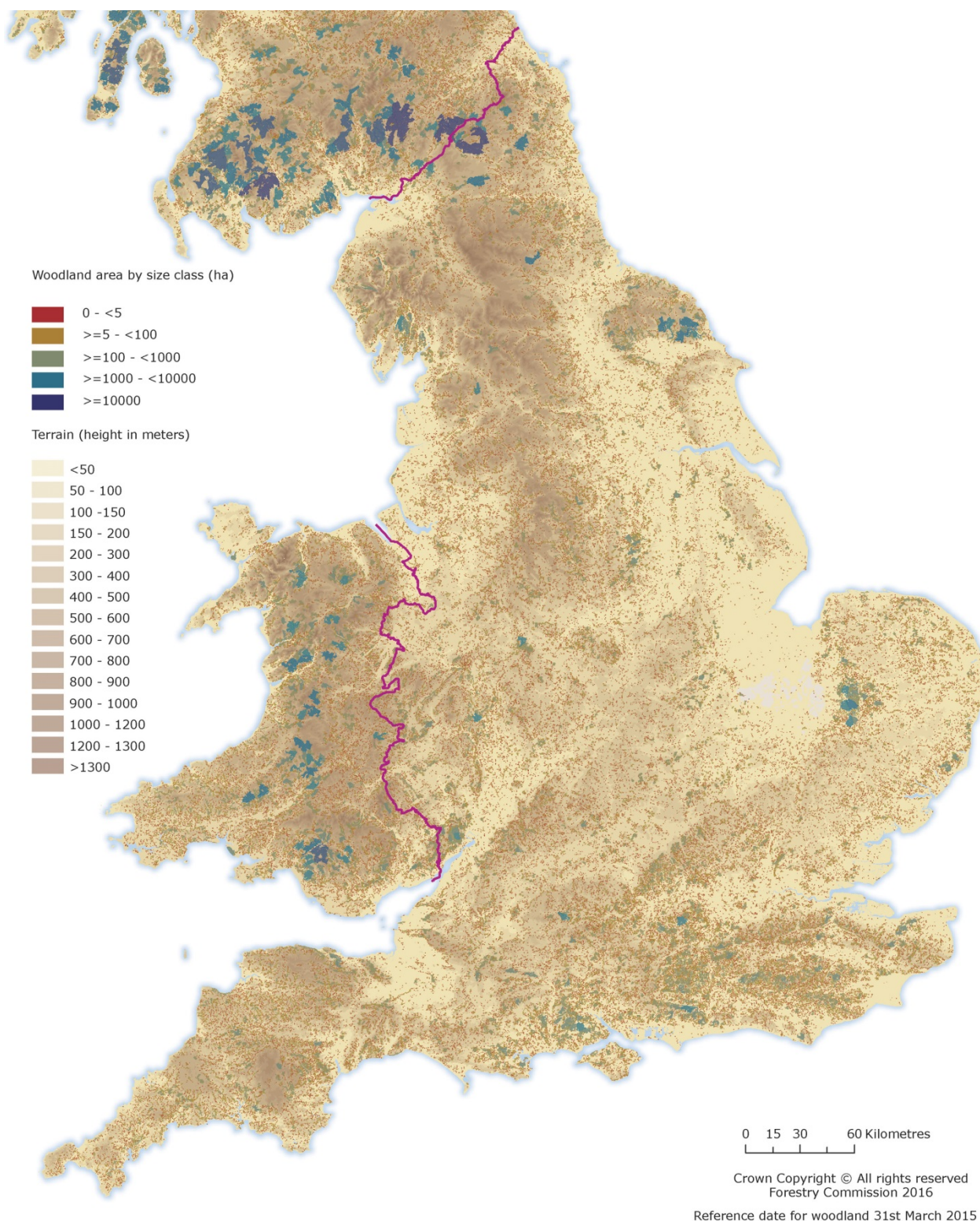
Table 4 Woodland area by interpreted forest type

Forest type	Total area (ha)	% of total area
England		
Broadleaved	786,995	61%
Conifer	316,175	24%
Felled	20,257	2%
Ground prep	9,434	1%
Mixed mainly broadleaved	22,128	2%
Mixed mainly conifer	28,273	2%
Young trees	75,303	6%
Coppice	2,290	0%
Coppice with standards	123	0%
Shrub	4,783	0%
Assumed woodland	27,792	2%
Low density	4,100	0%
Failed	0	0%
Windthrow	0	0%
Cloud/shadow/uncertain	13	0%
TOTALS	1,297,666	100%

Part 2 – what our woodlands are like today

Woodland area by interpreted forest type and woodland size

Map 4 Woodland by woodland size



Part 2 – what our woodlands are like today

Figure 7 Woodland area by interpreted forest type and woodland size

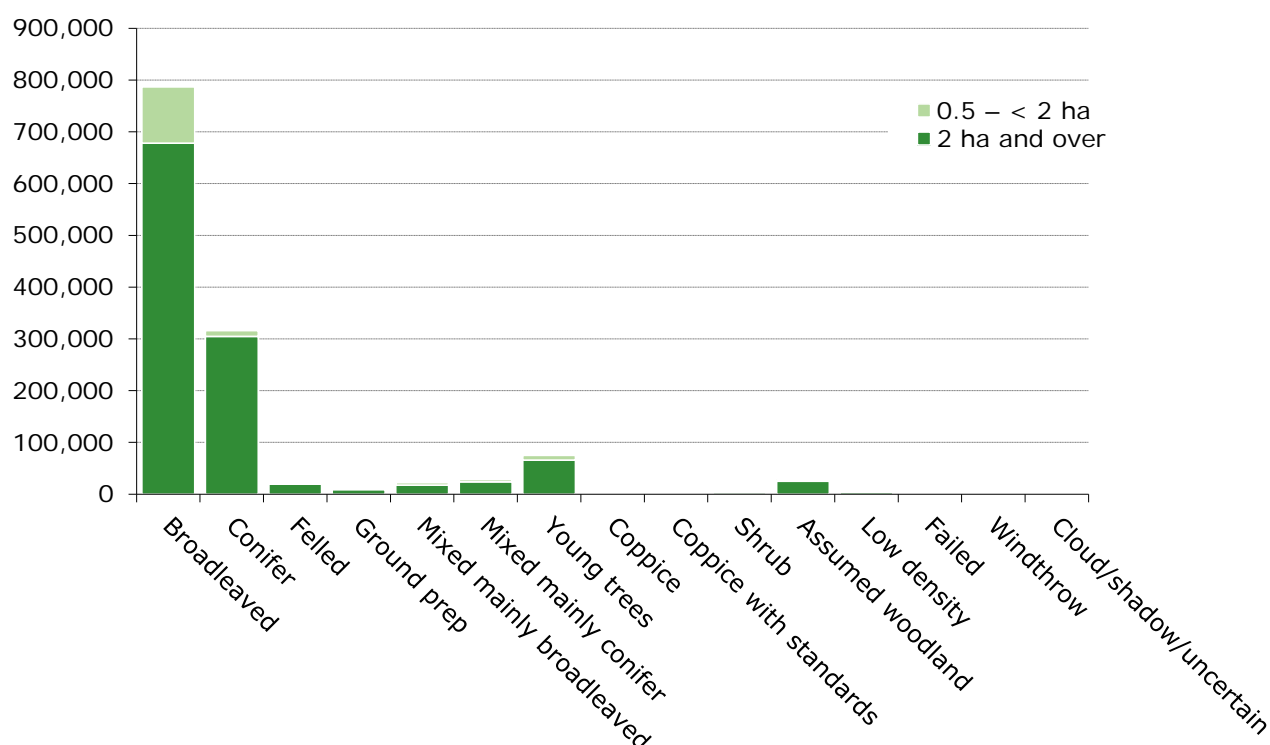


Table 5 Woodland area by interpreted woodland type and woodland size

Forest type	Woodland size		Total area (ha)
	2 ha and over	0.5 – < 2 ha	
England			
Broadleaved	678,091	108,904	786,995
Conifer	304,765	11,410	316,175
Felled	20,046	229	20,274
Ground prep	8,912	542	9,454
Mixed mainly broadleaved	17,453	4,661	22,114
Mixed mainly conifer	23,794	4,518	28,312
Young trees	65,716	9,383	75,099
Coppice	2,308	116	2,424
Coppice with standards	119	4	123
Shrub	3,393	1,393	4,786
Assumed woodland	25,071	2,720	27,791
Low density	3,780	325	4,105
Failed	0	0	0
Windthrow	0	0	0
Cloud/shadow/uncertain	13	0	13
TOTALS	1,153,460	144,205	1,297,666

Part 2 – what our woodlands are like today

Woodland area by interpreted forest type and ownership

Figure 8 Woodland area by interpreted forest type and ownership

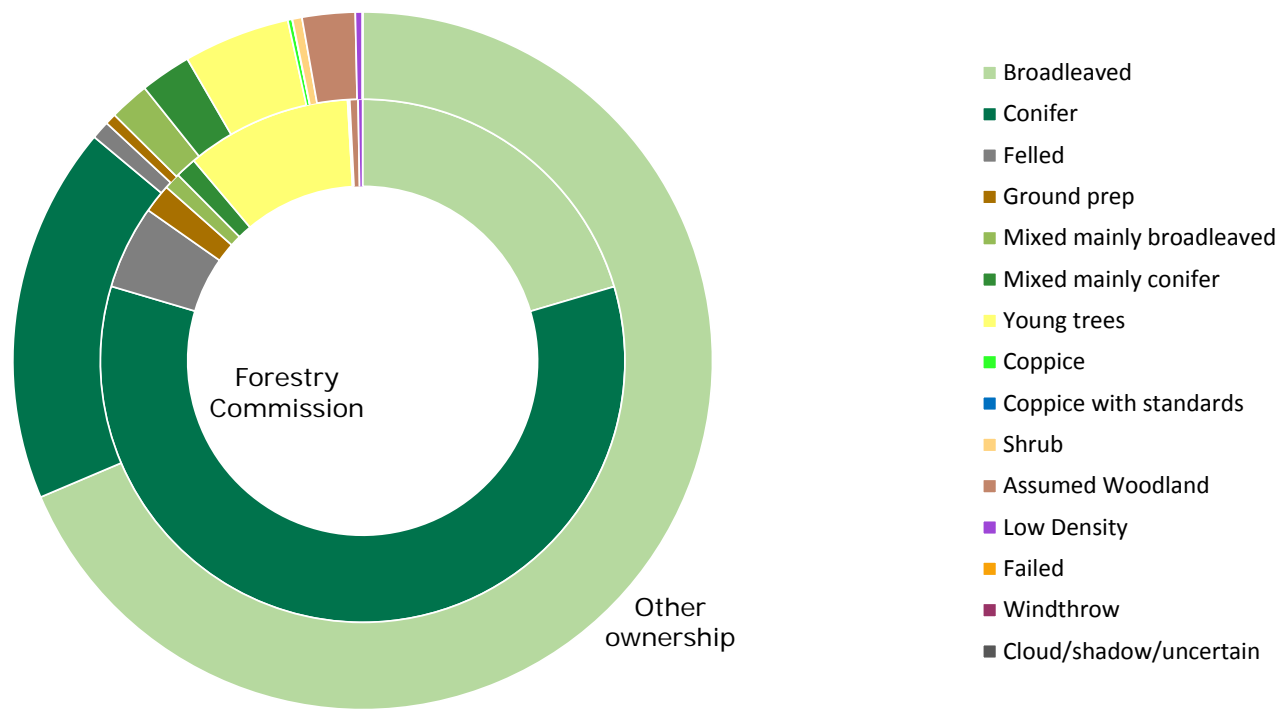


Table 6 Woodland area by interpreted forest type and ownership

Forest type	Forestry Commission		Other ownership	
	Area (ha)	% of total area	Area (ha)	% of total area
England				
Broadleaved	43,793	20%	743,203	69%
Conifer	126,880	59%	189,294	17%
Felled	11,075	5%	9,182	1%
Ground prep	3,828	2%	5,572	1%
Mixed mainly broadleaved	2,206	1%	19,959	2%
Mixed mainly conifer	2,770	1%	25,512	2%
Young trees	21,902	10%	53,323	5%
Coppice	160	0%	2,175	0%
Coppice with standards	5	0%	154	0%
Shrub	119	0%	4,781	0%
Assumed Woodland	1,086	1%	26,478	2%
Low Density	595	0%	3,599	0%
Failed	0	0%	< 1	0%
Windthrow	0	0%	0	0%
Cloud/shadow/uncertain	0	0%	13	0%
TOTALS	214,420	100%	1,083,246	100%

Part 2 – what our woodlands are like today

Woodland area by interpreted forest type, woodland size and ownership

Table 7 Woodland area by interpreted forest type, woodland size and ownership

Forest type	2 ha and over		0.5 – < 2 ha		Total area (ha)
	Forestry Commission	Other	Forestry Commission	Other	
England					
Broadleaved	43,570	634,558	223	108,645	786,995
Conifer	126,828	177,943	53	11,351	316,175
Felled	11,071	8,976	4	206	20,257
Ground prep	3,838	5,073	13	510	9,434
Mixed mainly broadleaved	2,177	15,277	6	4,668	22,128
Mixed mainly conifer	2,756	21,049	15	4,454	28,273
Young trees	21,858	43,896	64	9,484	75,303
Coppice	160	2,097	0	33	2,290
Coppice with standards	5	113	0	4	123
Shrub	111	3,282	8	1,382	4,783
Assumed woodland	1,043	24,034	16	2,700	27,792
Low Density	602	3,178	< 1	319	4,100
Failed	0	0	0	0	0
Windthrow	0	0	0	0	0
Cloud/shadow/uncertain	0	13	0	0	13
Totals	214,018	939,489	402	143,756	1,297,666

Part 2 – what our woodlands are like today

Woodland area by size class distribution

Figure 9 Woodland area by size class distribution

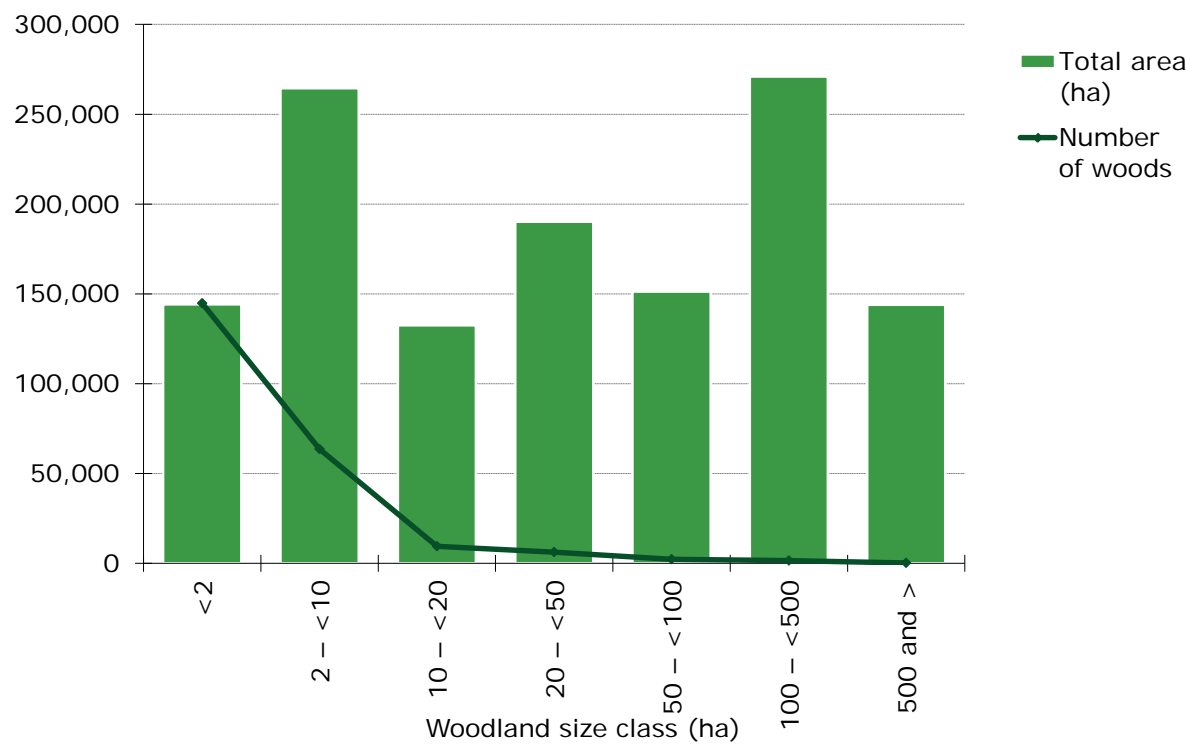


Table 8 Woodland area by size class distribution

Size class (ha)	Total area (ha)	Number of woods	% of total area	Mean wood area (ha)
England				
<2	144,208	144,668	11%	< 1
2 – <10	264,514	63,468	20%	4
10 – <20	132,457	9,484	10%	14
20 – <50	190,190	6,189	15%	31
50 – <100	151,336	2,181	12%	69
100 – <500	270,987	1,445	21%	188
500 and >	143,973	117	11%	1,231
All woods	1,297,666	227,552	100%	6

Part 2 – what our woodlands are like today

Open areas in woodland by land use type

Figure 10 Open areas in woodland by land use type

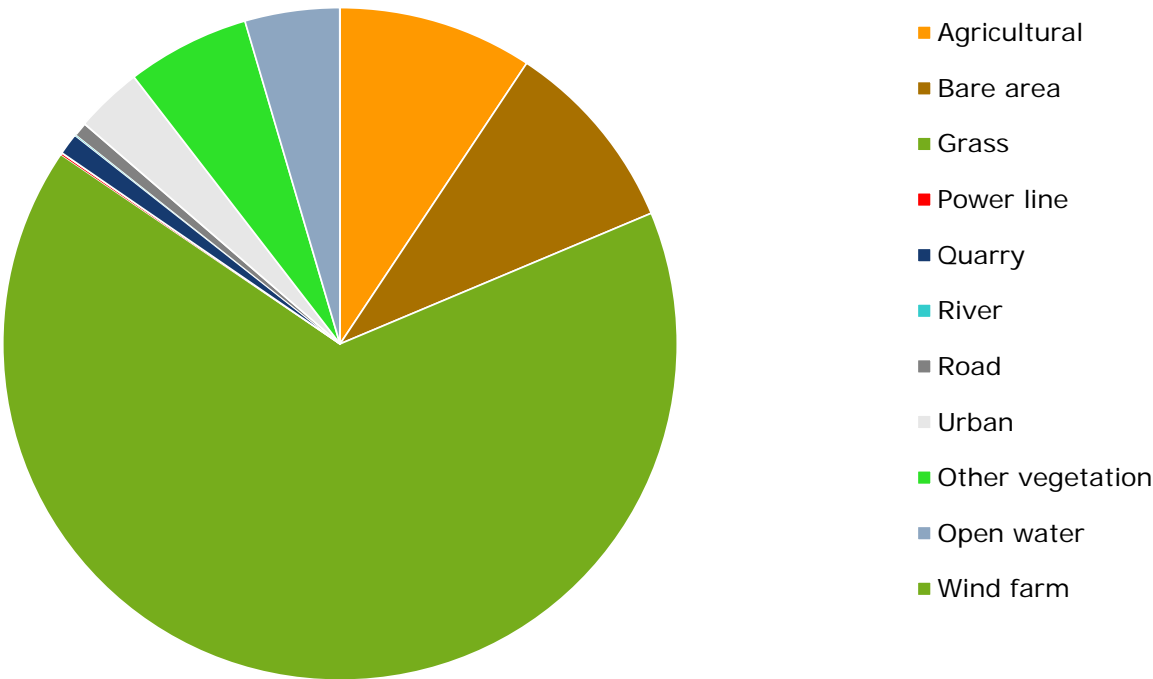


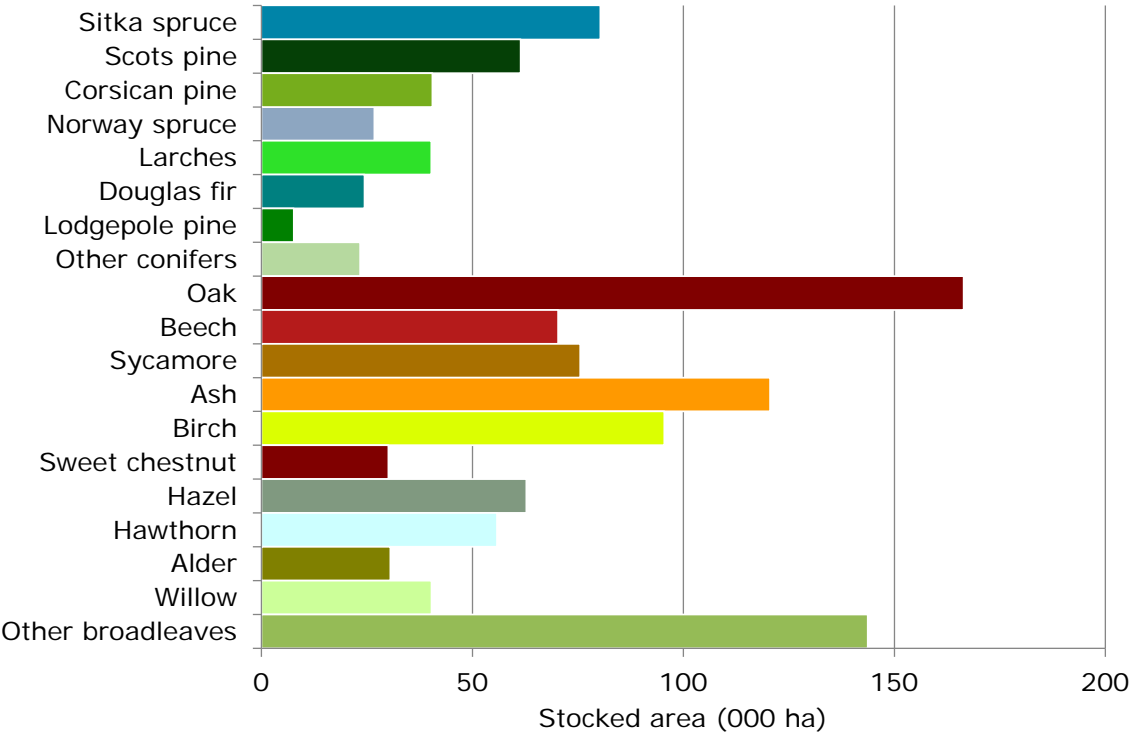
Table 9 Open areas in woodland by land use type

Interpreted open area	Total area (ha)	% of total area
England		
Agricultural	2,391	9%
Bare area	2,396	9%
Grass	16,890	66%
Power line	23	0%
Quarry	267	1%
River	15	0%
Road	163	1%
Urban	827	3%
Other vegetation	1,515	6%
Open water	1,164	5%
Wind farm	0	0%
TOTALS	25,652	100%

Net area under canopy

Stocked area by species

Figure 11 Stocked area by principal tree species



Part 2 – what our woodlands are like today

Table 10 Stocked area by principal tree species

Principal species	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
Conifers				
Sitka spruce	48.6	31.7	6	80.3
Scots pine	16.7	44.8	5	61.5
Corsican pine	26.7	13.8	9	40.5
Norway spruce	6.8	20.0	7	26.8
Larches	9.9	30.3	5	40.2
Douglas fir	9.8	14.6	8	24.4
Lodgepole pine	4.4	3.3	17	7.7
Other conifers	4.7	18.8	7	23.4
All conifers	127.5	177.6	2	305.1
Broadleaves				
Oak	15.7	150.7	3	166.4
Beech	12.7	57.6	4	70.3
Sycamore	1.1	74.4	4	75.6
Ash	2.9	117.6	3	120.6
Birch	5.8	89.7	3	95.5
Sweet chestnut	0.8	29.3	7	30.1
Hazel	0.4	62.4	4	62.8
Hawthorn	< 0.1	55.8	8	55.8
Alder	0.5	30.1	6	30.6
Willow	< 0.1	40.3	5	40.3
Other broadleaves	13.6	130.1	3	143.7
All broadleaves	53.7	838.8	1	892.5
All species				
All species	181.2	1,016.4	1	1,197.5

Part 2 – what our woodlands are like today

Figure 12 Stocked area by principal conifer species

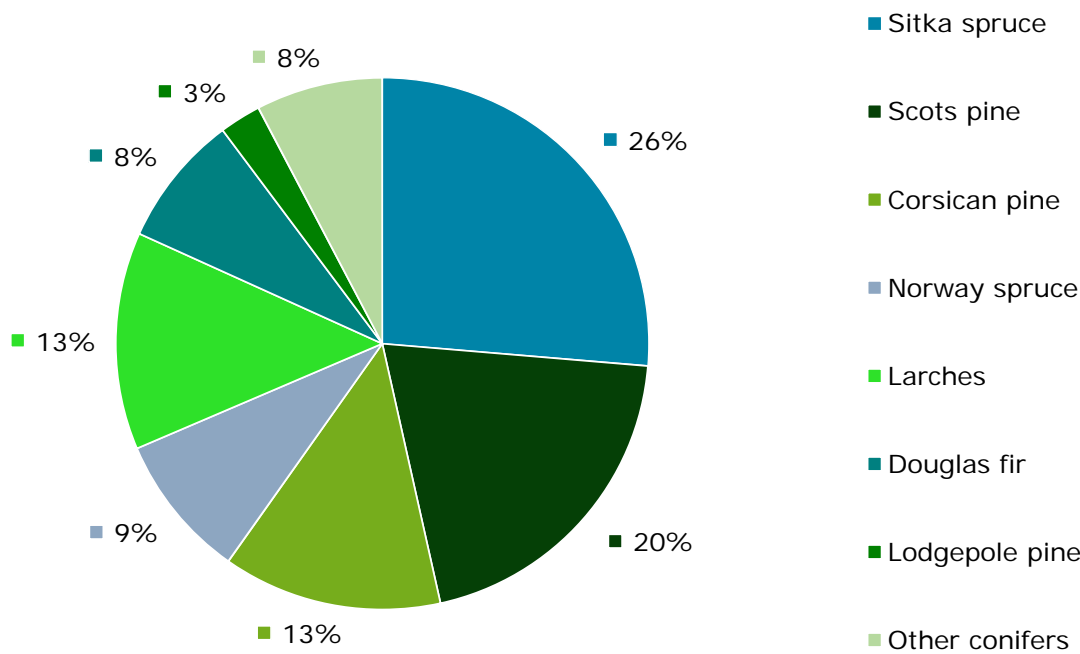
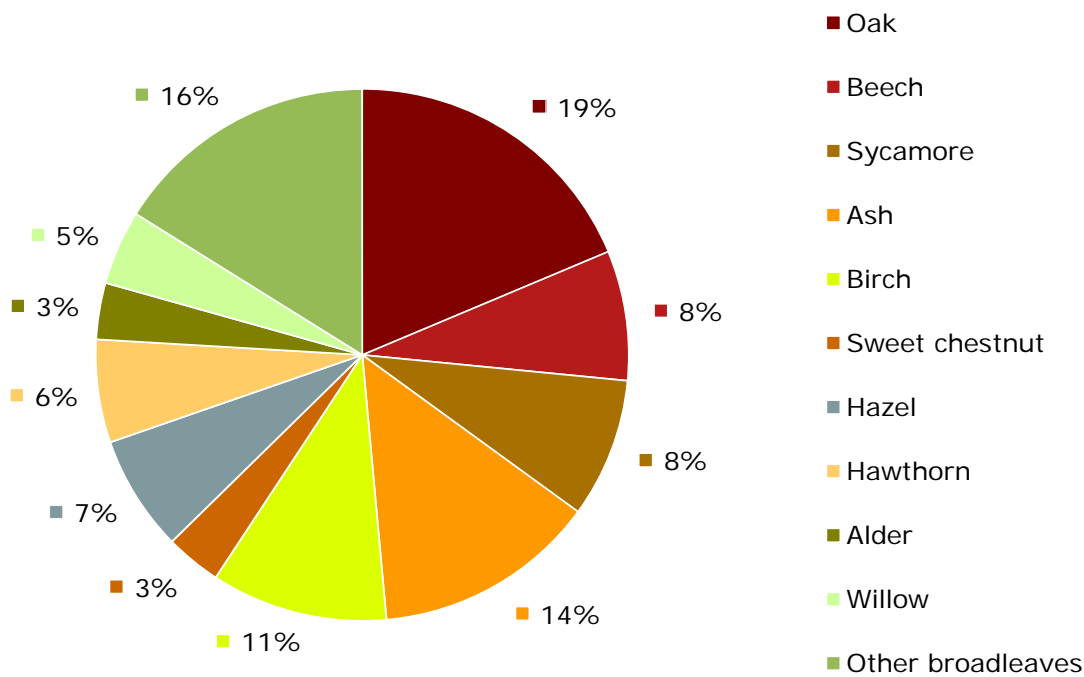


Figure 13 Stocked area by principal broadleaved species



Part 2 – what our woodlands are like today

Figure 14 Stocked area of all conifers by aligned area

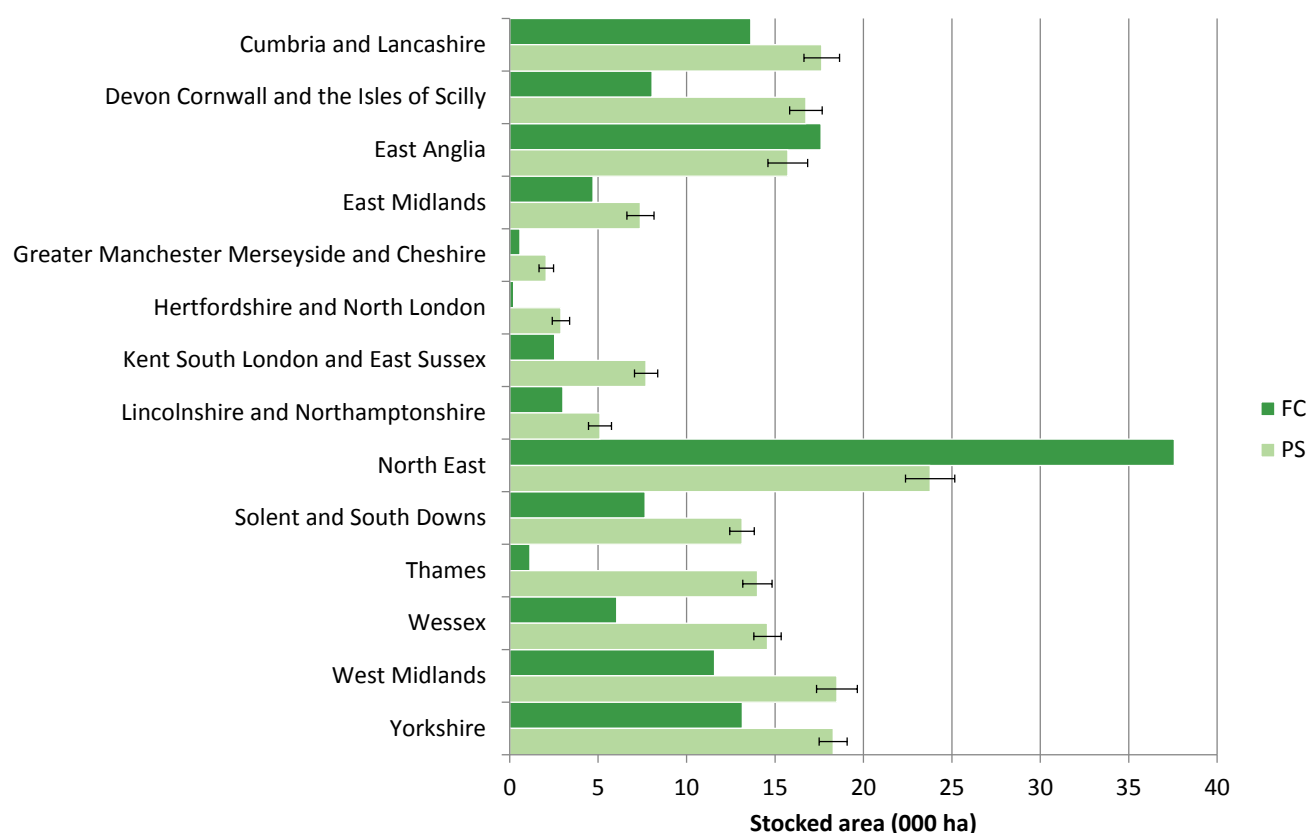


Table 11 Stocked area of all conifers by aligned area

Aligned area	All conifers			
	FC	Private sector		Total
	area (000 ha)		SE%	area (000 ha)
England	127.5	177.6	2	305.1
Cumbria and Lancashire	13.6	17.6	6	31.3
Devon and Cornwall	8.1	16.7	5	24.8
East Anglia	17.6	15.7	7	33.3
East Midlands	4.7	7.4	10	12.1
Gtr Mancs Mersey and Ches	0.6	2.1	20	2.6
Herts and North London	0.2	2.9	17	3.1
Kent S London and E Sussex	2.5	7.7	9	10.2
Lincs and Northants	3.0	5.1	13	8.1
North East	37.6	23.8	6	61.3
Solent and South Downs	7.7	13.1	5	20.8
Thames	1.1	14.0	6	15.1
Wessex	6.0	14.6	5	20.6
West Midlands	11.6	18.5	6	30.1
Yorkshire	13.2	18.3	4	31.4

Part 2 – what our woodlands are like today

Figure 15 Stocked area of all broadleaves by aligned area

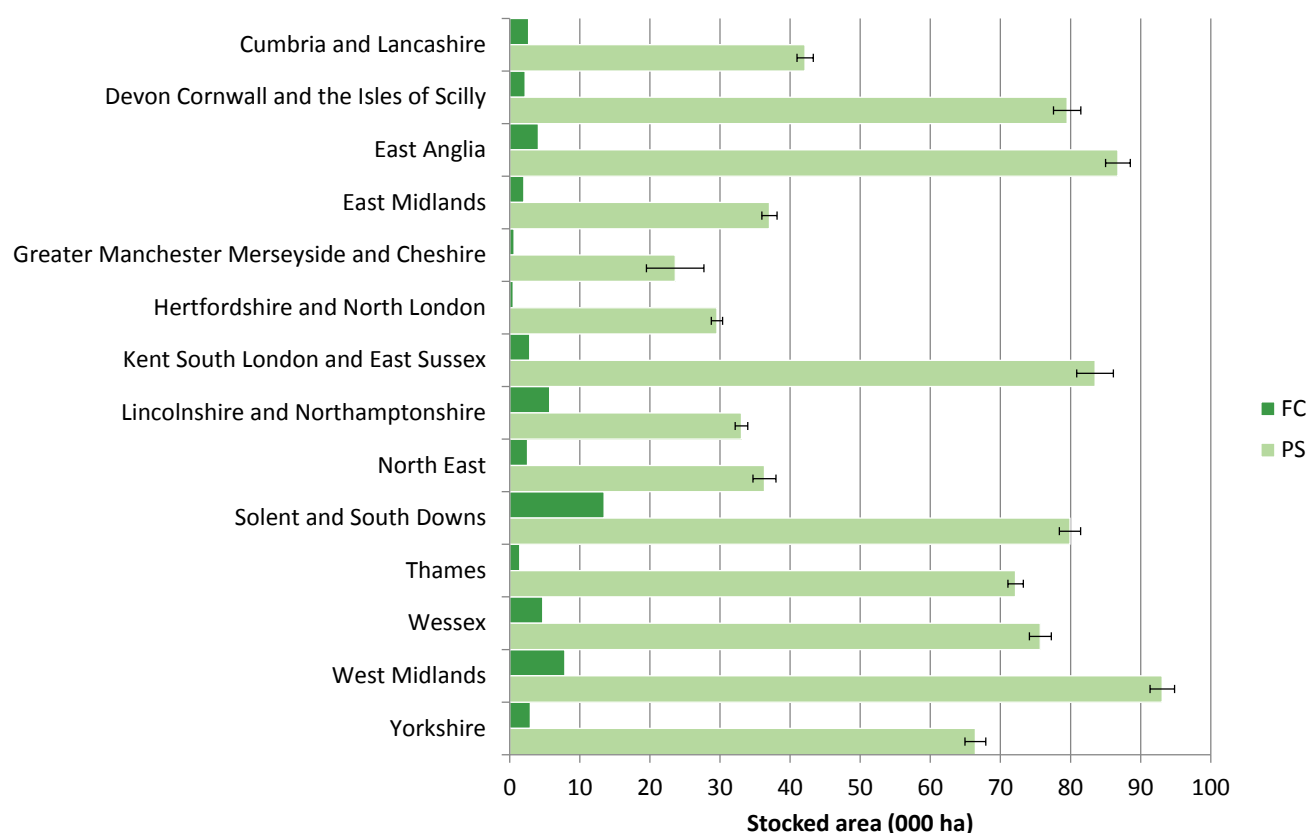


Table 12 Stocked area of all broadleaves by aligned area

Aligned area	All broadleaves			
	FC	Private sector		Total
	area (000 ha)	SE%	area (000 ha)	area (000 ha)
England	53.7	1	838.8	892.5
Cumbria and Lancashire	2.7	3	42.1	44.8
Devon and Cornwall	2.2	2	79.5	81.7
East Anglia	4.1	2	86.8	90.9
East Midlands	2.0	3	37.0	39.1
Gtr Mancs Mersey and Ches	0.6	17	23.6	24.2
Herts and North London	0.5	3	29.6	30.1
Kent S London and E Sussex	2.8	3	83.5	86.3
Lincs and Northants	5.7	3	33.1	38.8
North East	2.5	5	36.3	38.9
Solent and South Downs	13.5	2	79.9	93.4
Thames	1.4	2	72.2	73.6
Wessex	4.7	2	75.7	80.4
West Midlands	7.9	2	93.1	101.0
Yorkshire	2.9	2	66.4	69.4

Part 2 – what our woodlands are like today

Figure 16 Stocked area of all species by aligned area

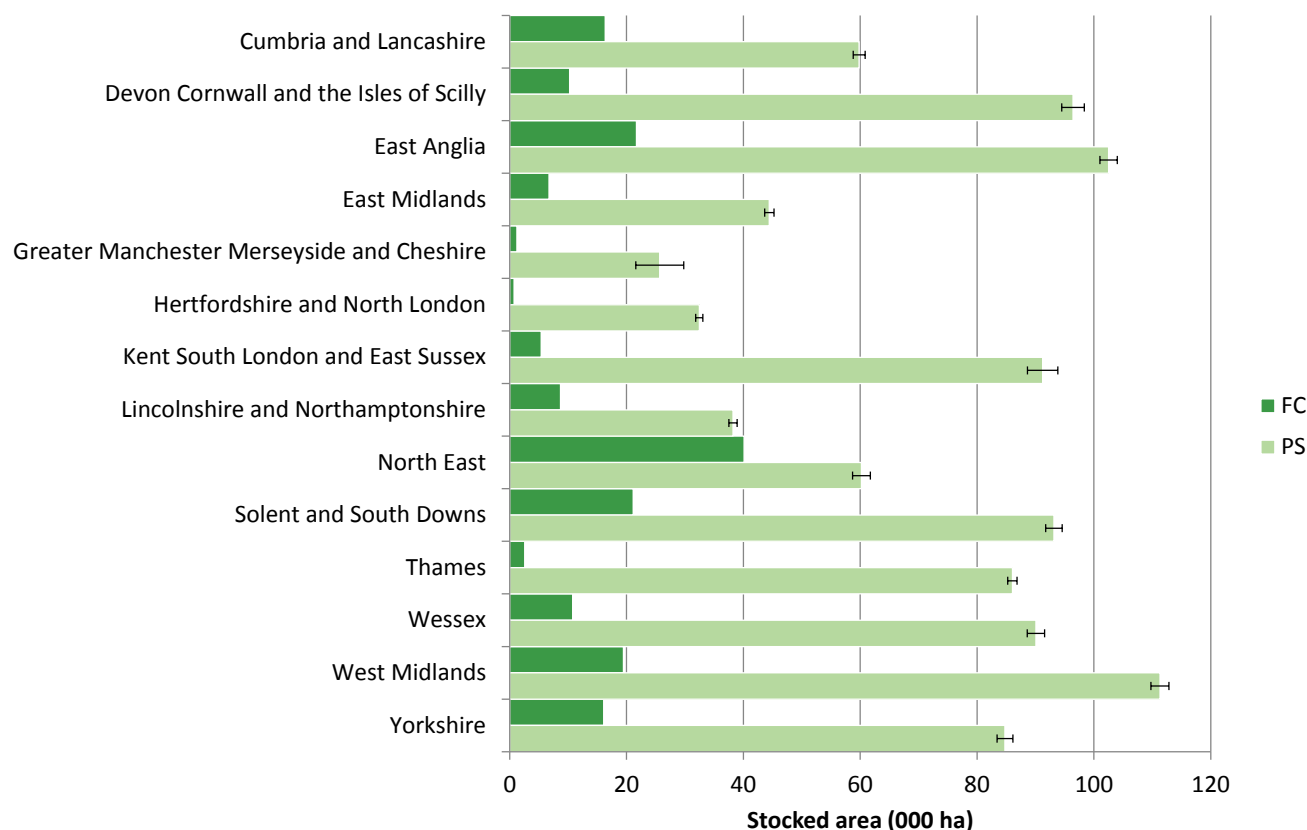


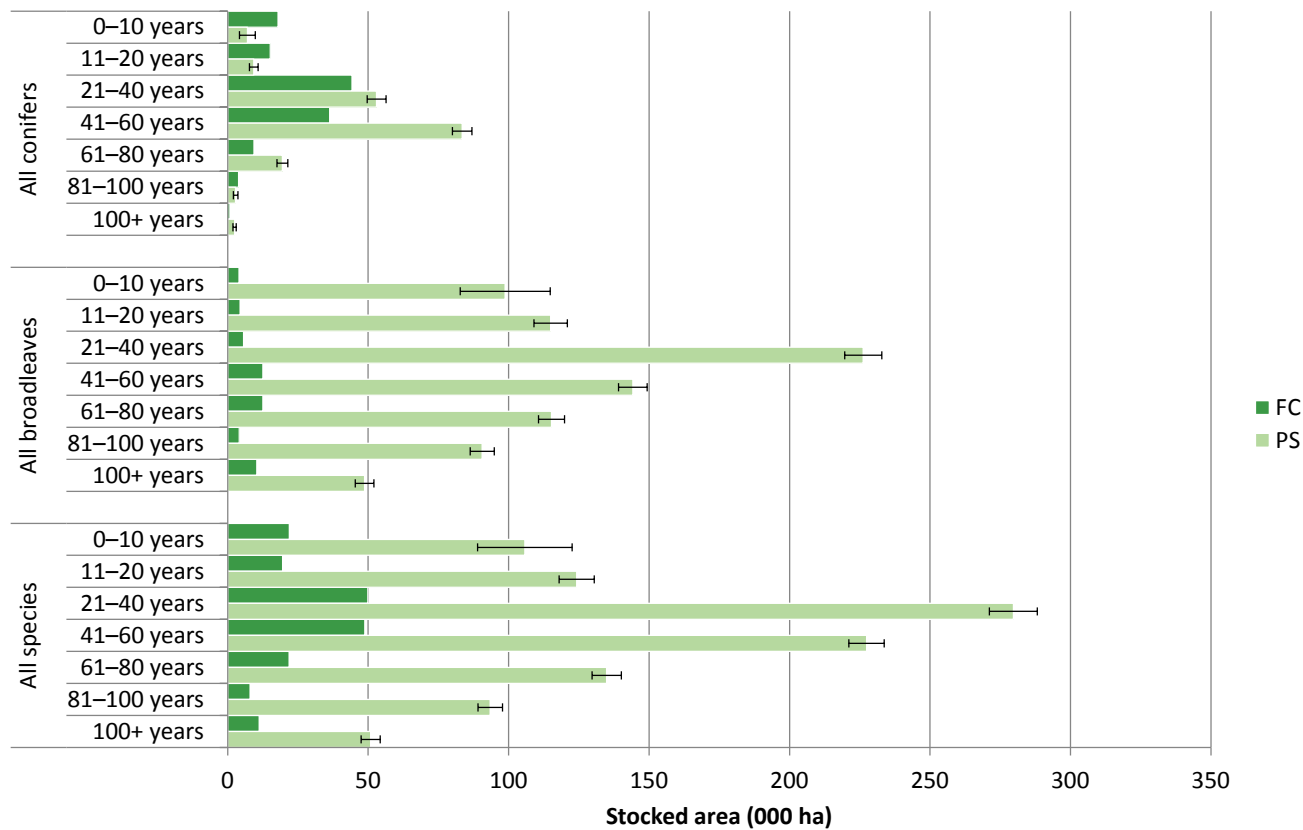
Table 13 Stocked area of all species by aligned area

Aligned area	All species			
	FC	Private sector		Total
	area (000 ha)	SE%	area (000 ha)	area (000 ha)
England	181.2	1	1,016.4	1,197.5
Cumbria and Lancashire	16.3	2	59.8	76.2
Devon and Cornwall	10.3	2	96.4	106.7
East Anglia	21.7	1	102.5	124.2
East Midlands	6.7	2	44.4	51.2
Gtr Mancs Mersey and Ches	1.2	16	25.7	26.9
Herts and North London	0.7	2	32.5	33.2
Kent S London and E Sussex	5.4	3	91.2	96.6
Lincs and Northants	8.7	2	38.2	46.9
North East	40.1	3	60.2	100.3
Solent and South Downs	21.1	2	93.2	114.3
Thames	2.6	1	86.0	88.6
Wessex	10.8	2	90.1	100.8
West Midlands	19.5	1	111.3	130.8
Yorkshire	16.1	2	84.8	100.9

Part 2 – what our woodlands are like today

Stocked area by age class

Figure 17 Stocked area by age class



Part 2 – what our woodlands are like today

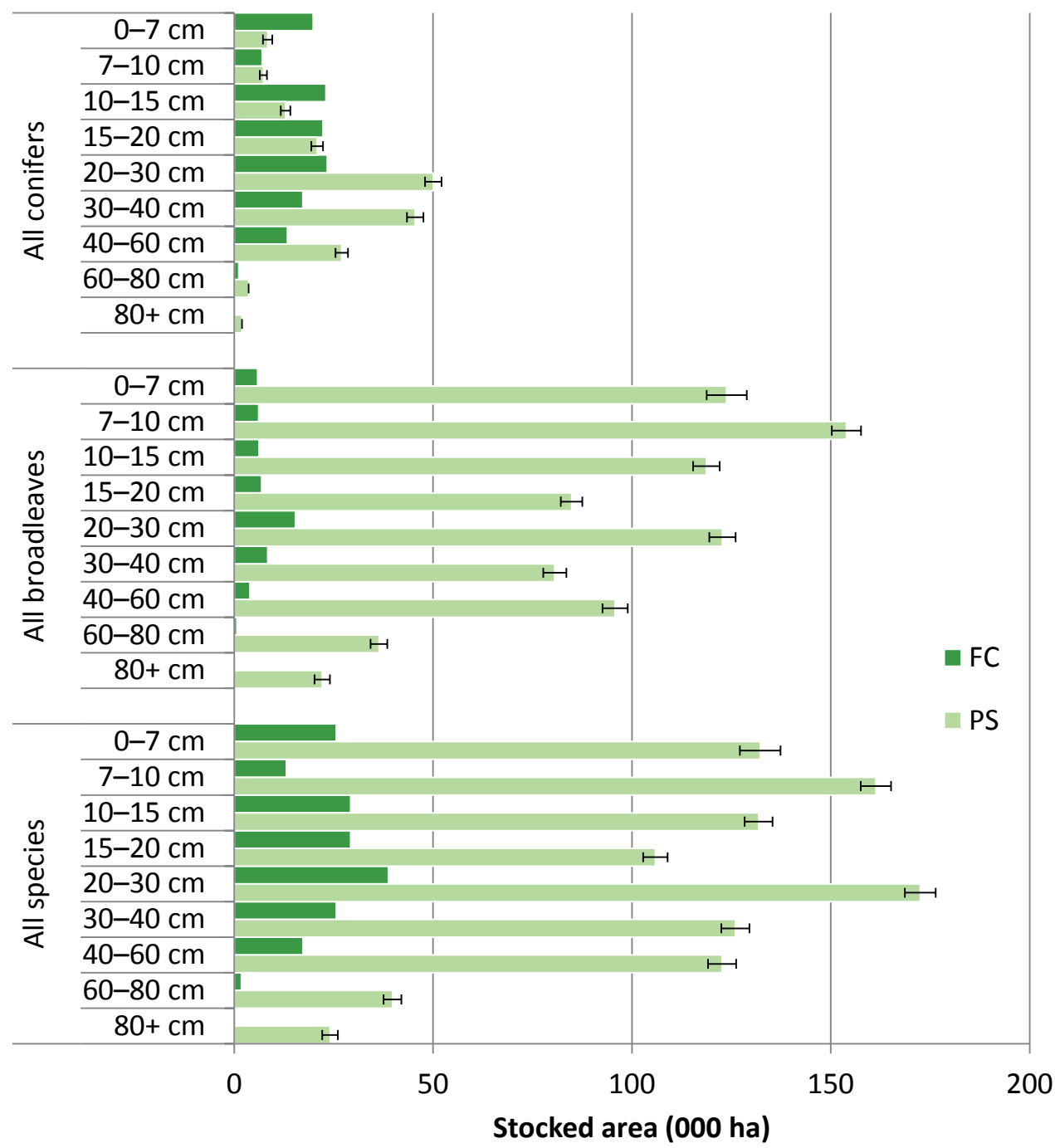
Table 14 Stocked area by age class

Age class (years)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
All conifers				
0–10	17.9	7.0	41	24.9
11–20	15.2	9.2	17	24.4
21–40	44.2	53.0	6	97.3
41–60	36.3	83.5	4	119.8
61–80	9.3	19.5	10	28.8
81–100	3.9	2.8	28	6.7
100+	0.8	2.5	23	3.3
Total	127.5	177.6	2	305.1
All broadleaves				
0–10	4.1	98.8	16	102.8
11–20	4.4	115.0	5	119.4
21–40	5.7	226.2	3	231.9
41–60	12.5	144.2	4	156.7
61–80	12.5	115.3	4	127.8
81–100	4.1	90.6	5	94.7
100+	10.4	48.7	7	59.1
Total	53.7	838.8	1	892.5
All species				
0–10	22.0	105.8	16	127.8
11–20	19.6	124.3	5	143.8
21–40	49.9	279.7	3	329.6
41–60	48.8	227.4	3	276.2
61–80	21.9	134.9	4	156.8
81–100	8.0	93.5	5	101.5
100+	11.2	50.9	7	62.1
Total	181.2	1,016.4	1	1,197.5

Part 2 – what our woodlands are like today

Stocked area by mean stand dbh class

Figure 18 Stocked area by mean stand dbh class



Part 2 – what our woodlands are like today

Table 15 Stocked area by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
All conifers				
0–7	19.8	8.4	14	28.2
7–10	7.0	7.3	12	14.3
10–15	23.0	12.9	9	35.9
15–20	22.3	20.9	7	43.2
20–30	23.4	50.0	4	73.4
30–40	17.3	45.5	5	62.7
40–60	13.4	27.0	6	40.4
60–80	1.1	3.6	0	4.7
80+	0.2	2.0	0	2.2
Total	127.5	177.6	2	305.1
All broadleaves				
0–7	5.9	123.8	4	129.7
7–10	6.1	153.9	2	160.0
10–15	6.2	118.7	3	124.9
15–20	6.9	84.8	3	91.7
20–30	15.4	122.7	3	138.1
30–40	8.4	80.6	4	89.0
40–60	3.9	95.8	3	99.7
60–80	0.7	36.4	6	37.1
80+	0.2	22.1	9	22.3
Total	53.7	838.8	1	892.5
All species				
0–7	25.7	132.2	4	157.9
7–10	13.1	161.3	2	174.5
10–15	29.3	131.8	3	161.1
15–20	29.2	105.9	3	135.1
20–30	38.7	172.5	2	211.2
30–40	25.7	126.0	3	151.6
40–60	17.3	122.7	3	139.9
60–80	1.8	39.8	6	41.6
80+	0.4	24.1	8	24.5
Total	181.2	1,016.4	1	1,197.5

Part 2 – what our woodlands are like today

Clearfelled area

Figure 19 Clearfelled area by aligned area

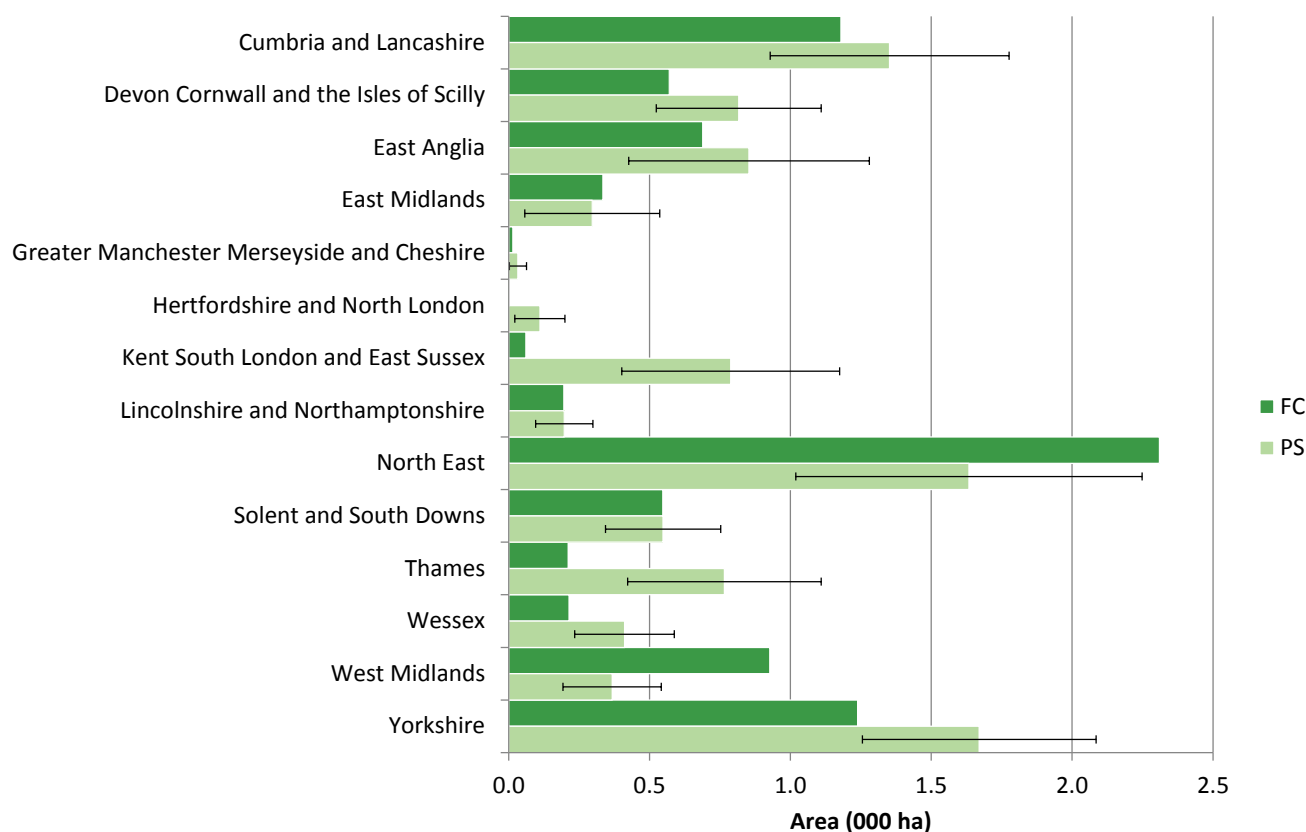


Table 16 Clearfelled area

Clearfelled area	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
England	8.5	9.8	12	18.3
Cumbria and Lancashire	1.2	1.4	31	2.5
Devon and Cornwall	0.6	0.8	36	1.4
East Anglia	0.7	0.9	50	1.5
East Midlands	0.3	0.3	81	0.6
Gtr Mancs Mersey and Ches	< 0.1	< 0.1	93	< 0.1
Herts and North London	< 0.1	0.1	81	0.1
Kent S London and E Sussex	< 0.1	0.8	49	0.8
Lincs and Northants	0.2	0.2	52	0.4
North East	2.3	1.6	38	3.9
Solent and South Downs	0.5	0.5	37	1.1
Thames	0.2	0.8	45	1.0
Wessex	0.2	0.4	43	0.6
West Midlands	0.9	0.4	47	1.3
Yorkshire	1.2	1.7	25	2.9

Part 2 – what our woodlands are like today

Comparison of mapped area estimates and stocked area estimates

Figure 20 Simplified comparison of mapped area and stocked area

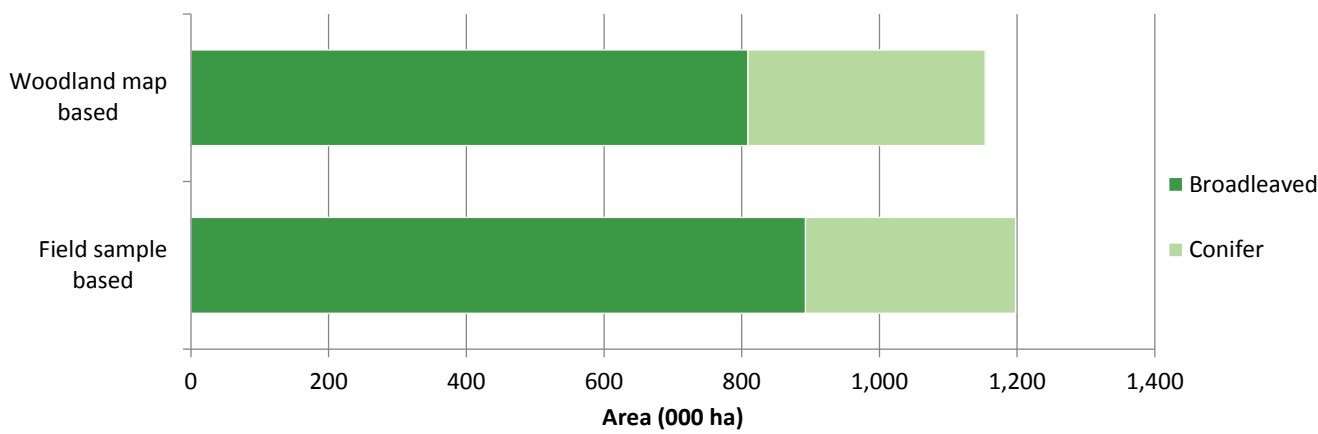


Table 17 Simplified comparison of mapped area and stocked area

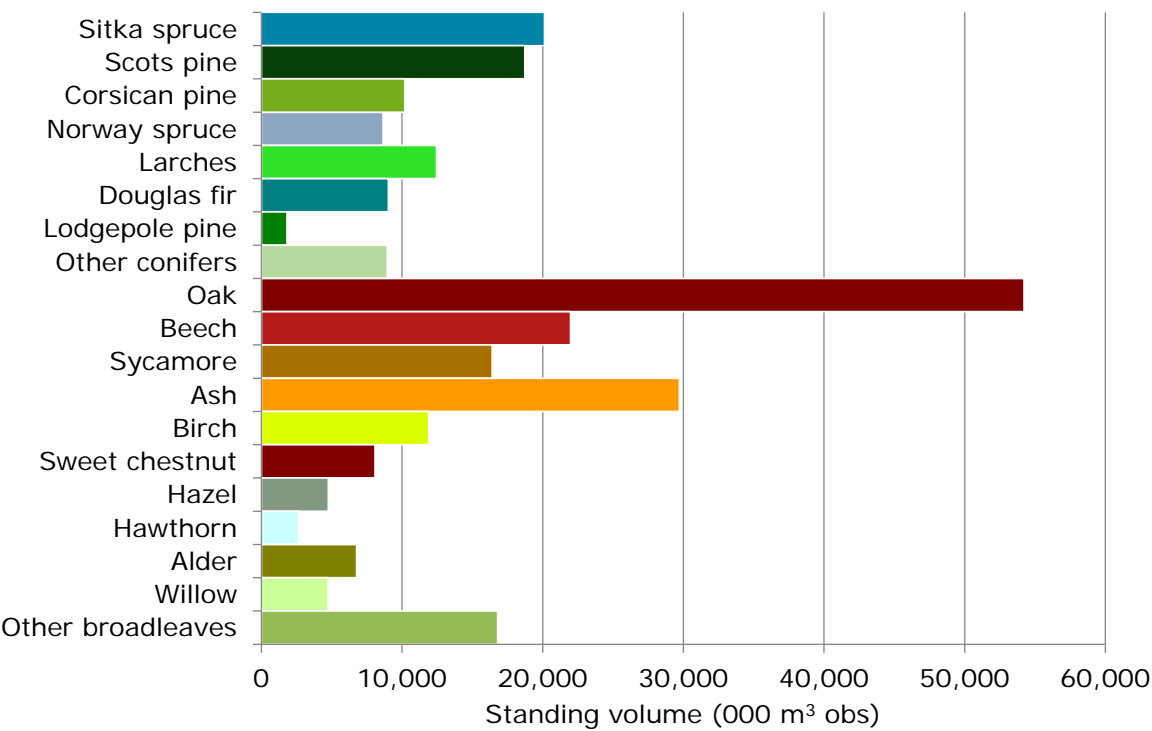
	Woodland map based	Field sample based
	area (000 ha)	
England		
Broadleaved	809.1	892.5
Conifer	344.4	305.1

The broadleaved class includes broadleaved, mixed mainly broadleaved, coppice and coppice with standards. The conifer class includes conifer and mixed mainly conifer. The transition class is excluded from this table as it is not possible to differentiate between conifer and broadleaves with aerial photography interpretation. The area of young trees is included in the field sample based estimates.

Standing volume

Standing volume by species

Figure 21 Standing volume by principal tree species



Part 2 – what our woodlands are like today

Table 18 Standing volume by principal tree species

Principal species	FC	Private sector		Total
	volume (000 m ³ obs)	volume (000 m ³ obs)	SE%	volume (000 m ³ obs)
Conifers				
Sitka spruce	8,794	11,322	8	20,116
Scots pine	3,869	14,865	5	18,734
Corsican pine	5,382	4,813	10	10,195
Norway spruce	1,674	6,981	8	8,655
Larches	1,678	10,778	6	12,456
Douglas fir	2,638	6,388	10	9,026
Lodgepole pine	814	1,012	21	1,826
Other conifers	1,527	7,420	10	8,947
All conifers	26,376	63,620	2	89,996
Broadleaves				
Oak	3,345	50,885	3	54,230
Beech	2,802	19,173	6	21,976
Sycamore	150	16,253	6	16,404
Ash	417	29,305	4	29,722
Birch	506	11,383	4	11,889
Sweet chestnut	127	7,944	9	8,071
Hazel	46	4,718	6	4,764
Hawthorn	< 1	2,645	6	2,645
Alder	70	6,693	8	6,763
Willow	< 1	4,747	8	4,748
Other broadleaves	1,296	15,493	5	16,789
All broadleaves	8,761	169,181	2	177,942
All species				
All species	35,137	232,722	1	267,859

Part 2 – what our woodlands are like today

Figure 22 Standing volume by principal conifer species

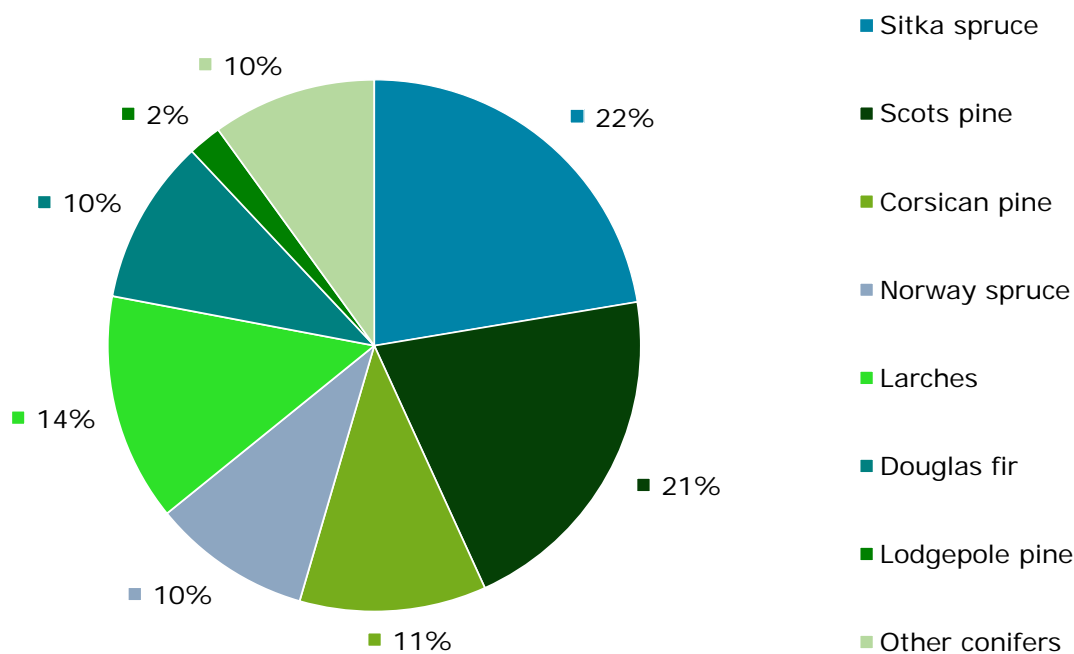
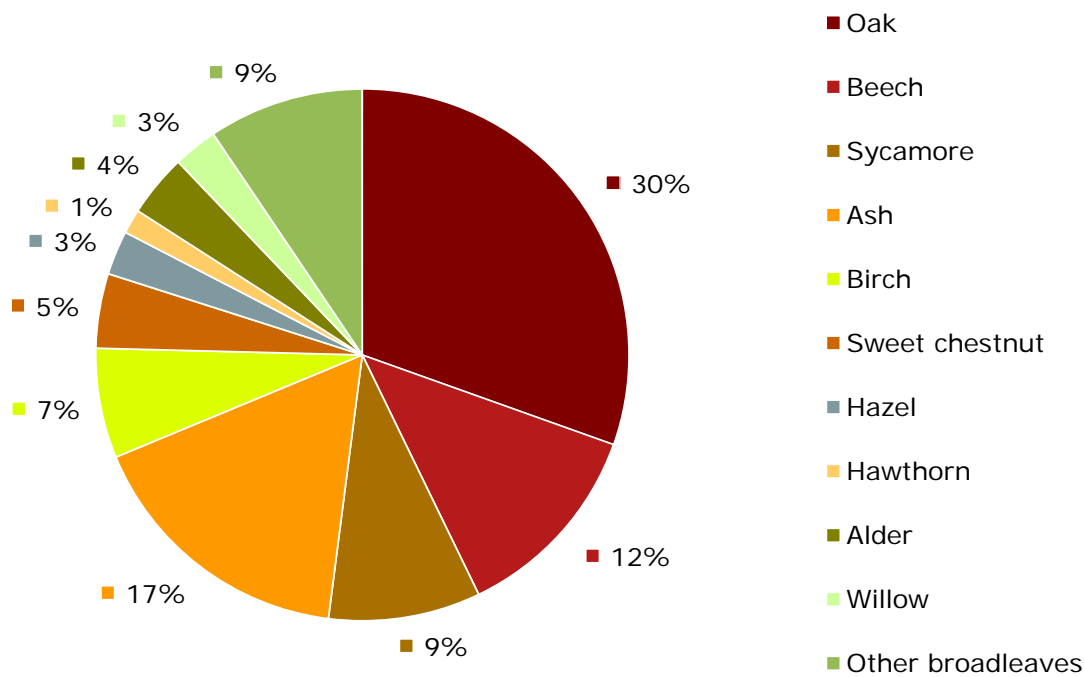


Figure 23 Standing volume by principal broadleaved species



Part 2 – what our woodlands are like today

Figure 24 Standing volume of all conifers by aligned area

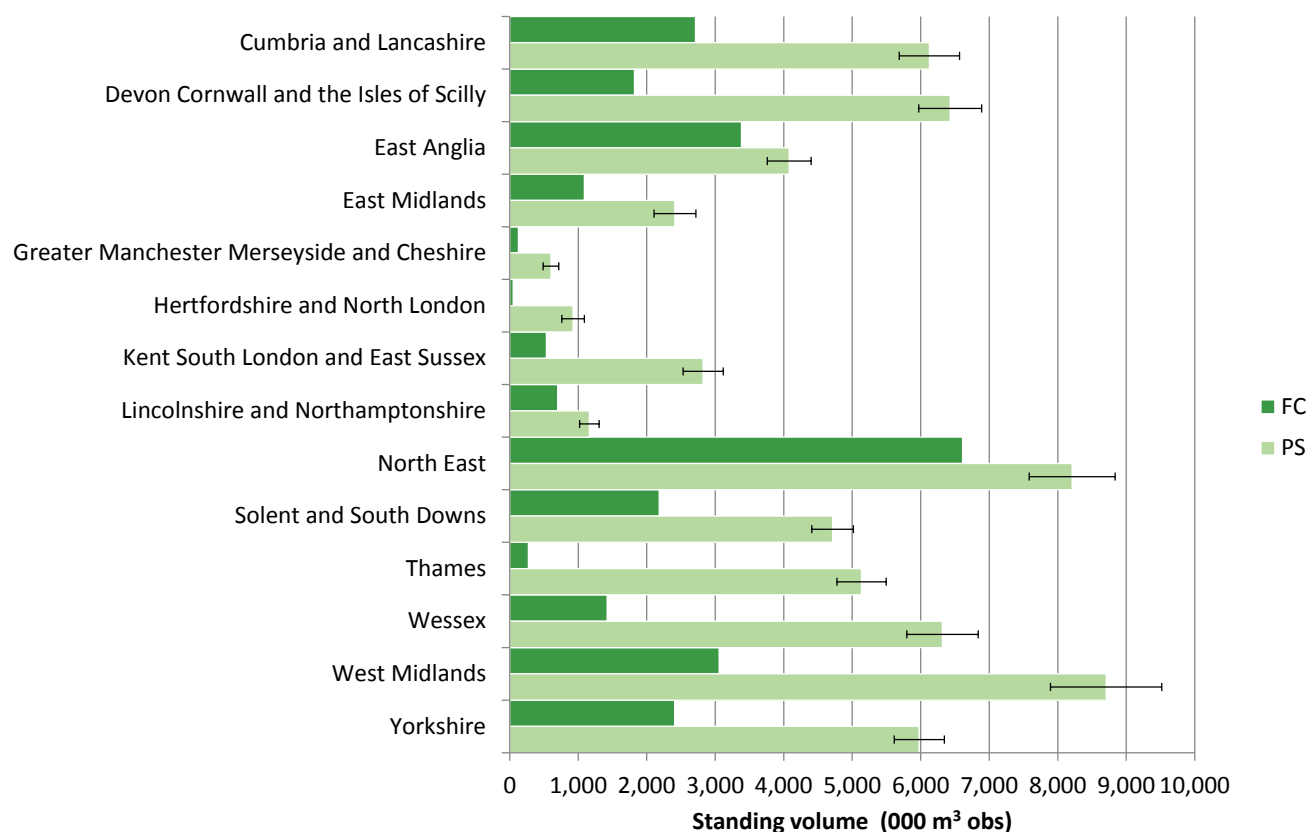


Table 19 Standing volume of all conifers by aligned area

Aligned area	All conifers			
	FC	Private sector		Total
	volume (000 m³ obs)		SE%	volume (000 m³ obs)
England	26,376	63,620	2	89,996
Cumbria and Lancashire	2,712	6,127	7	8,839
Devon and Cornwall	1,822	6,430	7	8,251
East Anglia	3,383	4,079	8	7,462
East Midlands	1,088	2,411	13	3,500
Gtr Mancs Mersey and Ches	128	601	19	729
Herts and North London	51	925	18	976
Kent S London and E Sussex	536	2,823	10	3,359
Lincs and Northants	701	1,162	12	1,863
North East	6,611	8,211	8	14,822
Solent and South Downs	2,183	4,713	6	6,896
Thames	273	5,135	7	5,408
Wessex	1,423	6,317	8	7,740
West Midlands	3,058	8,707	9	11,765
Yorkshire	2,406	5,978	6	8,384

Part 2 – what our woodlands are like today

Figure 25 Standing volume of all broadleaves by aligned area

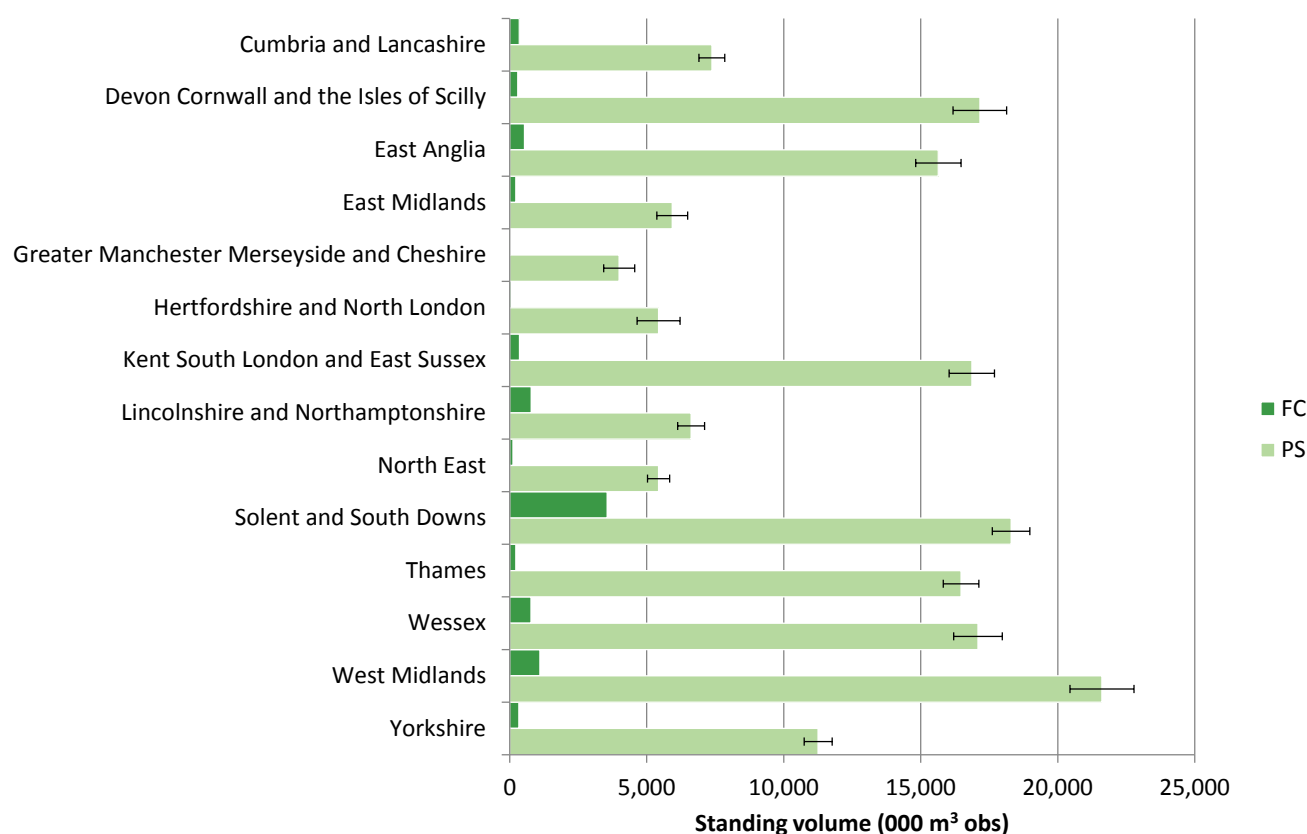


Table 20 Standing volume of all broadleaves by aligned area

Aligned area	All broadleaves			
	FC	Private sector		Total
	volume (000 m³ obs)		SE%	volume (000 m³ obs)
England	8,761	169,181	2	177,942
Cumbria and Lancashire	348	7,378	6	7,726
Devon and Cornwall	293	17,158	6	17,451
East Anglia	538	15,643	5	16,181
East Midlands	221	5,928	9	6,149
Gtr Mancs Mersey and Ches	52	3,995	14	4,046
Herts and North London	57	5,433	14	5,489
Kent S London and E Sussex	358	16,864	5	17,222
Lincs and Northants	784	6,621	7	7,405
North East	121	5,436	7	5,557
Solent and South Downs	3,558	18,297	4	21,855
Thames	220	16,472	4	16,691
Wessex	777	17,088	5	17,864
West Midlands	1,105	21,614	5	22,719
Yorkshire	331	11,257	5	11,588

Part 2 – what our woodlands are like today

Figure 26 Standing volume of all species by aligned area

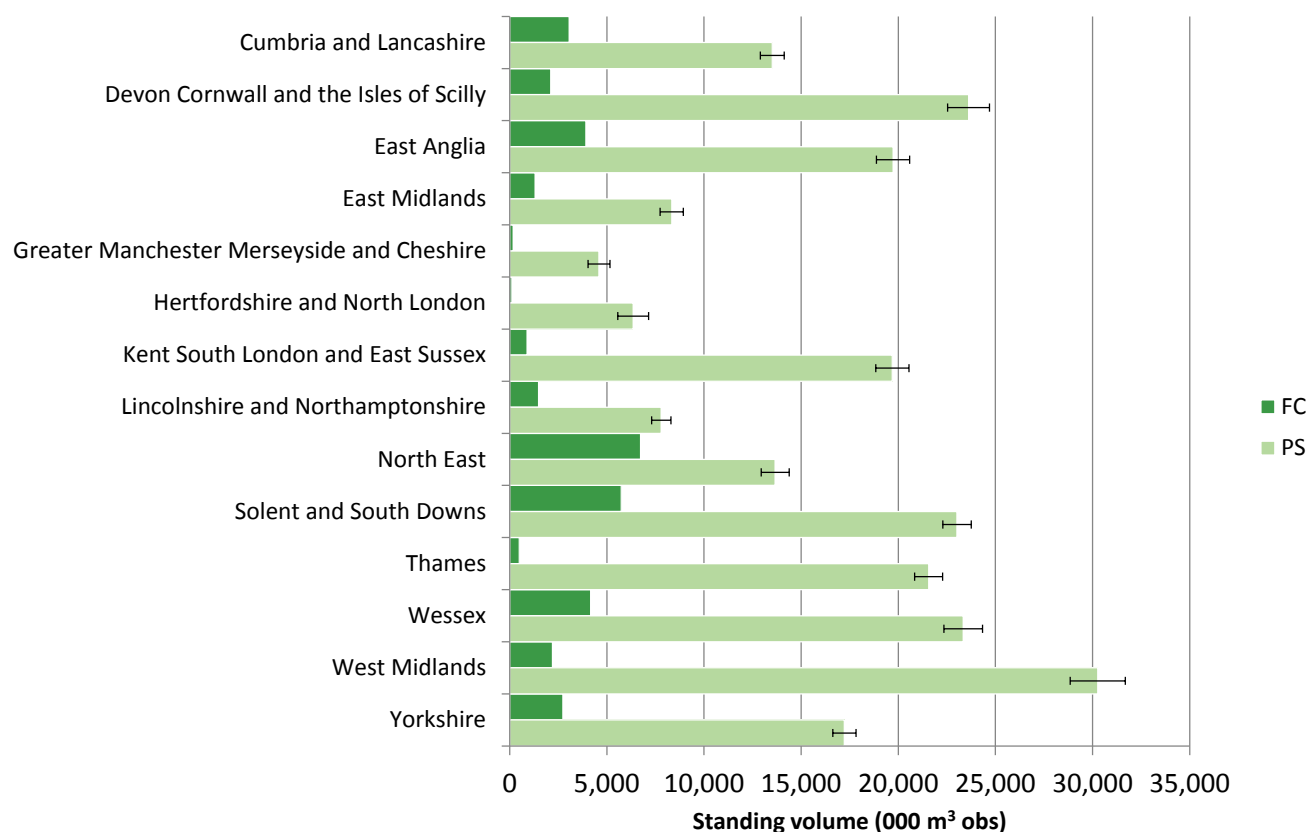


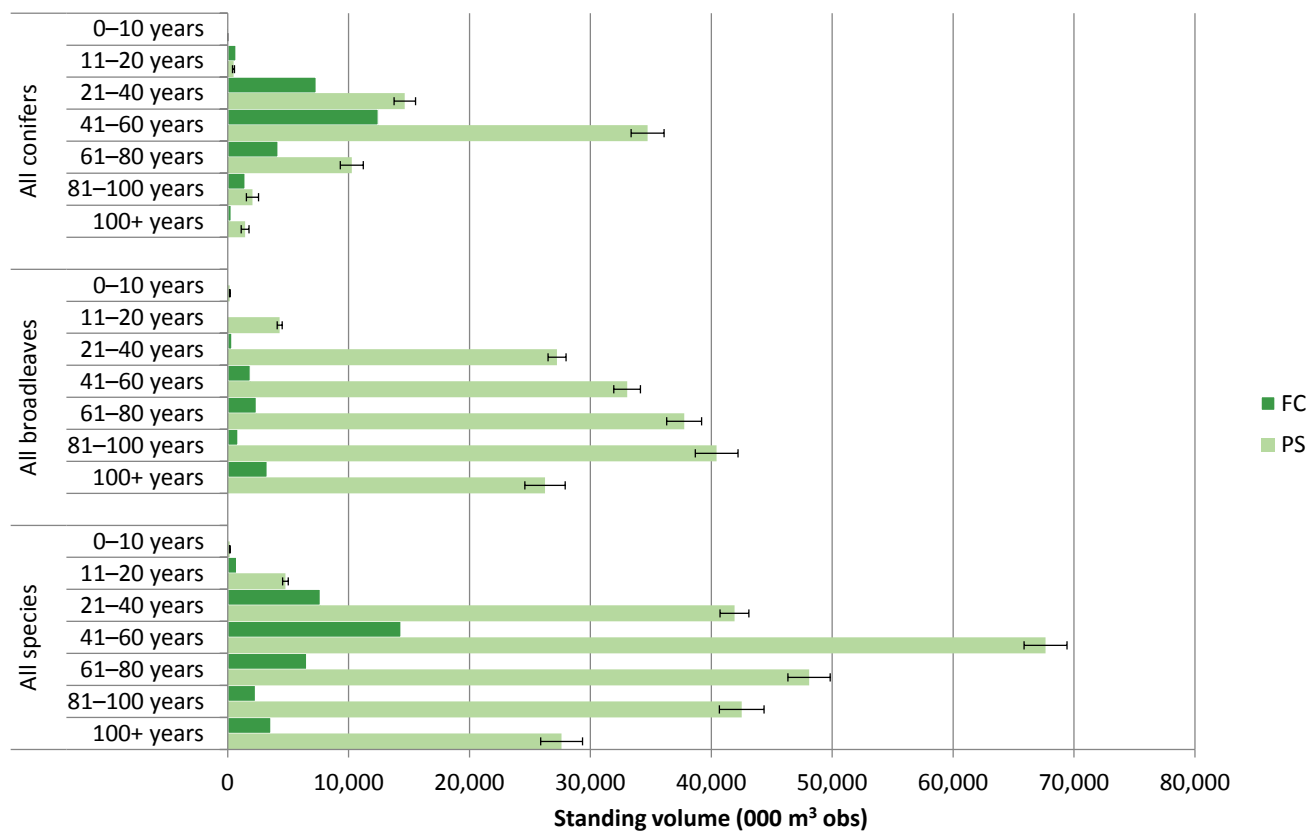
Table 21 Standing volume of all species by aligned area

Aligned area	All species			
	FC	Private sector		Total
	volume (000 m³ obs)		SE%	volume (000 m³ obs)
England	35,137	232,722	1	267,859
Cumbria and Lancashire	3,060	13,512	5	16,572
Devon and Cornwall	2,115	23,618	5	25,734
East Anglia	3,921	19,730	4	23,651
East Midlands	1,309	8,339	7	9,648
Gtr Mancs Mersey and Ches	180	4,596	12	4,775
Herts and North London	107	6,358	13	6,465
Kent S London and E Sussex	894	19,693	4	20,588
Lincs and Northants	1,485	7,797	6	9,282
North East	6,731	13,663	5	20,395
Solent and South Downs	5,741	23,021	3	28,762
Thames	493	21,562	3	22,055
Wessex	4,163	23,342	4	27,505
West Midlands	2,199	30,266	5	32,466
Yorkshire	2,737	17,224	3	19,962

Part 2 – what our woodlands are like today

Standing volume by age class

Figure 27 Standing volume by age class



Part 2 – what our woodlands are like today

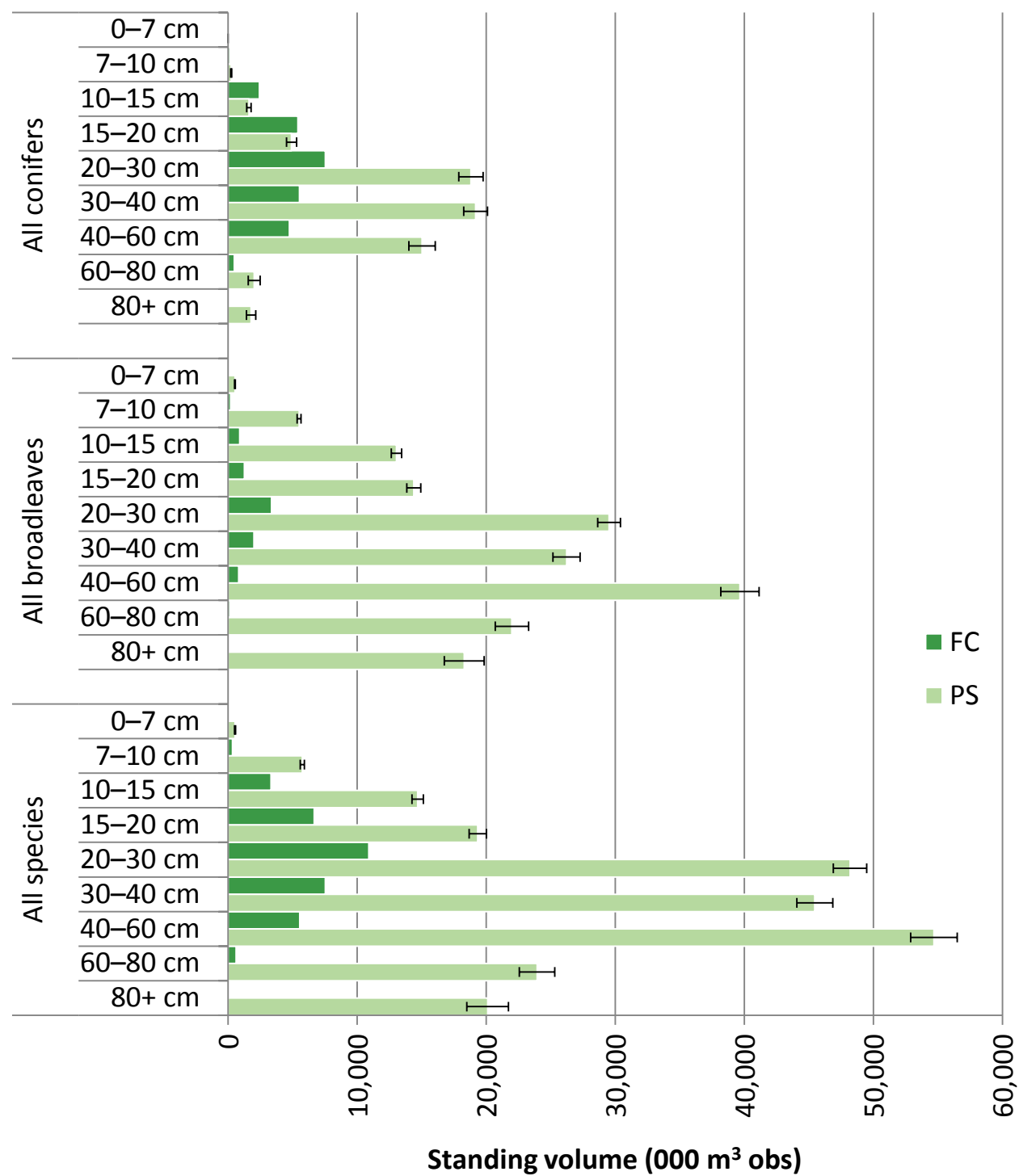
Table 22 Standing volume by age class

Age class (years)	FC	Private sector		Total
	volume (000 m ³ obs)	volume (000 m ³ obs)	SE%	volume (000 m ³ obs)
All conifers				
0–10	5	3	43	8
11–20	694	481	16	1,174
21–40	7,316	14,648	6	21,964
41–60	12,454	34,735	4	47,189
61–80	4,160	10,262	9	14,422
81–100	1,447	2,051	25	3,497
100+	300	1,441	22	1,741
Total	26,376	63,620	2	89,996
All broadleaves				
0–10	< 1	1	45	1
11–20	2	153	20	155
21–40	16	928	12	944
41–60	86	1,426	14	1,512
61–80	108	2,299	16	2,408
81–100	40	1,911	15	1,951
100+	96	660	36	755
Total	8,761	169,181	2	177,942
All species				
0–10	5	173	16	178
11–20	743	4,776	5	5,518
21–40	7,664	41,916	3	49,580
41–60	14,329	67,648	3	81,977
61–80	6,528	48,086	4	54,614
81–100	2,292	42,510	4	44,802
100+	3,576	27,614	6	31,189
Total	35,137	232,722	1	267,859

Part 2 – what our woodlands are like today

Standing volume by mean stand dbh class

Figure 28 Standing volume by stand mean dbh class



Part 2 – what our woodlands are like today

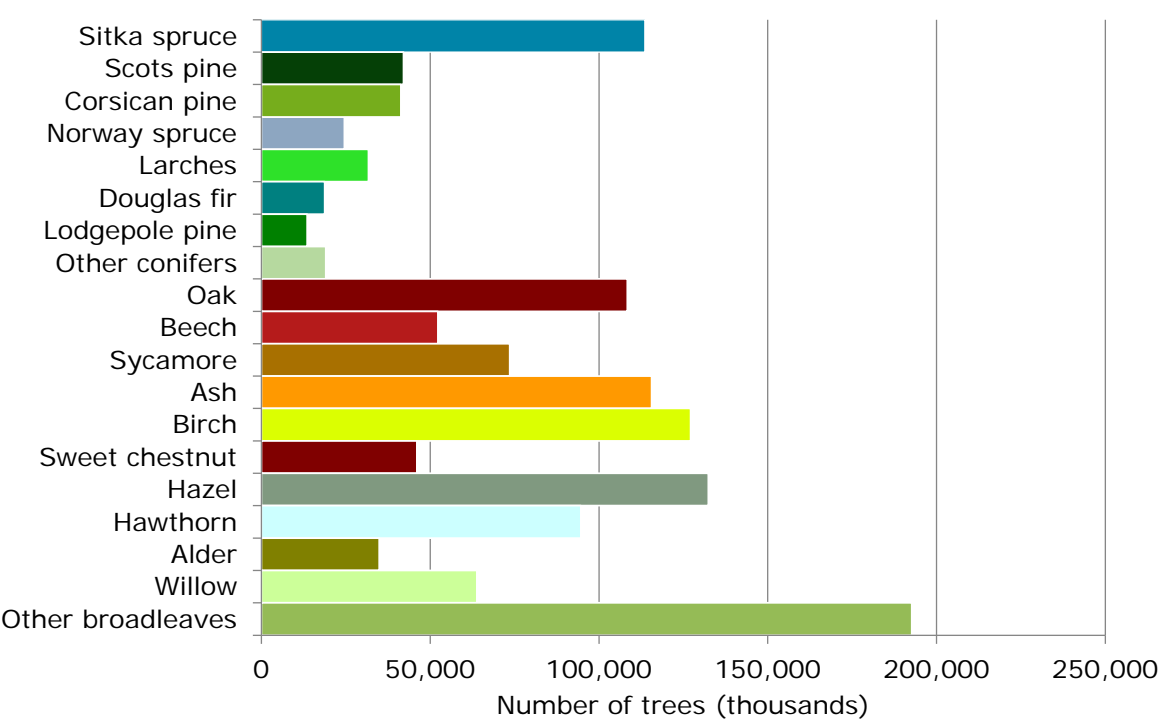
Table 23 Standing volume by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	volume (000 m ³ obs)	volume (000 m ³ obs)	SE%	volume (000 m ³ obs)
All conifers				
0–7	2	5	33	8
7–10	139	242	14	381
10–15	2,427	1,615	11	4,043
15–20	5,412	4,921	8	10,332
20–30	7,544	18,812	5	26,356
30–40	5,528	19,183	5	24,711
40–60	4,748	15,026	7	19,775
60–80	483	2,031	23	2,514
80+	93	1,784	20	1,877
Total	26,376	63,620	2	89,996
All broadleaves				
0–7	16	539	6	555
7–10	203	5,505	3	5,708
10–15	894	13,052	3	13,946
15–20	1,269	14,382	4	15,651
20–30	3,367	29,525	3	32,892
30–40	2,015	26,226	4	28,241
40–60	814	39,663	4	40,477
60–80	148	21,991	6	22,138
80+	35	18,298	8	18,333
Total	8,761	169,181	2	177,942
All species				
0–7	18	544	6	563
7–10	342	5,754	3	6,096
10–15	3,322	14,694	3	18,016
15–20	6,681	19,342	3	26,022
20–30	10,911	48,189	3	59,100
30–40	7,543	45,457	3	53,000
40–60	5,562	54,686	3	60,248
60–80	630	23,943	6	24,574
80+	128	20,113	8	20,240
Total	35,137	232,722	1	267,859

Number of measureable trees

Number of measureable trees by species

Figure 29 Number of measureable trees by principal tree species



Part 2 – what our woodlands are like today

Table 24 Number of measureable trees by principal tree species

Principal species	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
Conifers				
Sitka spruce	73,373	40,212	9	113,585
Scots pine	10,148	31,947	6	42,096
Corsican pine	29,765	11,537	12	41,302
Norway spruce	5,173	19,416	8	24,589
Larches	10,840	20,892	6	31,732
Douglas fir	7,797	10,937	11	18,734
Lodgepole pine	8,776	4,790	19	13,567
Other conifers	3,828	15,249	8	19,077
All conifers	149,701	155,504	3	305,205
Broadleaves				
Oak	16,920	91,446	3	108,366
Beech	9,518	42,774	5	52,293
Sycamore	871	72,688	4	73,560
Ash	3,085	112,497	4	115,581
Birch	8,256	118,876	4	127,132
Sweet chestnut	1,347	44,683	10	46,031
Hazel	805	131,601	4	132,407
Hawthorn	5	94,657	6	94,661
Alder	712	34,165	7	34,877
Willow	31	63,825	7	63,855
Other broadleaves	16,655	176,014	3	192,668
All broadleaves	58,205	983,274	1	1,041,479
All species				
All species	207,905	1,139,545	1	1,347,451

Part 2 – what our woodlands are like today

Figure 30 Number of measureable conifer trees by aligned area

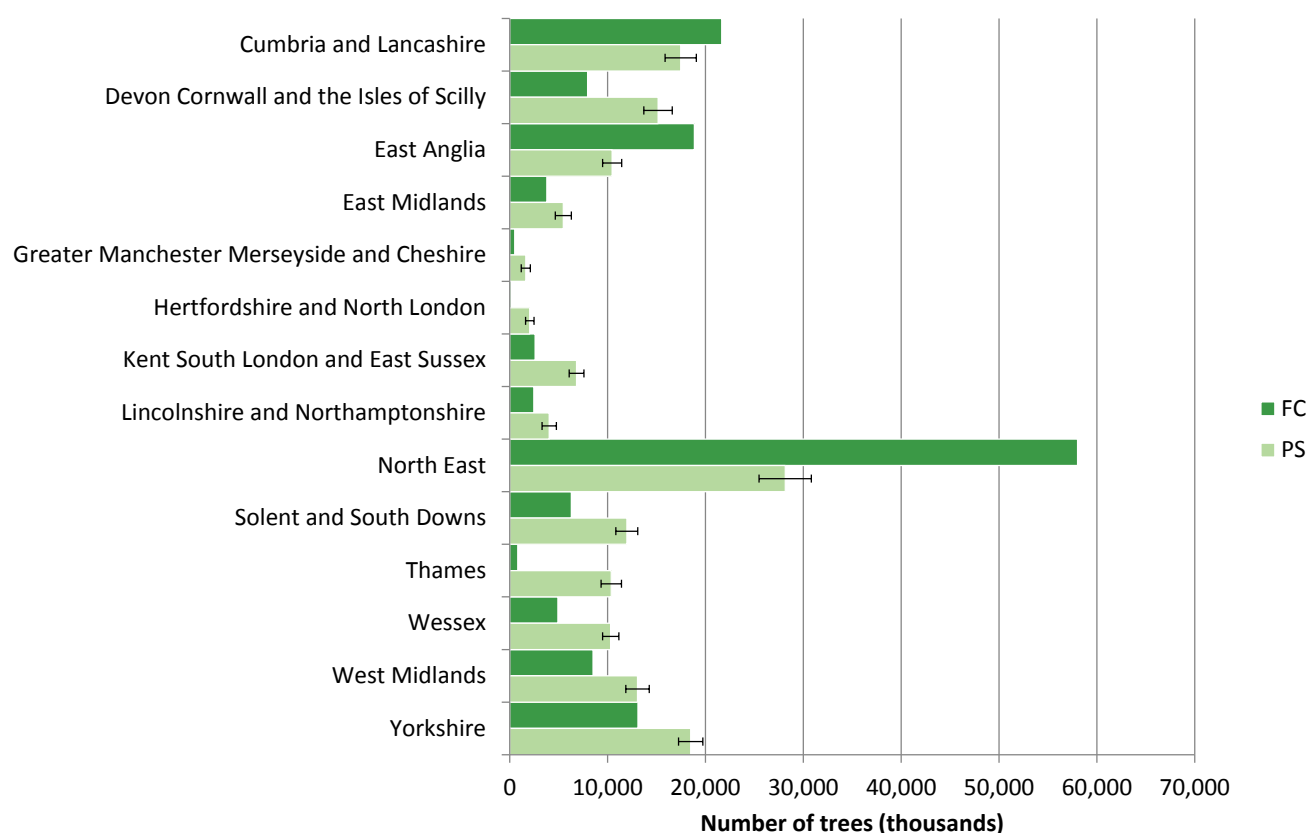


Table 25 Number of measureable conifer trees by aligned area

Aligned area	All conifers			
	FC	Private sector		Total
	(thousands)		SE%	(thousands)
England	149,701	155,504	3	305,205
Cumbria and Lancashire	21,655	17,479	9	39,135
Devon and Cornwall	7,958	15,158	10	23,115
East Anglia	18,879	10,463	9	29,342
East Midlands	3,794	5,484	15	9,278
Gtr Mancs Mersey and Ches	509	1,635	29	2,144
Herts and North London	152	2,051	21	2,203
Kent S London and E Sussex	2,598	6,826	11	9,424
Lincs and Northants	2,462	4,038	18	6,500
North East	58,022	28,155	9	86,177
Solent and South Downs	6,296	11,966	9	18,262
Thames	825	10,386	10	11,211
Wessex	4,919	10,318	8	15,237
West Midlands	8,522	13,061	9	21,583
Yorkshire	13,109	18,485	7	31,594

Part 2 – what our woodlands are like today

Figure 31 Number of measureable broadleaved trees by aligned area

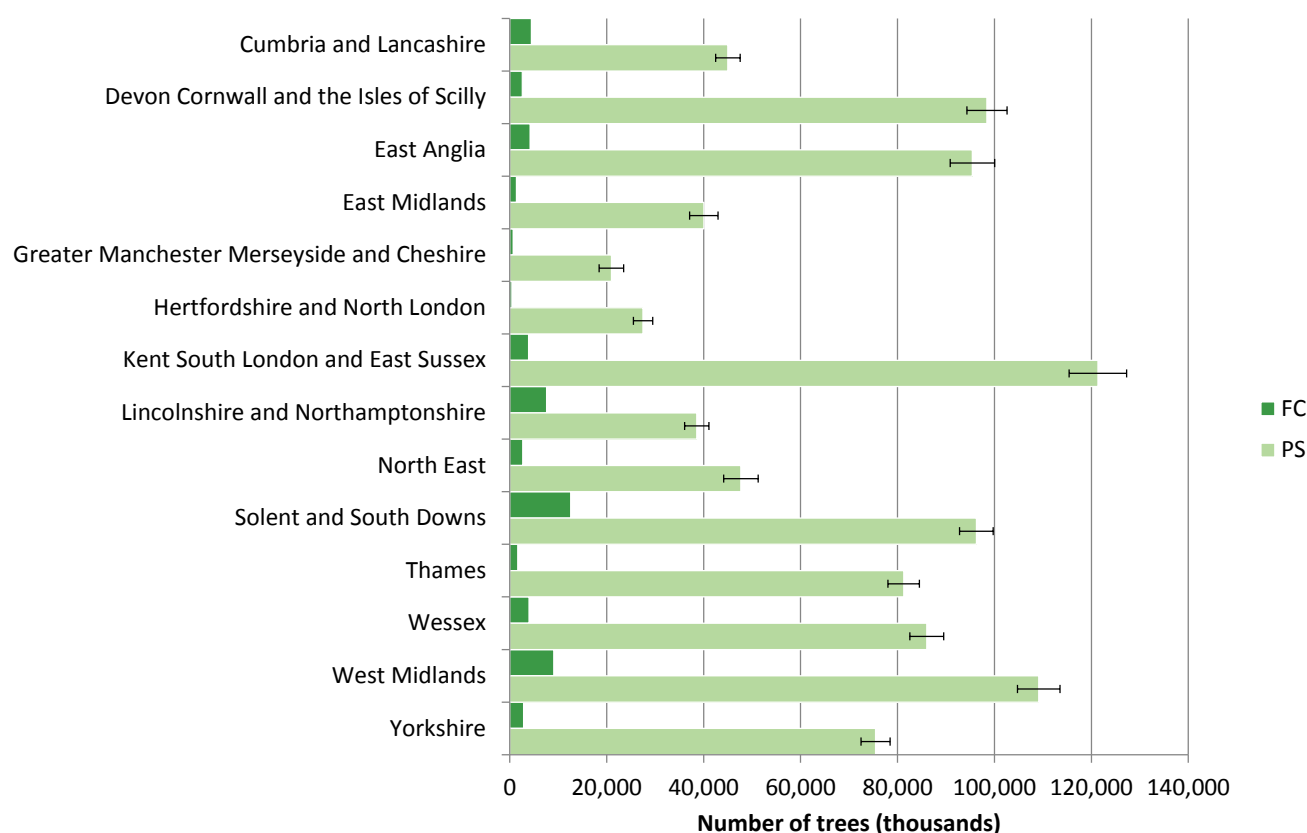


Table 26 Number of measureable broadleaved trees by aligned area

Aligned area	All broadleaves			
	FC	Private sector	Total	
	(thousands)		SE%	(thousands)
England	58,205	983,274	1	1,041,479
Cumbria and Lancashire	4,479	45,012	6	49,491
Devon and Cornwall	2,587	98,449	4	101,036
East Anglia	4,193	95,461	5	99,654
East Midlands	1,377	40,045	7	41,422
Gtr Mancs Mersey and Ches	713	20,975	12	21,688
Herts and North London	463	27,509	7	27,972
Kent S London and E Sussex	3,904	121,345	5	125,248
Lincs and Northants	7,590	38,592	6	46,182
North East	2,677	47,697	7	50,374
Solent and South Downs	12,596	96,279	4	108,875
Thames	1,660	81,289	4	82,950
Wessex	3,999	86,019	4	90,018
West Midlands	9,078	109,117	4	118,195
Yorkshire	2,889	75,484	4	78,373

Part 2 – what our woodlands are like today

Figure 32 Number of measureable trees by aligned area

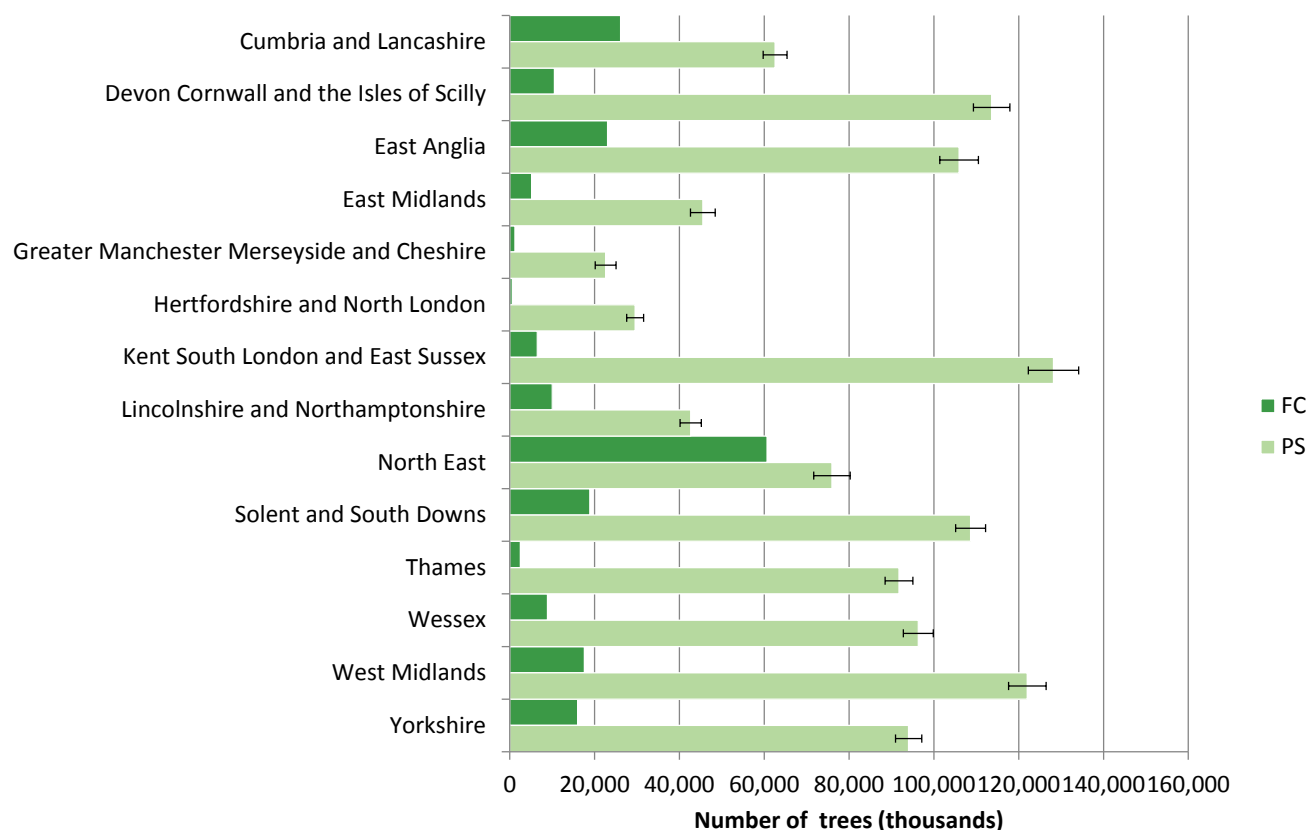


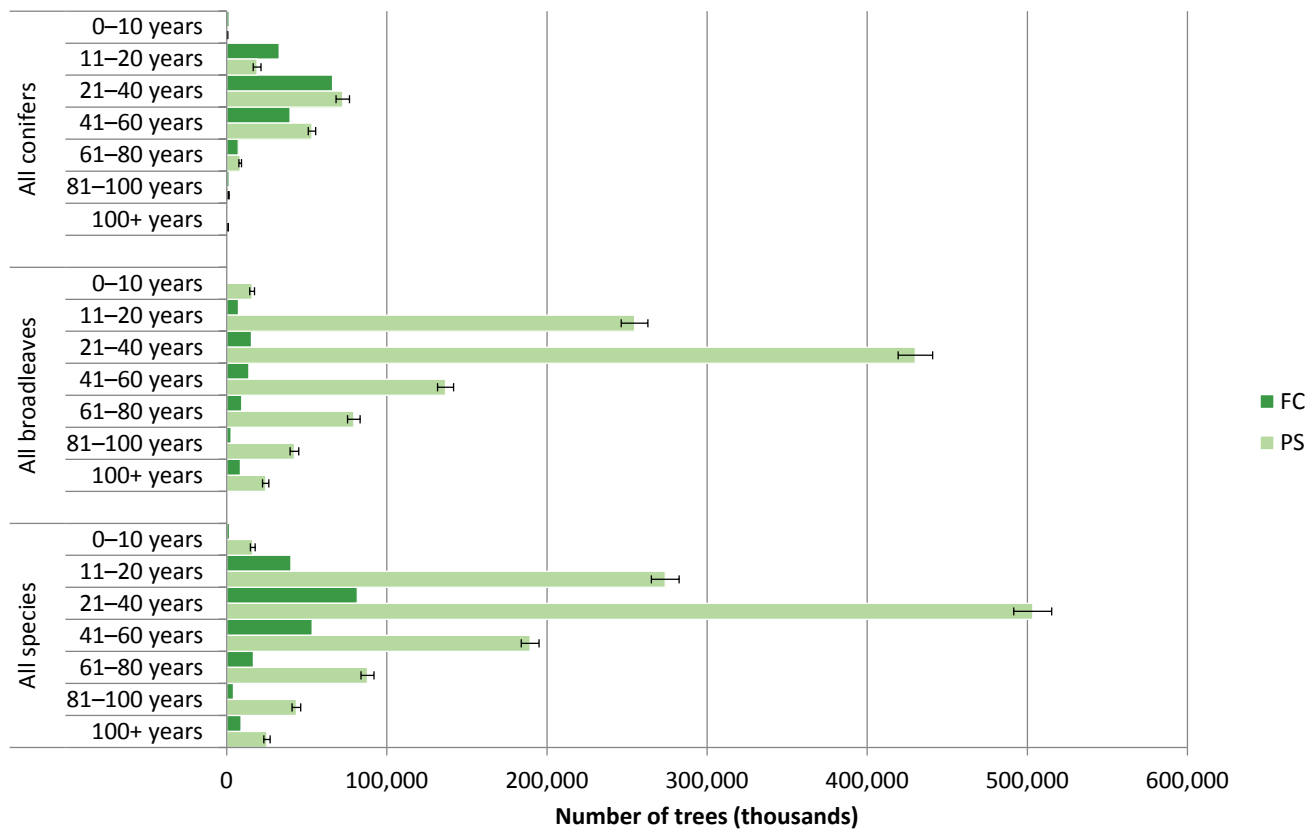
Table 27 Number of measureable trees by aligned area

Aligned area	All species			
	FC	Private sector	Total	
	(thousands)		SE%	(thousands)
England	207,905	1,139,545	1	1,347,451
Cumbria and Lancashire	26,134	62,577	5	88,712
Devon and Cornwall	10,545	113,612	4	124,157
East Anglia	23,073	105,964	4	129,037
East Midlands	5,172	45,529	6	50,700
Gtr Mancs Mersey and Ches	1,222	22,610	11	23,832
Herts and North London	615	29,559	7	30,175
Kent S London and E Sussex	6,501	128,190	5	134,692
Lincs and Northants	10,052	42,680	6	52,732
North East	60,699	75,970	6	136,669
Solent and South Downs	18,891	108,672	3	127,564
Thames	2,485	91,782	4	94,267
Wessex	8,918	96,314	4	105,232
West Midlands	17,600	122,038	4	139,638
Yorkshire	15,997	94,048	3	110,045

Part 2 – what our woodlands are like today

Number of measureable trees by age class

Figure 33 Number of measureable trees by age class



Part 2 – what our woodlands are like today

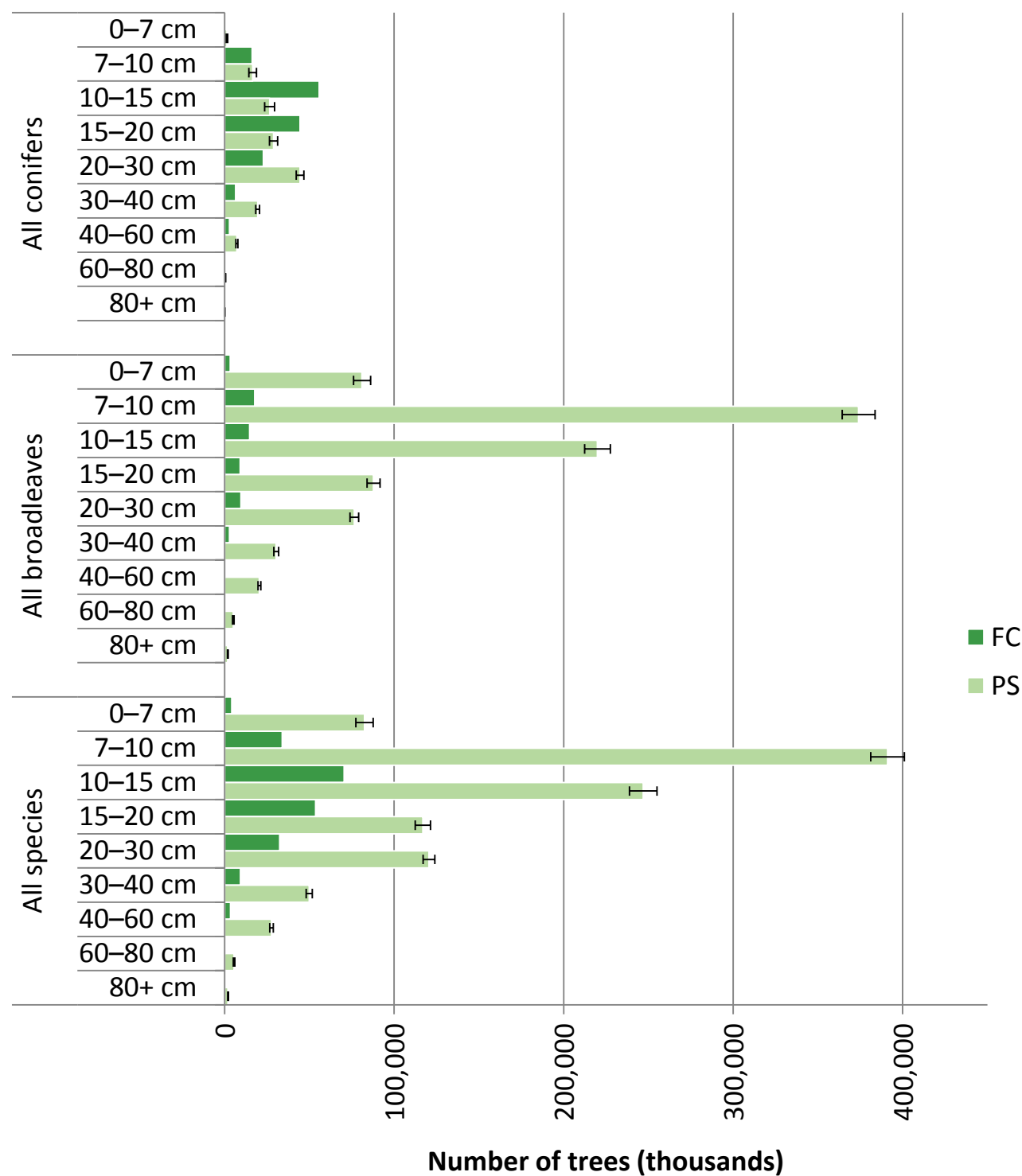
Table 28 Number of measureable trees by age class

Age class (years)	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
All conifers				
0–10	1,571	465	50	2,036
11–20	32,820	18,964	13	51,783
21–40	66,164	72,524	6	138,688
41–60	39,574	53,190	4	92,763
61–80	7,275	8,420	10	15,695
81–100	1,522	1,184	25	2,706
100+	394	758	21	1,152
Total	149,701	155,504	3	305,205
All broadleaves				
0–10	165	15,852	9	16,017
11–20	7,363	254,705	3	262,067
21–40	15,451	430,063	3	445,513
41–60	13,816	136,647	4	150,462
61–80	9,378	79,390	5	88,768
81–100	2,775	42,248	6	45,022
100+	8,597	24,370	8	32,967
Total	58,205	983,274	1	1,041,479
All species				
0–10	1,735	16,335	9	18,070
11–20	40,182	273,824	3	314,007
21–40	81,615	503,337	2	584,952
41–60	53,389	189,506	3	242,896
61–80	16,653	87,923	5	104,576
81–100	4,297	43,488	6	47,785
100+	8,991	25,132	8	34,123
Total	207,905	1,139,545	1	1,347,451

Part 2 – what our woodlands are like today

Number of measureable trees by mean stand dbh class

Figure 34 Number of measureable trees by mean stand dbh class



Part 2 – what our woodlands are like today

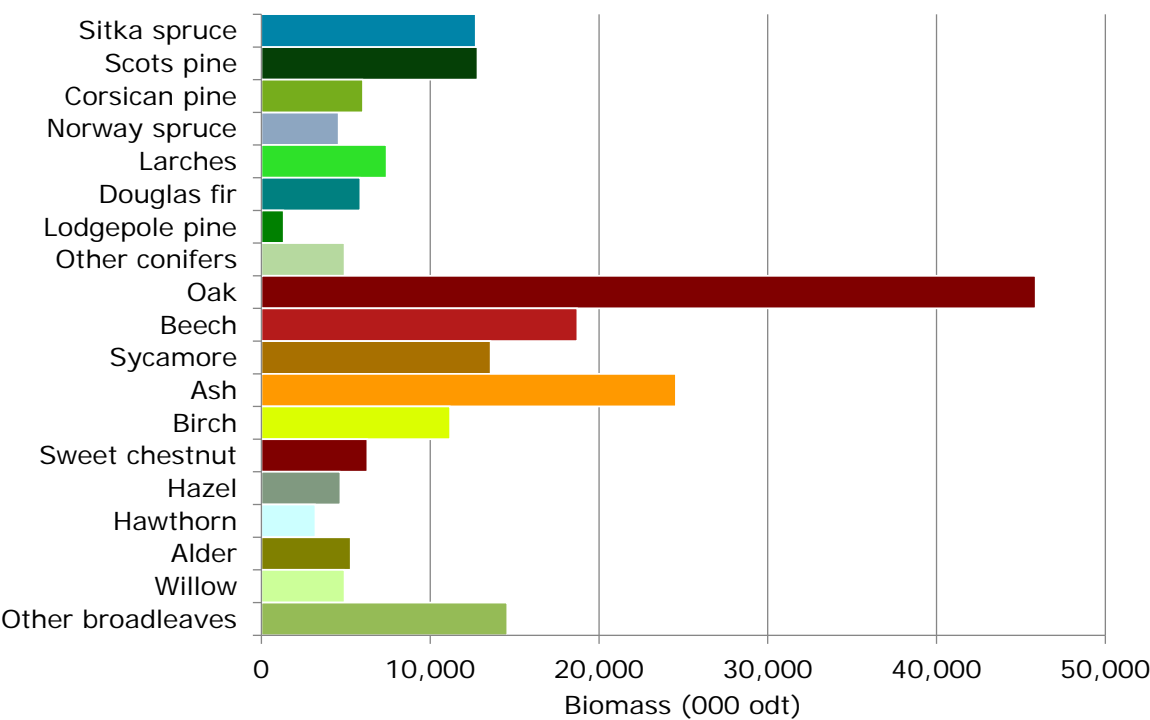
Table 29 Number of measureable trees by mean stand dbh class

Mean stand DBH	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
All conifers				
0–7 cm	871	1,345	32	2,215
7–10 cm	16,259	16,547	13	32,807
10–15 cm	55,791	26,586	11	82,377
15–20 cm	44,531	28,915	8	73,447
20–30 cm	22,795	44,501	5	67,296
30–40 cm	6,442	19,485	5	25,928
40–60 cm	2,868	7,170	8	10,038
60–80 cm	130	485	41	615
80+ cm	13	151	29	164
Total	149,701	155,504	3	305,205
All broadleaves				
0–7 cm	3,334	81,093	6	84,428
7–10 cm	17,762	374,026	3	391,787
10–15 cm	14,718	219,913	3	234,631
15–20 cm	9,206	87,850	4	97,056
20–30 cm	9,663	76,522	3	86,185
30–40 cm	2,903	30,401	5	33,304
40–60 cm	564	20,478	4	21,042
60–80 cm	47	5,121	7	5,168
80+ cm	7	1,852	12	1,859
Total	58,205	983,274	1	1,041,479
All species				
0–7 cm	4,205	82,498	6	86,703
7–10 cm	34,021	391,034	3	425,055
10–15 cm	70,508	246,964	3	317,472
15–20 cm	53,738	117,003	4	170,740
20–30 cm	32,458	120,616	3	153,074
30–40 cm	9,346	49,858	4	59,204
40–60 cm	3,432	27,651	4	31,083
60–80 cm	177	5,601	8	5,779
80+ cm	20	2,006	11	2,026
Total	207,905	1,139,545	1	1,347,451

Biomass stocks in live woodland trees

Biomass stocks by species

Figure 35 Biomass stocks by principal tree species



Part 2 – what our woodlands are like today

Table 30 Biomass stocks by principal tree species

Principal species	FC	Private sector		Total
	biomass (000 odt)	biomass (000 odt)	SE%	biomass (000 odt)
Conifers				
Sitka spruce	5,994	6,687	8	12,681
Scots pine	2,730	10,078	5	12,808
Corsican pine	3,298	2,725	9	6,023
Norway spruce	926	3,658	8	4,584
Larches	1,105	6,315	6	7,420
Douglas fir	1,787	4,071	9	5,858
Lodgepole pine	610	709	21	1,319
Other conifers	843	4,090	9	4,933
All conifers	17,294	38,364	2	55,659
Broadleaves				
Oak	3,035	42,838	3	45,872
Beech	2,615	16,108	6	18,724
Sycamore	138	13,443	6	13,580
Ash	389	24,165	4	24,554
Birch	502	10,676	4	11,178
Sweet chestnut	107	6,166	8	6,272
Hazel	44	4,642	5	4,686
Hawthorn	< 1	3,208	6	3,208
Alder	58	5,229	7	5,287
Willow	< 1	4,922	7	4,923
Other broadleaves	1,197	13,374	5	14,571
All broadleaves	8,085	144,755	1	152,841
All species				
All species	25,380	183,073	1	208,453

Part 2 – what our woodlands are like today

Figure 36 Biomass stocks in conifers by aligned area

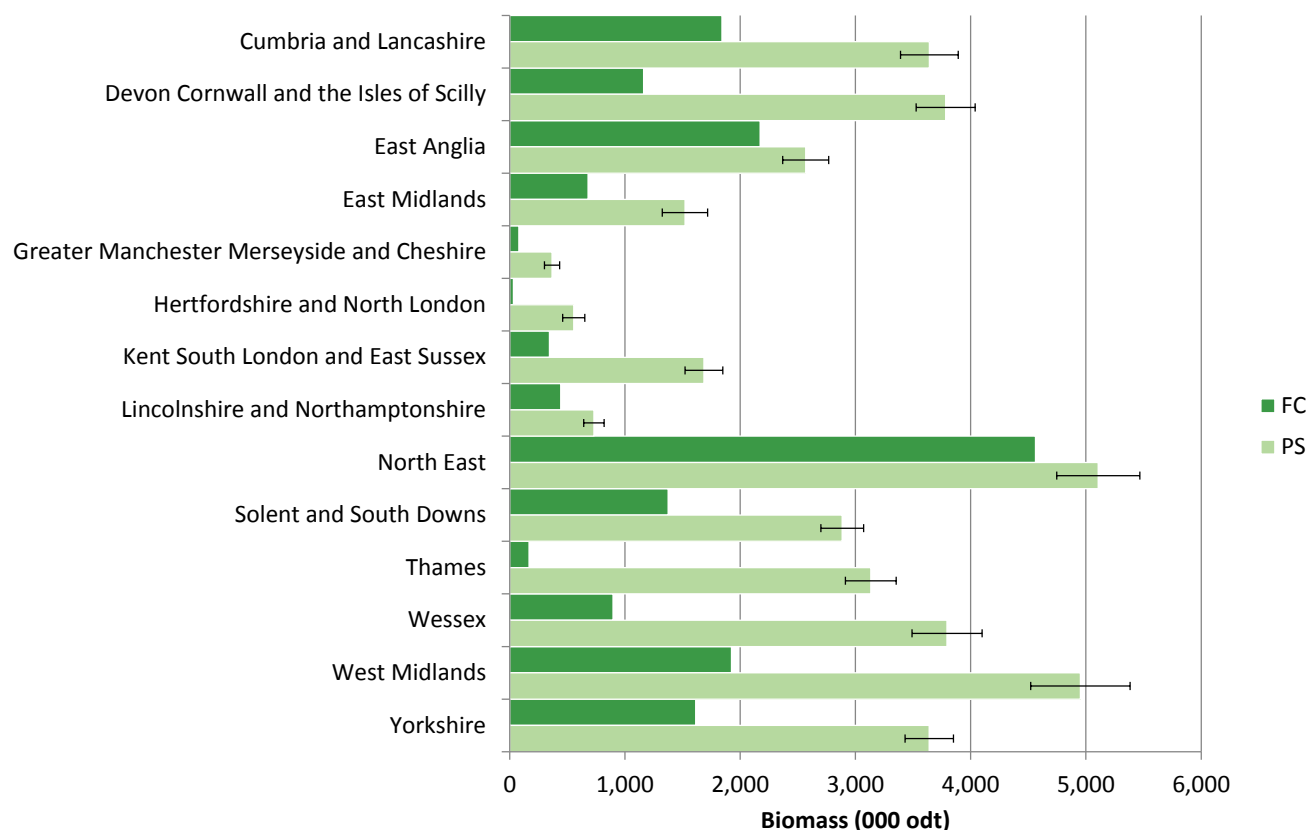


Table 31 Biomass stocks in conifers by aligned area

Aligned area	All conifers			
	FC	Private sector		Total
	biomass (000 odt)		SE%	biomass (000 odt)
England	17,294	38,364	2	55,659
Cumbria and Lancashire	1,842	3,642	7	5,484
Devon and Cornwall	1,162	3,783	7	4,945
East Anglia	2,174	2,568	8	4,742
East Midlands	680	1,521	13	2,201
Gtr Mancs Mersey and Ches	80	367	18	447
Herts and North London	31	555	17	587
Kent S London and E Sussex	344	1,685	10	2,029
Lincs and Northants	443	731	12	1,174
North East	4,561	5,107	7	9,669
Solent and South Downs	1,375	2,885	6	4,260
Thames	168	3,134	7	3,302
Wessex	896	3,795	8	4,691
West Midlands	1,923	4,952	9	6,876
Yorkshire	1,614	3,640	6	5,254

Part 2 – what our woodlands are like today

Figure 37 Biomass stocks in broadleaves by aligned area

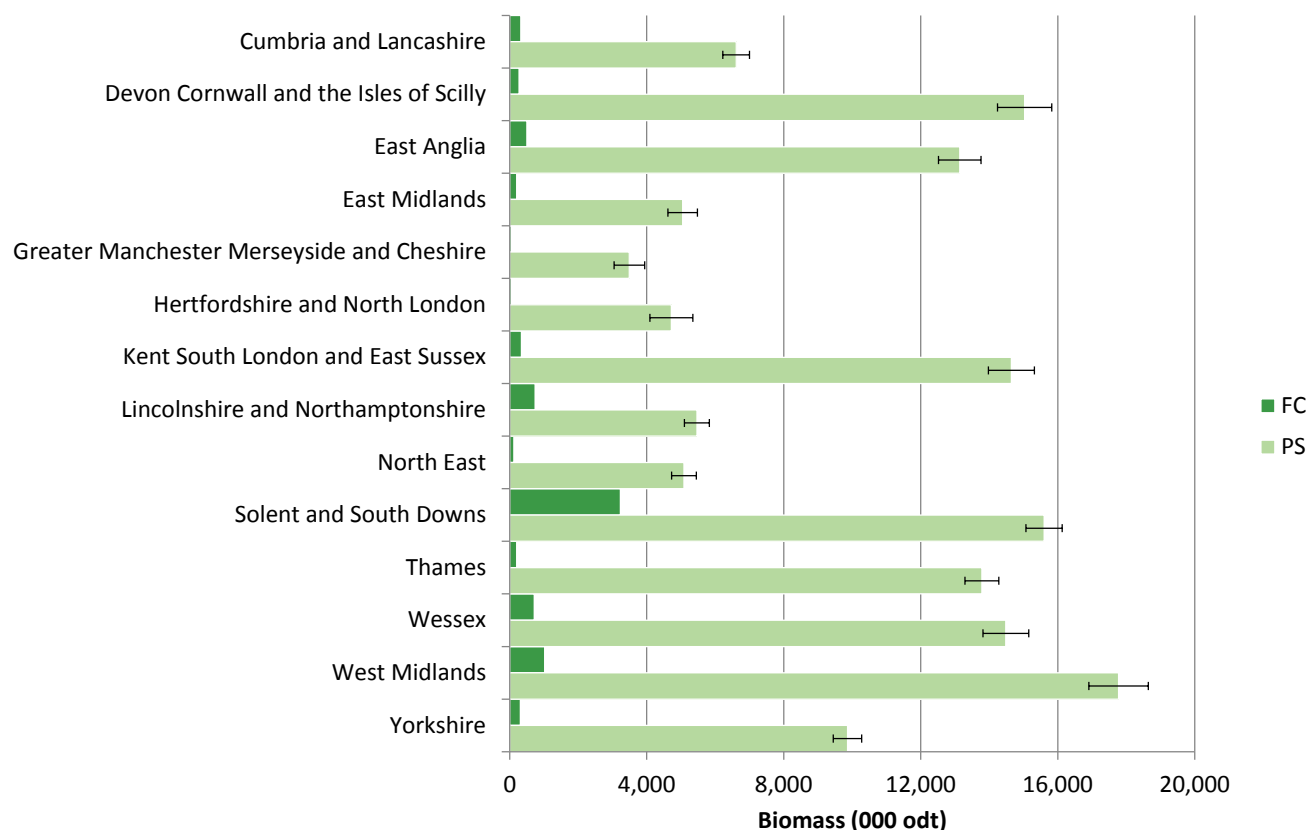


Table 32 Biomass stocks in broadleaves by aligned area

Aligned area	All broadleaves			
	FC	Private sector		Total
	biomass (000 odt)		SE%	biomass (000 odt)
England	8,085	144,755	1	152,841
Cumbria and Lancashire	327	6,613	6	6,939
Devon and Cornwall	271	15,034	5	15,305
East Anglia	498	13,137	5	13,635
East Midlands	203	5,049	8	5,252
Gtr Mancs Mersey and Ches	48	3,492	13	3,540
Herts and North London	54	4,721	13	4,775
Kent S London and E Sussex	340	14,646	5	14,986
Lincs and Northants	740	5,466	7	6,205
North East	120	5,088	7	5,208
Solent and South Downs	3,231	15,602	3	18,833
Thames	206	13,785	4	13,991
Wessex	714	14,483	5	15,197
West Midlands	1,023	17,777	5	18,800
Yorkshire	311	9,862	4	10,174

Part 2 – what our woodlands are like today

Figure 38 Biomass stocks by aligned area

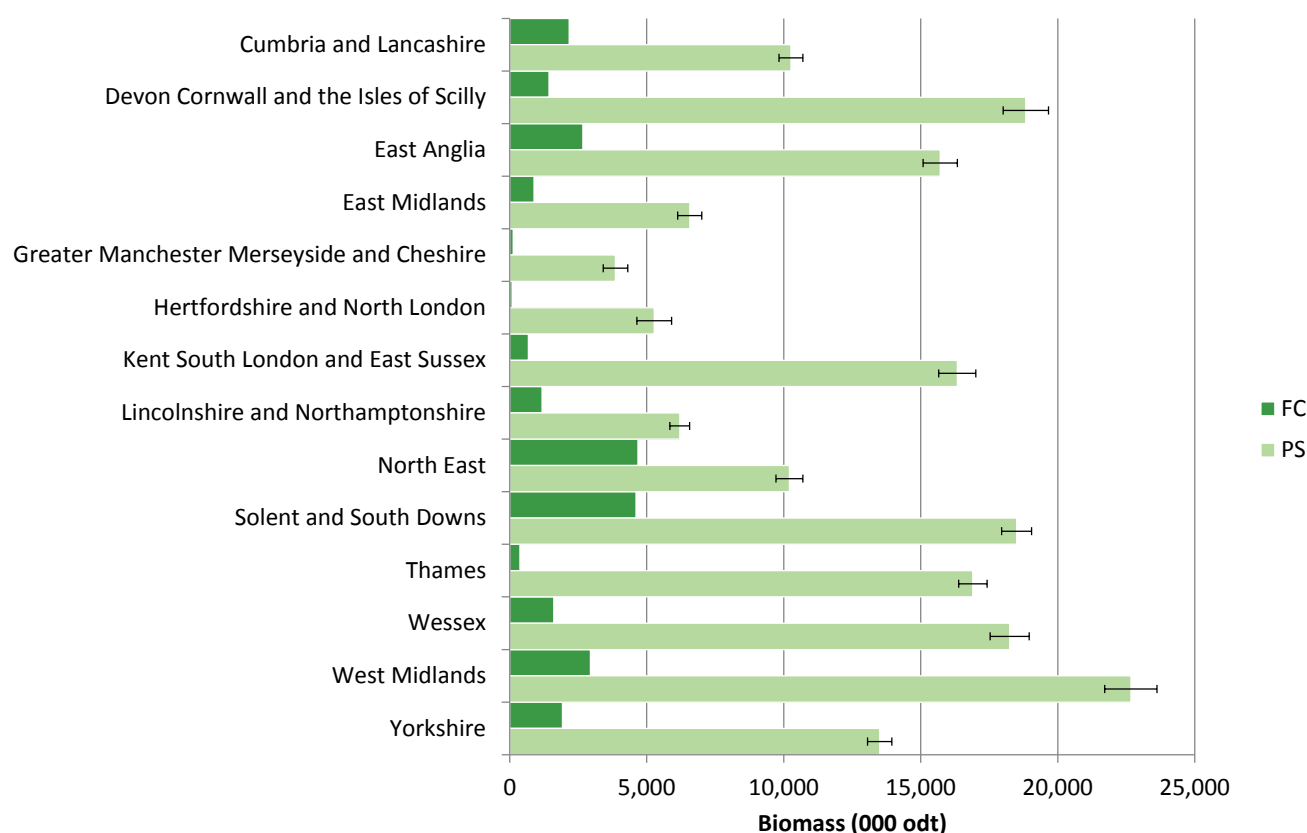


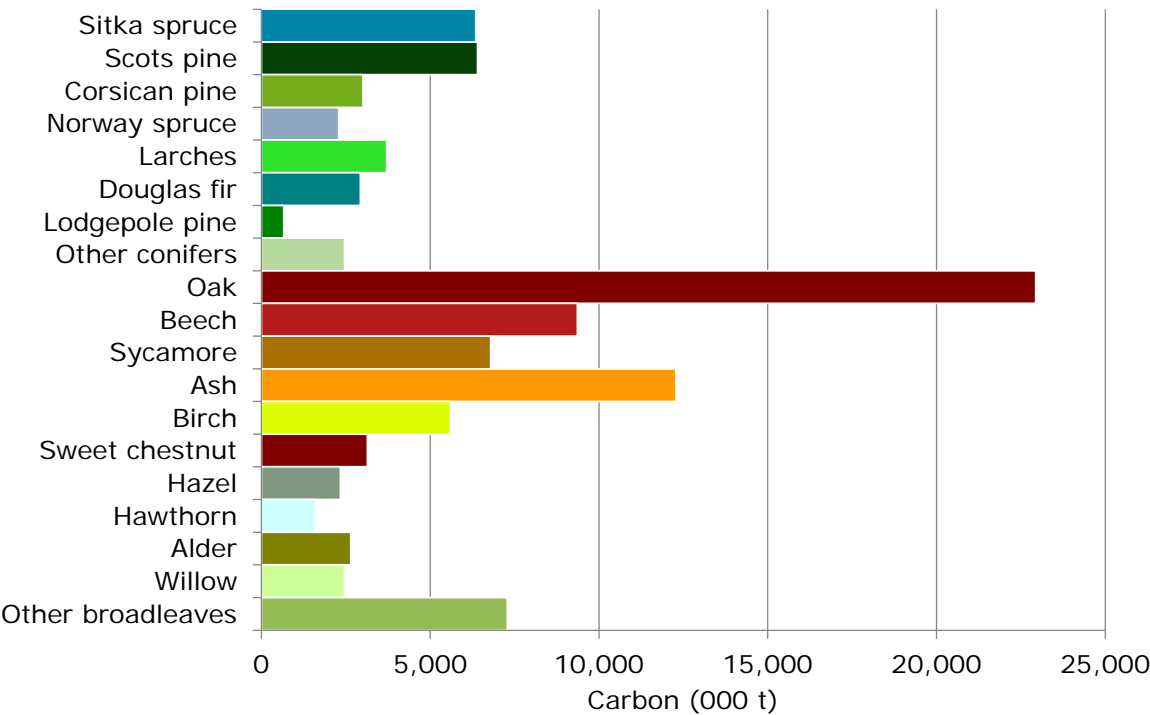
Table 33 Biomass stocks by aligned area

Aligned area	All species			
	FC	Private sector		Total
	biomass (000 odt)		SE%	biomass (000 odt)
England	25,380	183,073	1	208,453
Cumbria and Lancashire	2,168	10,263	4	12,431
Devon and Cornwall	1,433	18,834	4	20,267
East Anglia	2,672	15,710	4	18,382
East Midlands	883	6,570	7	7,453
Gtr Mancs Mersey and Ches	128	3,859	12	3,987
Herts and North London	85	5,276	12	5,361
Kent S London and E Sussex	684	16,335	4	17,019
Lincs and Northants	1,183	6,205	6	7,388
North East	4,682	10,207	5	14,889
Solent and South Downs	4,606	18,500	3	23,106
Thames	374	16,899	3	17,273
Wessex	1,609	18,245	4	19,855
West Midlands	2,946	22,669	4	25,615
Yorkshire	1,926	13,500	3	15,426

Carbon stocks in live woodland trees

Carbon stocks by species

Figure 39 Carbon stocks by principal tree species



Part 2 – what our woodlands are like today

Table 34 Carbon stocks by principal tree species

Principal species	FC	Private sector		Total
	carbon (000 t)	carbon (000 t)	SE%	carbon (000 t)
Conifers				
Sitka spruce	2,997	3,344	8	6,341
Scots pine	1,365	5,039	5	6,404
Corsican pine	1,649	1,362	9	3,012
Norway spruce	463	1,829	8	2,292
Larches	553	3,158	6	3,710
Douglas fir	894	2,036	9	2,929
Lodgepole pine	305	354	21	660
Other conifers	422	2,045	9	2,467
All conifers	8,647	19,182	2	27,829
Broadleaves				
Oak	1,517	21,419	3	22,936
Beech	1,308	8,054	6	9,362
Sycamore	69	6,721	6	6,790
Ash	194	12,083	4	12,277
Birch	251	5,338	4	5,589
Sweet chestnut	53	3,083	8	3,136
Hazel	22	2,321	5	2,343
Hawthorn	< 1	1,604	6	1,604
Alder	29	2,615	7	2,644
Willow	< 1	2,461	7	2,462
Other broadleaves	598	6,687	5	7,285
All broadleaves	4,043	72,378	1	76,420
All species				
All species	12,690	91,537	1	104,226

Part 2 – what our woodlands are like today

Figure 40 Carbon stocks in conifers by aligned area

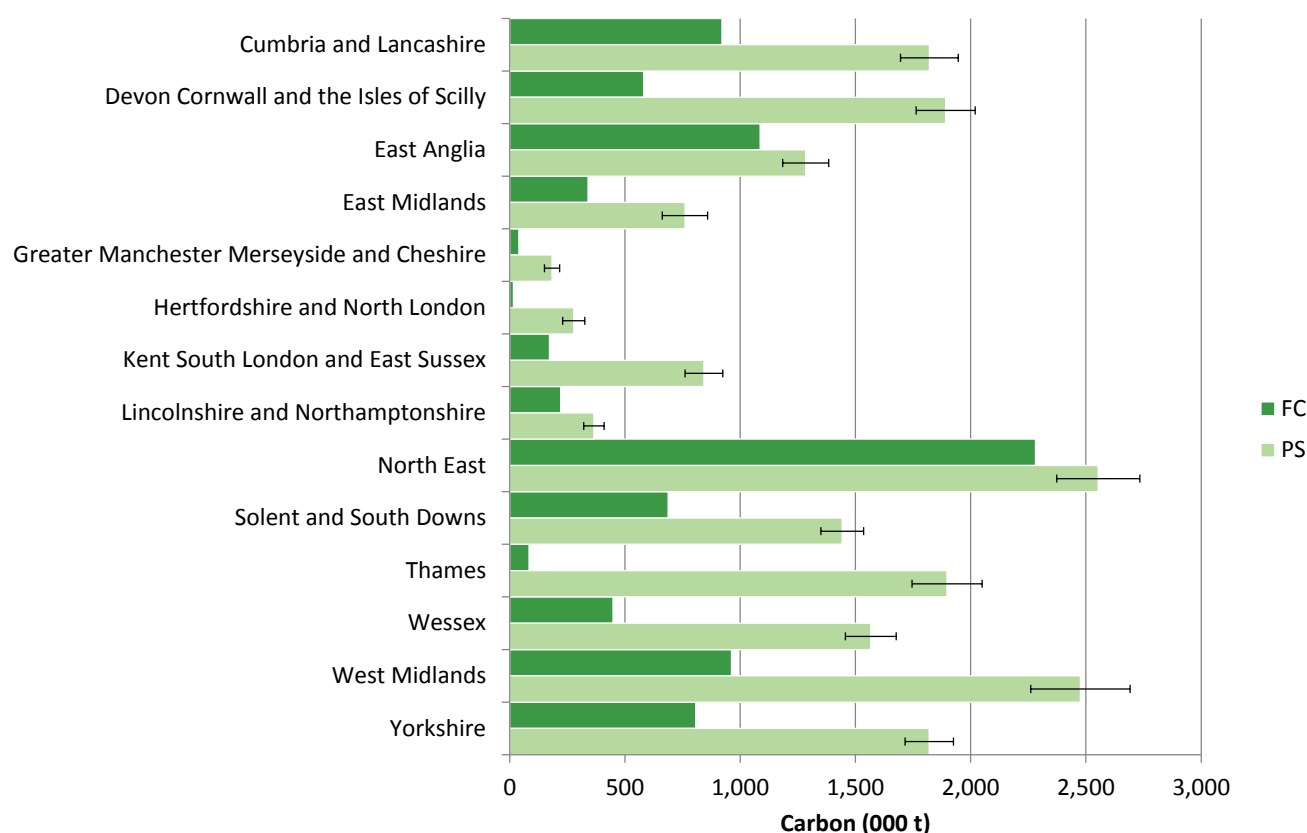


Table 35 Carbon stocks in conifers by aligned area

Aligned area	All conifers			
	FC	Private sector		Total
	carbon (000 t)		SE%	carbon (000 t)
England	8,647	19,182	2	27,829
Cumbria and Lancashire	921	1,821	7	2,742
Devon and Cornwall	581	1,891	7	2,472
East Anglia	1,087	1,284	8	2,371
East Midlands	340	760	13	1,101
Gtr Mancs Mersey and Ches	40	184	18	224
Herts and North London	16	278	17	293
Kent S London and E Sussex	172	842	10	1,014
Lincs and Northants	221	365	12	587
North East	2,281	2,554	7	4,834
Solent and South Downs	687	1,442	6	2,130
Thames	84	1,897	8	1,982
Wessex	448	1,567	7	2,015
West Midlands	962	2,476	9	3,438
Yorkshire	807	1,820	6	2,627

Part 2 – what our woodlands are like today

Figure 41 Carbon stocks in broadleaves by aligned area

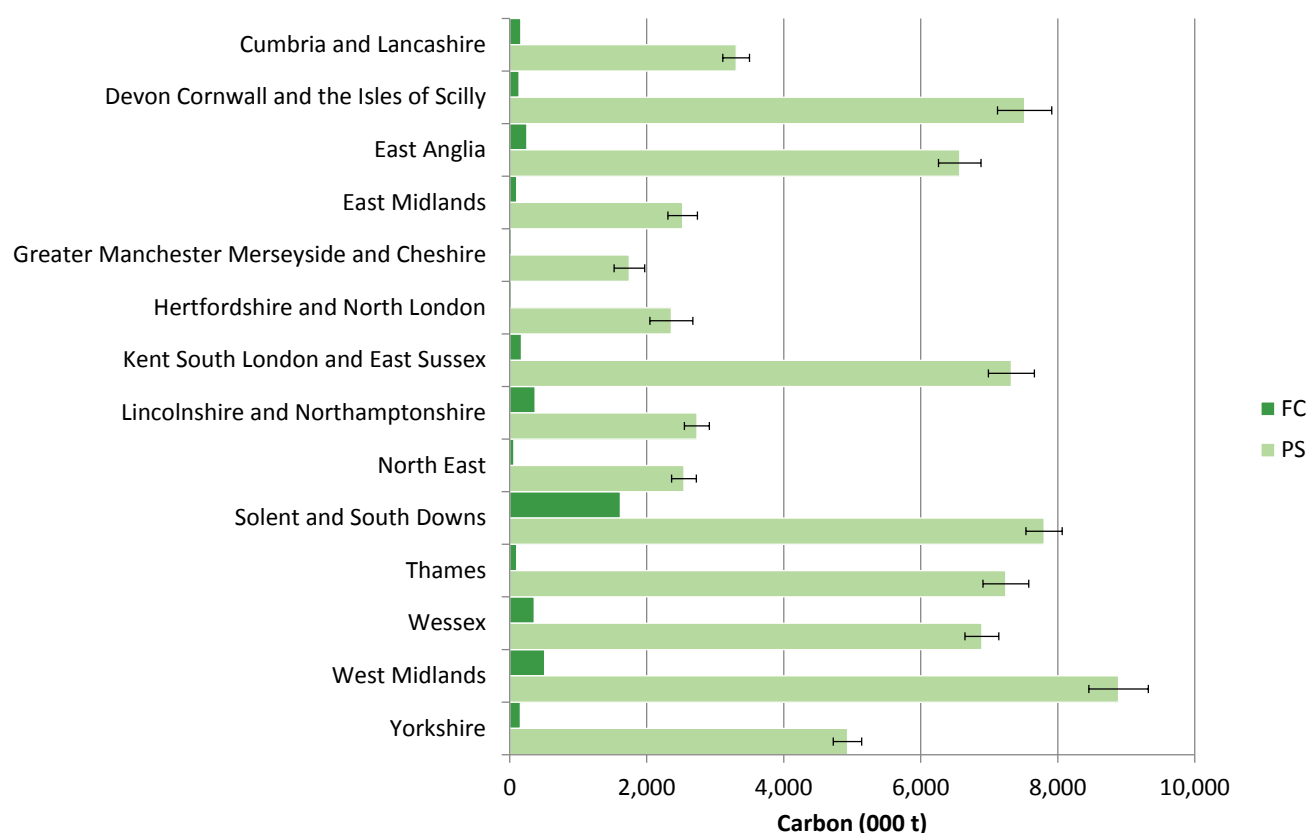


Table 36 Carbon stocks in broadleaves by aligned area

Aligned area	All broadleaves			
	FC	Private sector		Total
	carbon (000 t)		SE%	carbon (000 t)
England	4,043	72,378	1	76,420
Cumbria and Lancashire	163	3,306	6	3,470
Devon and Cornwall	136	7,517	5	7,653
East Anglia	249	6,568	5	6,818
East Midlands	101	2,525	8	2,626
Gtr Mancs Mersey and Ches	24	1,746	13	1,770
Herts and North London	27	2,361	13	2,387
Kent S London and E Sussex	170	7,323	5	7,493
Lincs and Northants	370	2,733	7	3,103
North East	60	2,544	7	2,604
Solent and South Downs	1,616	7,801	3	9,417
Thames	103	7,242	5	7,344
Wessex	357	6,893	4	7,250
West Midlands	511	8,888	5	9,400
Yorkshire	156	4,931	4	5,087

Part 2 – what our woodlands are like today

Figure 42 Carbon stocks by aligned area

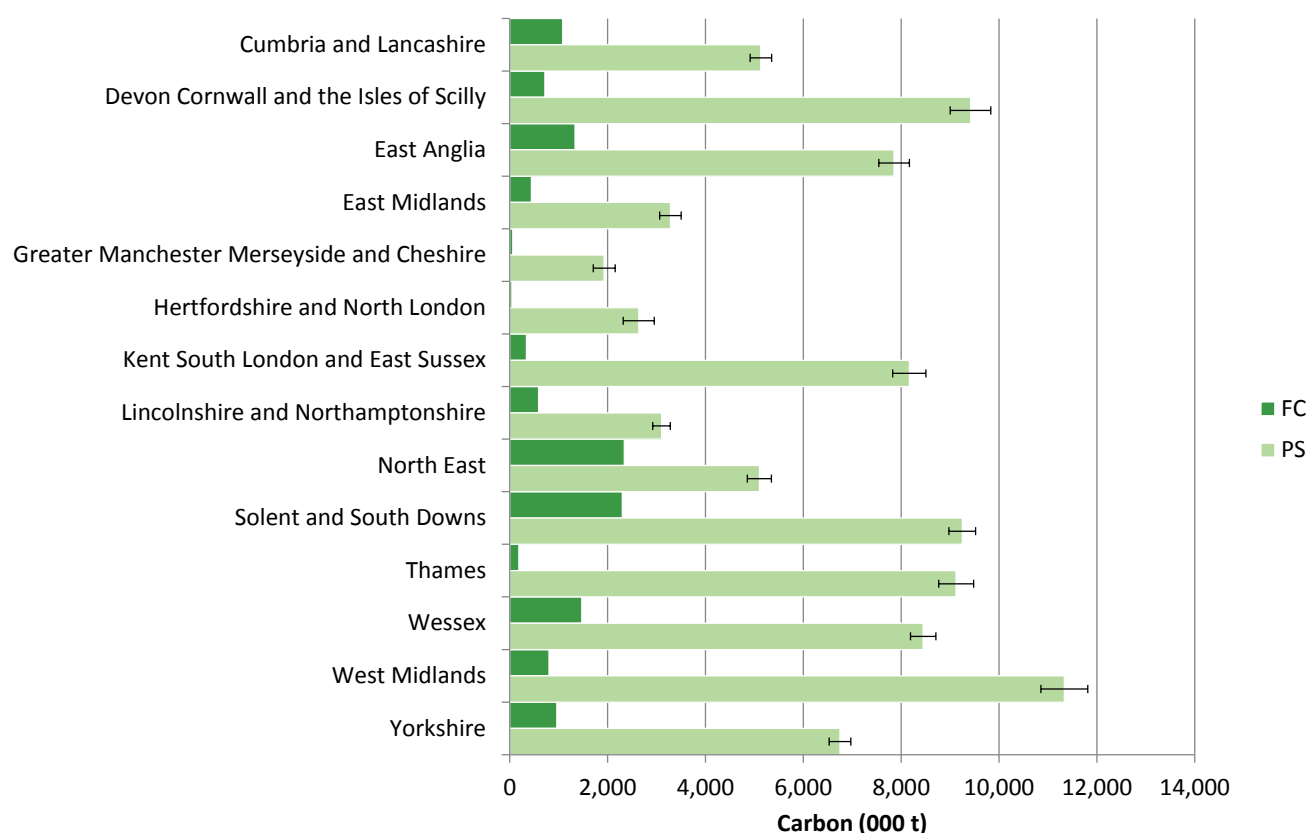


Table 37 Carbon stocks by aligned area

Aligned area	All species			
	FC	Private sector		Total
	carbon (000 t)		SE%	carbon (000 t)
England	12,690	91,537	1	104,226
Cumbria and Lancashire	1,084	5,131	4	6,216
Devon and Cornwall	717	9,417	4	10,134
East Anglia	1,336	7,855	4	9,191
East Midlands	442	3,285	7	3,727
Gtr Mancs Mersey and Ches	64	1,930	12	1,994
Herts and North London	42	2,638	12	2,681
Kent S London and E Sussex	342	8,167	4	8,510
Lincs and Northants	591	3,103	6	3,694
North East	2,341	5,104	5	7,445
Solent and South Downs	2,303	9,250	3	11,553
Thames	187	9,123	4	9,310
Wessex	1,473	8,450	3	9,923
West Midlands	805	11,334	4	12,139
Yorkshire	963	6,750	3	7,713

Part 2 – what our woodlands are like today

Existing woodland management information and economic viability data (PS only)

Sample square distribution

Table 38 Sample square distribution

Number of squares surveyed	Number of squares surveyed	Number of Private sector squares surveyed	Number of Private sector squares containing coniferous species	Number of Private sector squares containing broadleaved species
England	3,830	3,735	2,183	3,482
Cumbria and Lancashire	284	277	191	243
Devon and Cornwall	321	318	169	304
East Anglia	362	352	189	326
East Midlands	150	146	68	141
Gtr Mancs Mersey and Ches	68	67	28	61
Herts and North London	105	104	59	102
Kent S London and E Sussex	281	273	154	265
Lincs and Northants	171	170	80	164
North East	186	160	125	128
Solent and South Downs	374	369	225	352
Thames	361	354	227	345
Wessex	311	310	174	295
West Midlands	338	322	205	299
Yorkshire	518	513	289	457

Part 2 – what our woodlands are like today

Evidence of management

Figure 43 Evidence of management in PS broadleaf sections

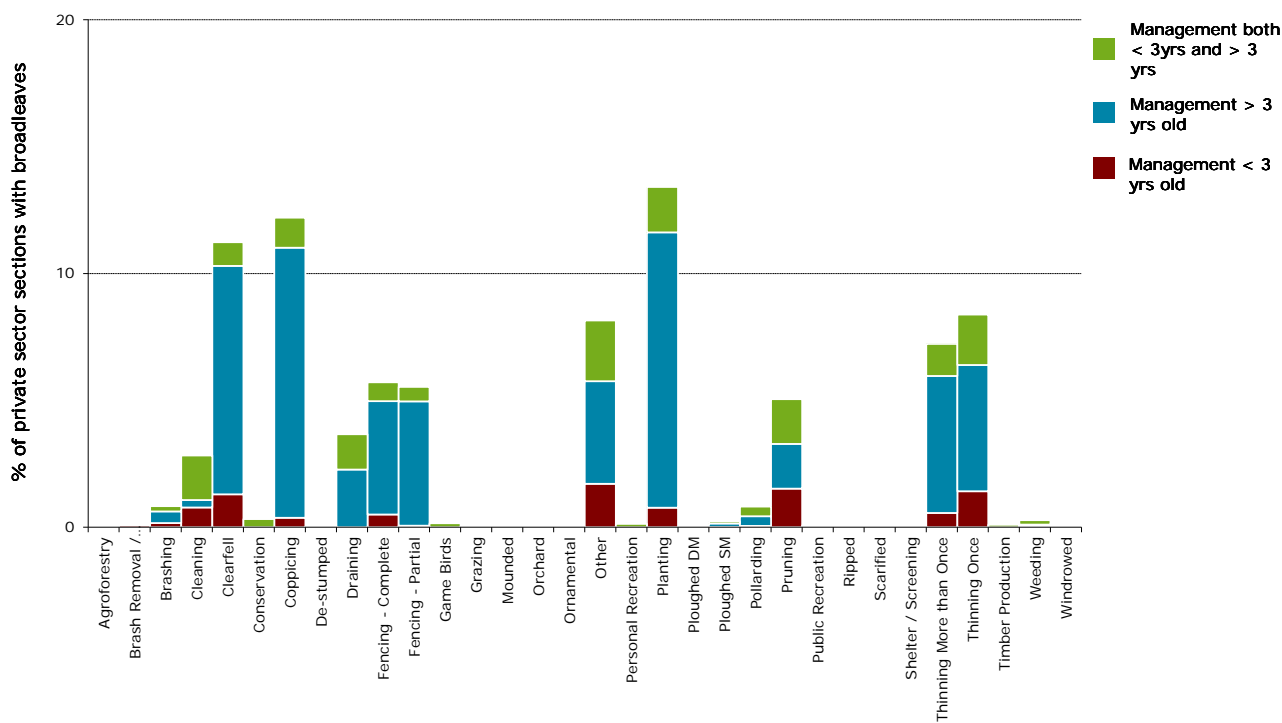
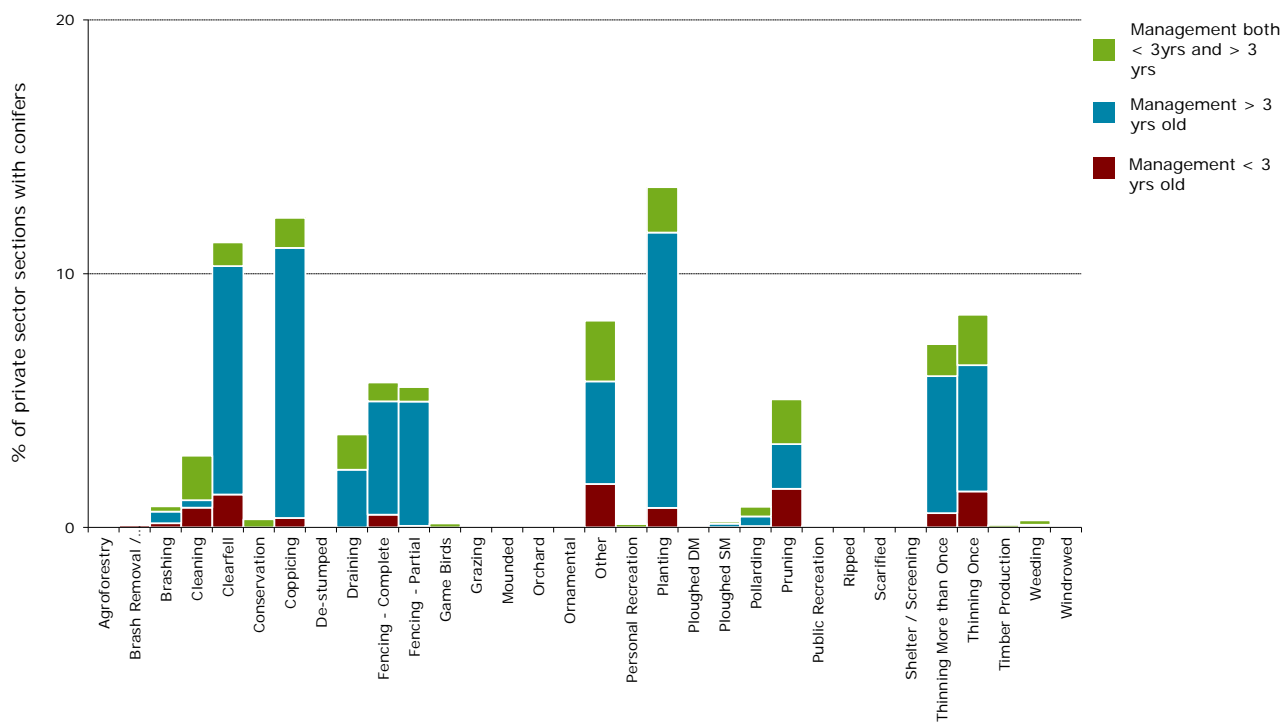


Figure 44 Evidence of management in PS conifer sections



Part 2 – what our woodlands are like today

Figure 45 Evidence of management in PS mixed broadleaf/conifer sections

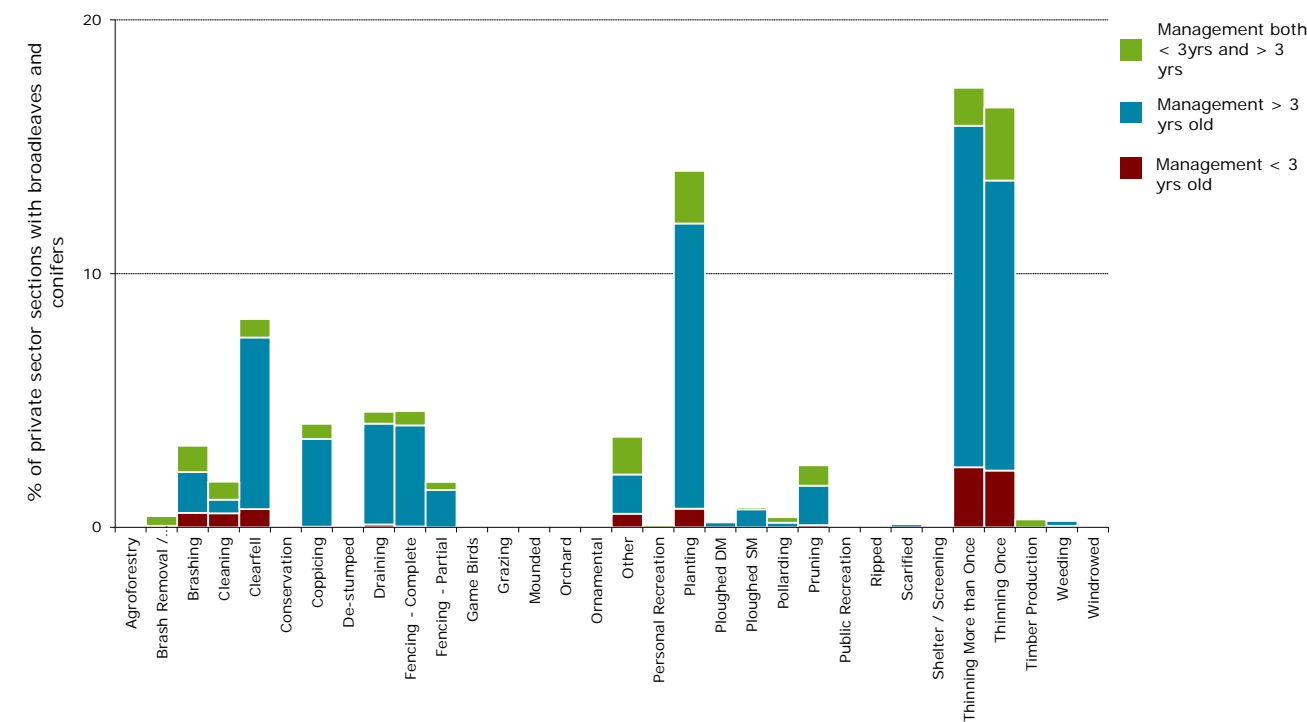
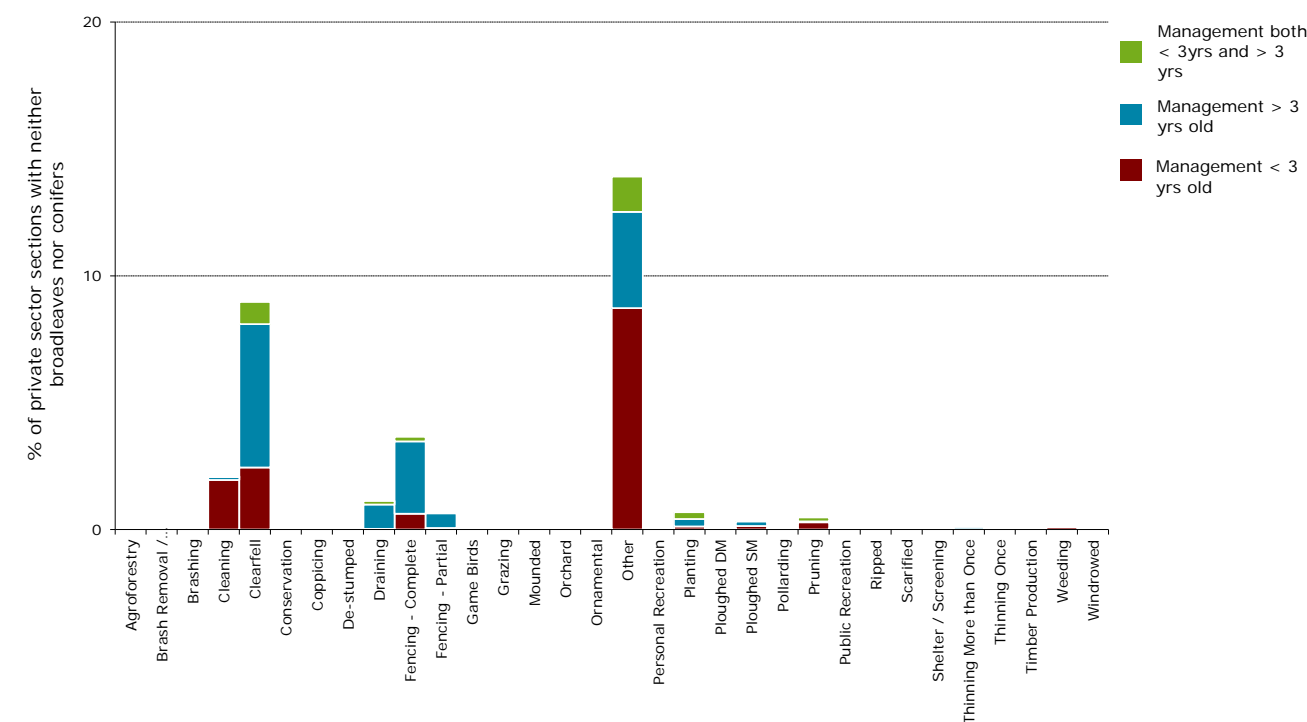


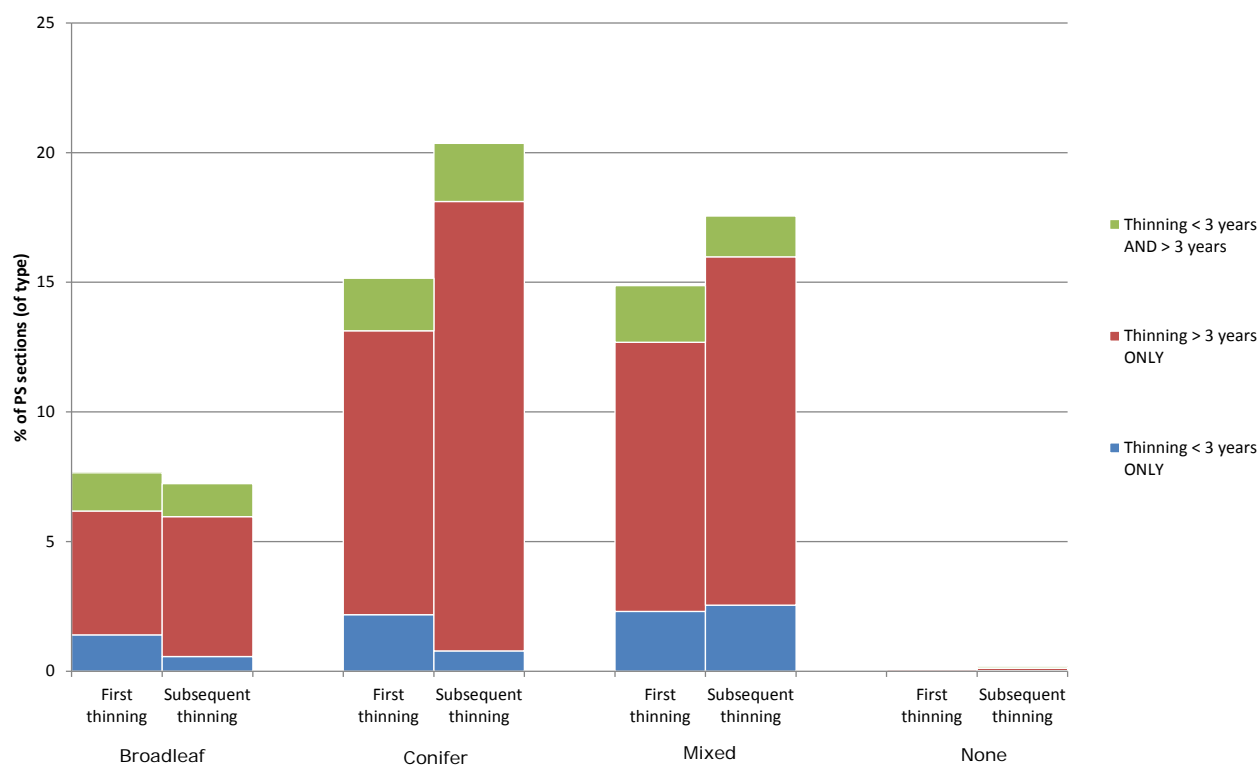
Figure 46 Evidence of management in PS sections with no broadleaf or conifer



Part 2 – what our woodlands are like today

Evidence of thinning

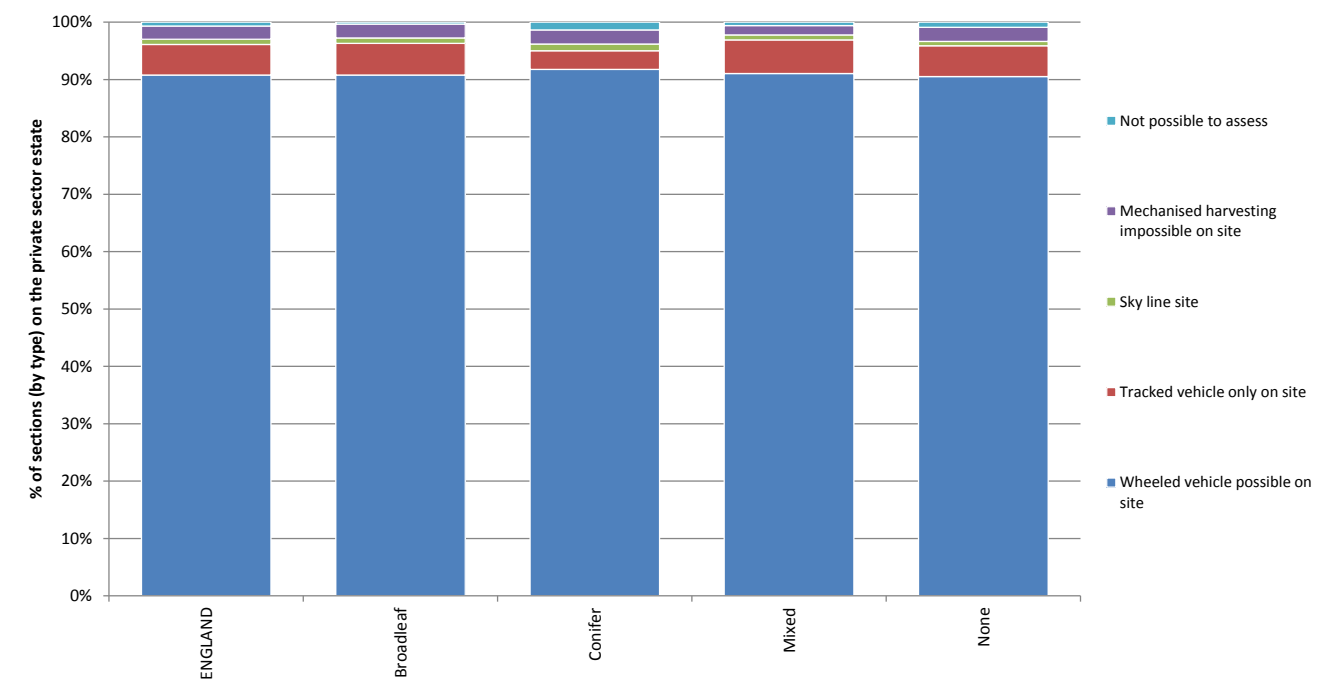
Figure 47 Evidence of thinning



Part 2 – what our woodlands are like today

Suitability for harvesting

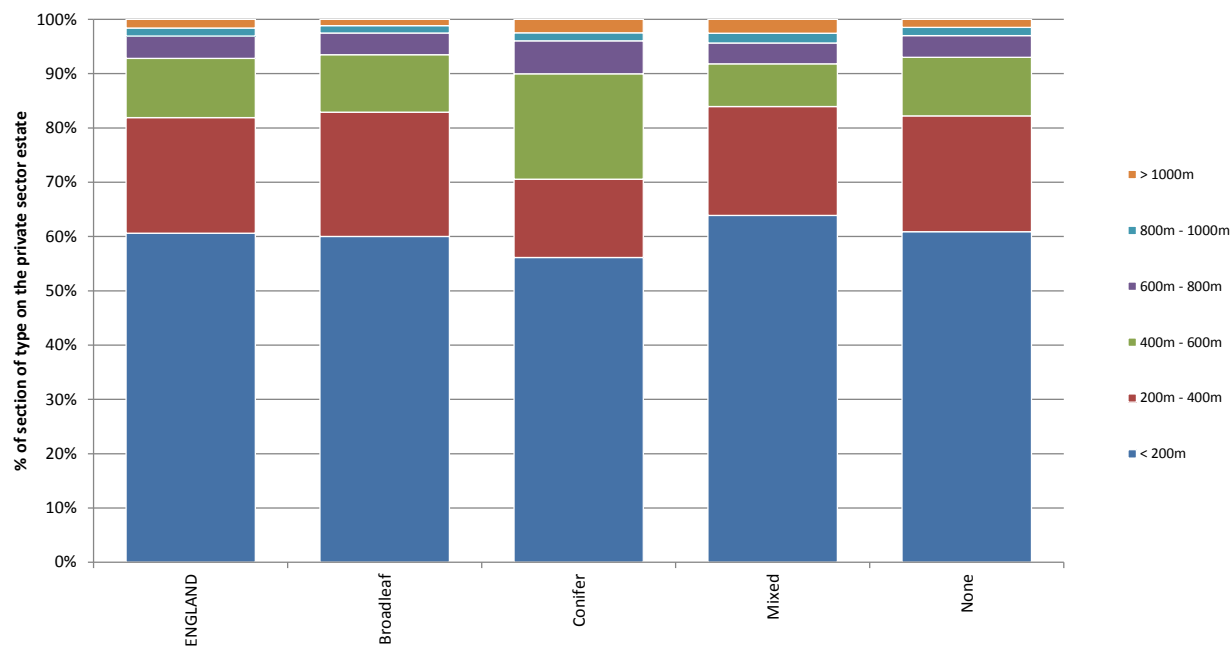
Figure 48 Suitability for harvesting



Part 2 – what our woodlands are like today

Distance to road

Figure 49 Distance to road



Part 2 – what our woodlands are like today

Type of road or ride

Figure 50 Road or ride in survey square

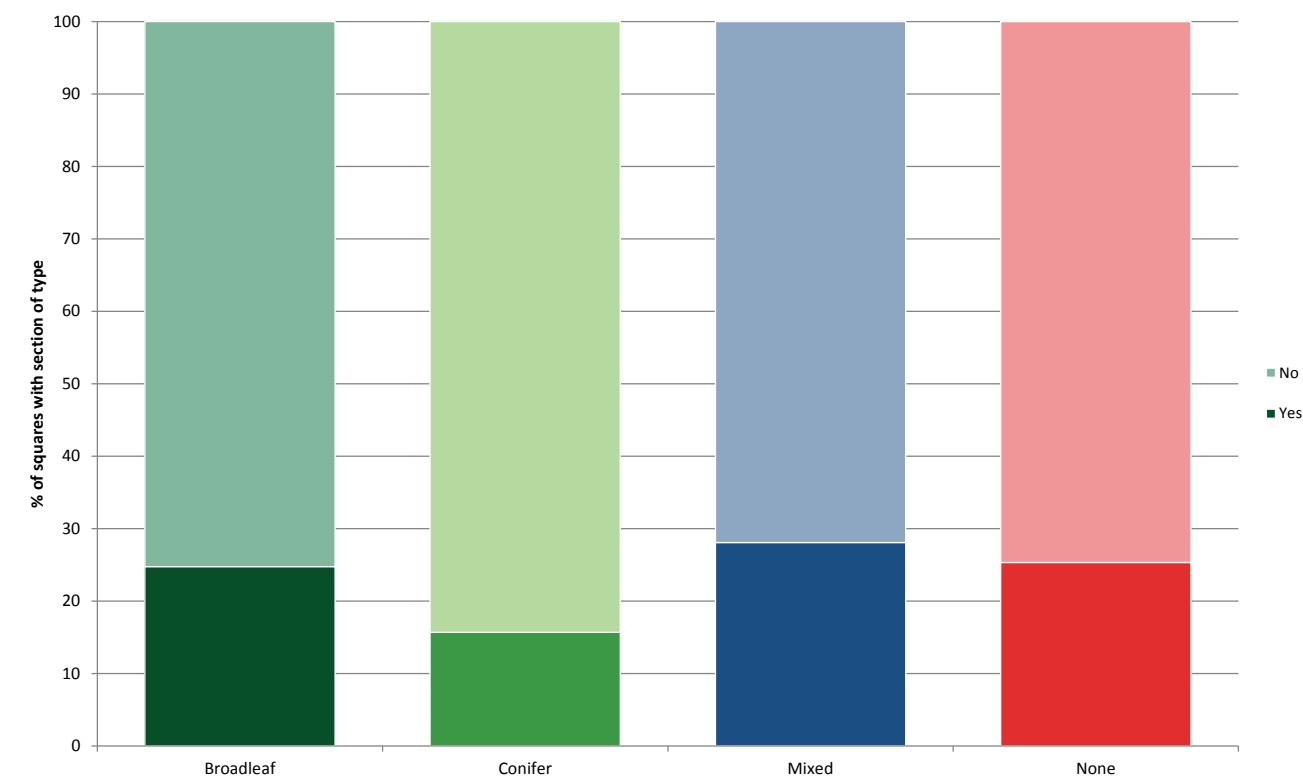
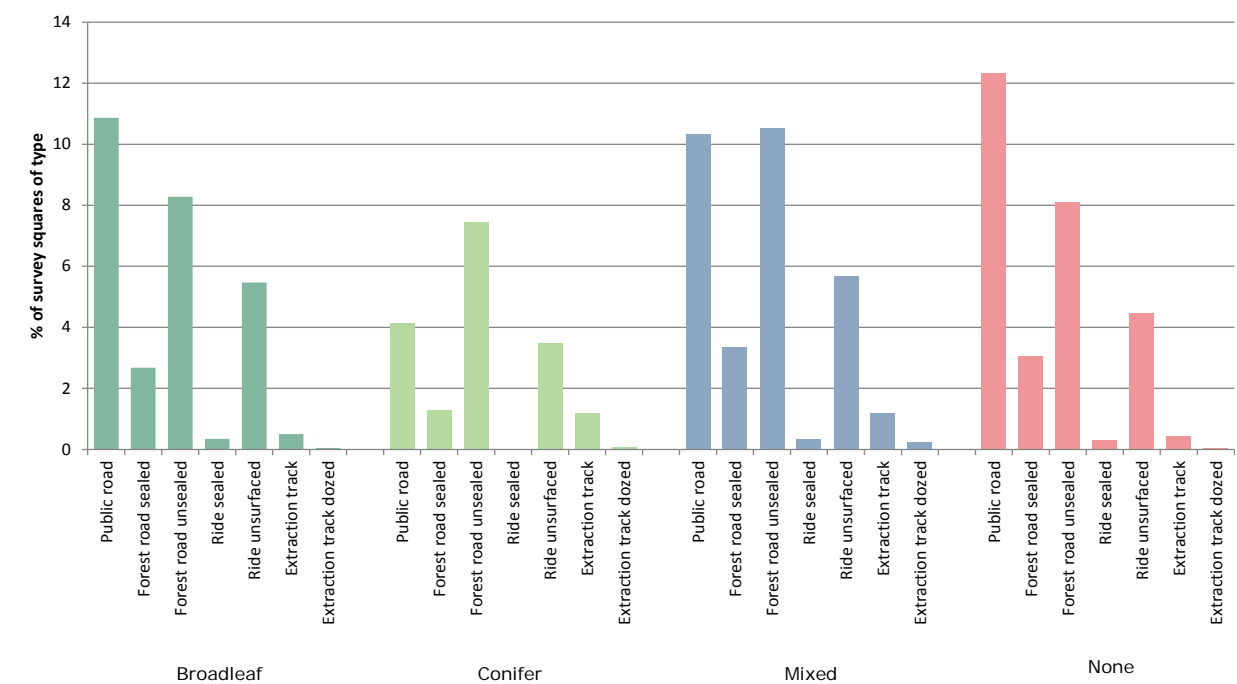


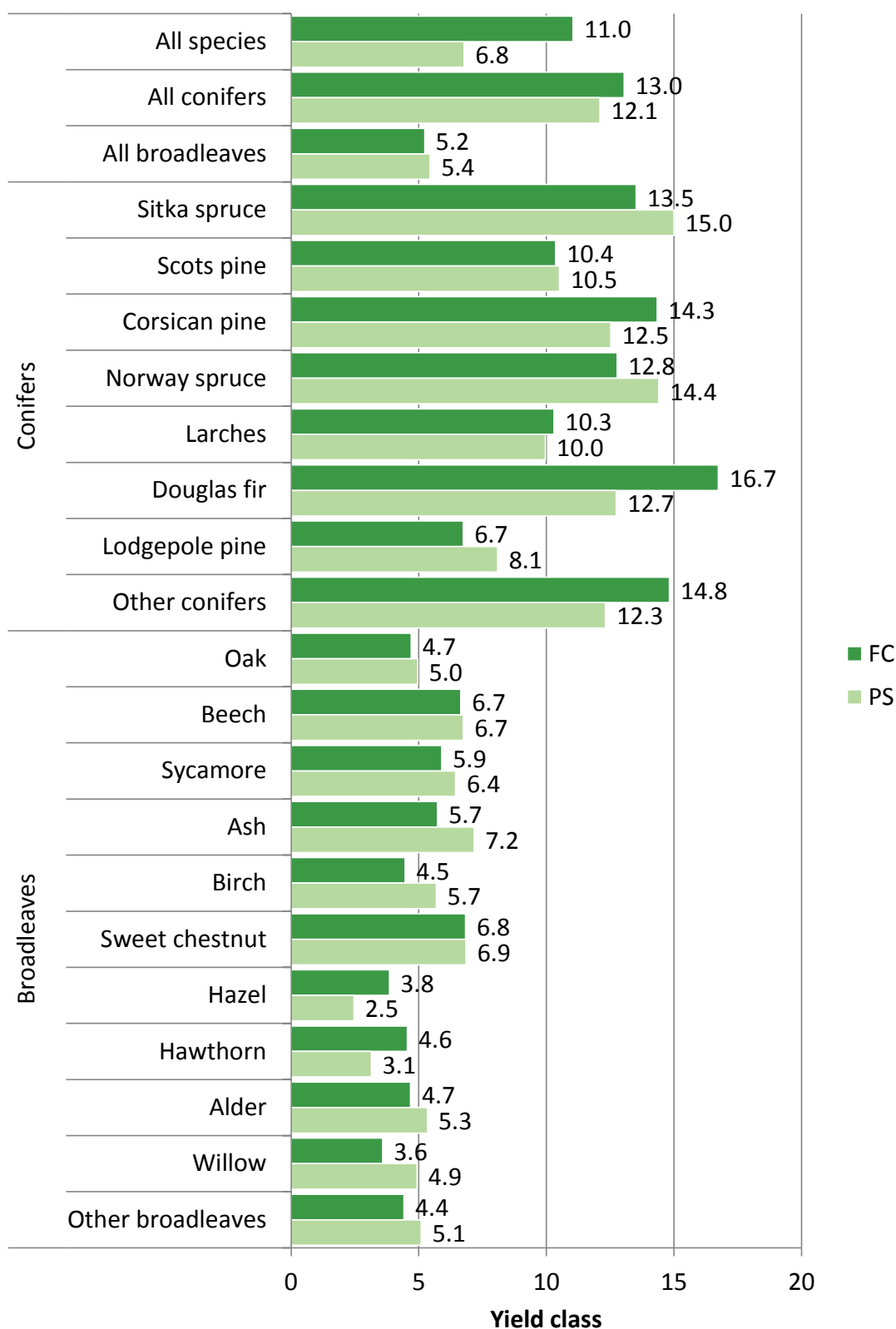
Figure 51 Type of road or ride in survey square



Part 2 – what our woodlands are like today

Mean yield class

Figure 52 Mean yield class by principal tree species (FC and PS)



Part 2 – what our woodlands are like today

Table 39 Mean yield class by principal tree species (FC and PS)

Principal species	FC	Private sector
	mean yield class (weighted by area)	
Conifers		
Sitka spruce	13.5	15.0
Scots pine	10.4	10.5
Corsican pine	14.3	12.5
Norway spruce	12.8	14.4
Larches	10.3	10.0
Douglas fir	16.7	12.7
Lodgepole pine	6.7	8.1
Other conifers	14.8	12.3
All conifers	13.0	12.1
Broadleaves		
Oak	4.7	5.0
Beech	6.7	6.7
Sycamore	5.9	6.4
Ash	5.7	7.2
Birch	4.5	5.7
Sweet chestnut	6.8	6.9
Hazel	3.8	2.5
Hawthorn	4.6	3.1
Alder	4.7	5.3
Willow	3.6	4.9
Other broadleaves	4.4	5.1
All broadleaves	5.2	5.4
All species		
All species	11.0	6.8

Overdue timber stocks

Overdue volume and area

Table 40 Standing volume in overdue timber stocks

	FC	Private sector	
	volume (000 m ³ obs)	volume (000 m ³ obs)	SE %
England			
All conifers	908	19,493	6
All broadleaves	179	95,384	3
All species	1,087	114,759	2

Table 41 Stocked area of overdue timber stocks

	FC	Private sector	
	area (000 ha)	area (000 ha)	SE %
England			
All conifers	3.1	35.2	5
All broadleaves	1.2	239.0	2
All species	4.2	273.7	2

Part 2 – what our woodlands are like today

Figure 53 Summary of overdue volume in the private sector

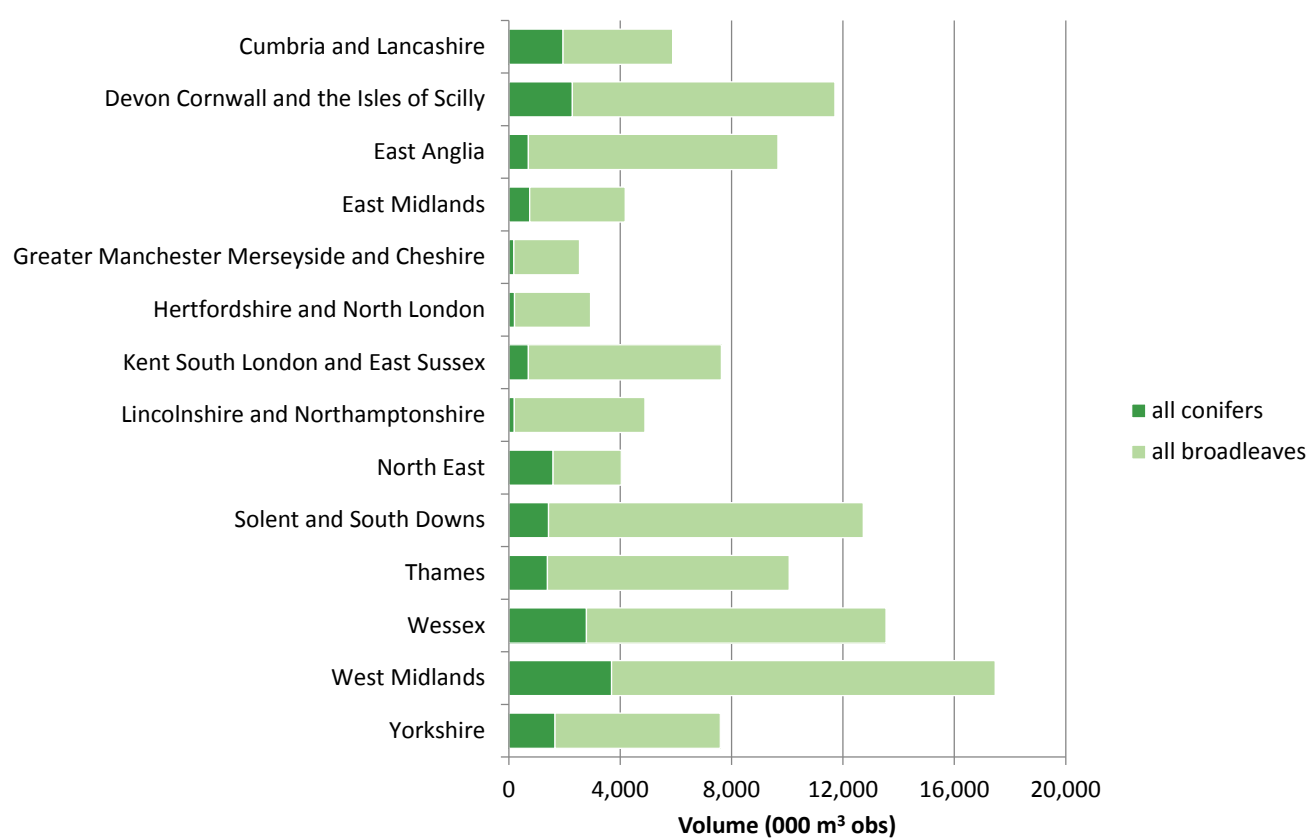
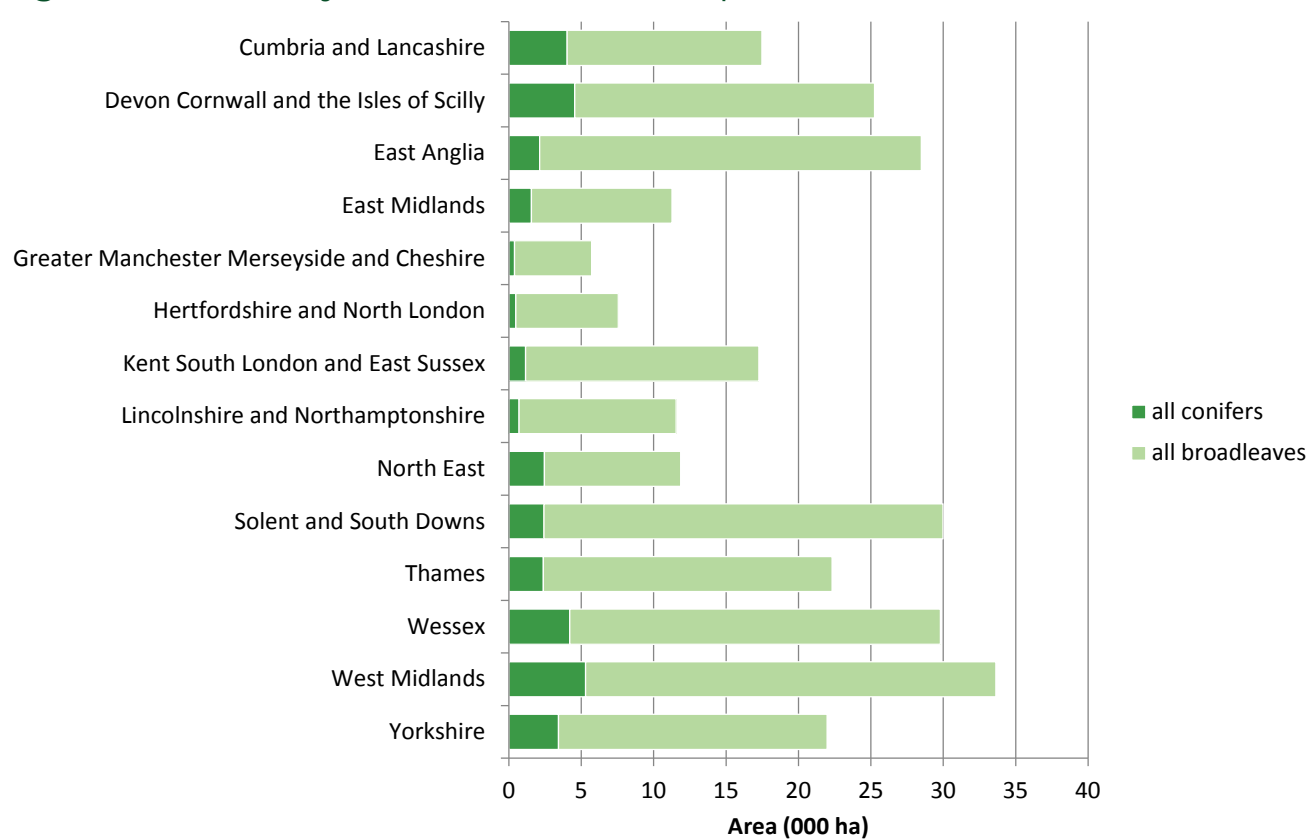


Figure 54 Summary of overdue area in the private sector



Part 2 – what our woodlands are like today

Table 42 Summary of overdue volume in conifers by aligned area

Aligned area	All conifers			
	FC	Private sector		Total
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)
England	908	19,493	6	20,402
Cumbria and Lancashire	140	1,944	17	2,084
Devon and Cornwall	8	2,283	14	2,291
East Anglia	33	704	24	737
East Midlands	34	746	34	780
Gtr Mancs Mersey and Ches	4	182	52	186
Herts and North London	2	205	44	207
Kent S London and E Sussex	40	704	33	744
Lincs and Northants	59	193	30	252
North East	229	1,589	27	1,818
Solent and South Downs	67	1,424	17	1,491
Thames	12	1,384	19	1,396
Wessex	51	2,784	19	2,835
West Midlands	123	3,691	18	3,813
Yorkshire	108	1,661	14	1,768

Table 43 Summary of overdue area in conifers by aligned area

Aligned area	All conifers			
	FC	Private sector		Total
	area (000 ha)		SE%	area (000 ha)
England	3.1	35.2	5	38.3
Cumbria and Lancashire	0.4	4.0	15	4.4
Devon and Cornwall	< 0.1	4.6	14	4.6
East Anglia	0.3	2.1	24	2.5
East Midlands	0.1	1.6	31	1.7
Gtr Mancs Mersey and Ches	< 0.1	0.4	49	0.4
Herts and North London	< 0.1	0.5	39	0.5
Kent S London and E Sussex	0.1	1.1	28	1.3
Lincs and Northants	0.2	0.7	30	0.9
North East	0.6	2.5	24	3.1
Solent and South Downs	0.2	2.4	16	2.6
Thames	< 0.1	2.4	16	2.4
Wessex	0.2	4.2	16	4.4
West Midlands	0.4	5.3	15	5.7
Yorkshire	0.4	3.4	13	3.9

Part 2 – what our woodlands are like today

Table 44 Summary of overdue volume in broadleaves by aligned area

Aligned area	All broadleaves			
	FC	Private sector		Total
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)
England	179	95,384	3	95,563
Cumbria and Lancashire	1	3,941	10	3,942
Devon and Cornwall	< 1	9,427	9	9,427
East Anglia	10	8,961	9	8,972
East Midlands	5	3,435	15	3,440
Gtr Mancs Mersey and Ches	7	2,354	23	2,361
Herts and North London	< 1	2,729	24	2,729
Kent S London and E Sussex	2	6,929	10	6,931
Lincs and Northants	11	4,693	11	4,704
North East	8	2,452	13	2,460
Solent and South Downs	11	11,308	6	11,320
Thames	< 1	8,688	7	8,688
Wessex	15	10,760	7	10,774
West Midlands	105	13,777	9	13,882
Yorkshire	2	5,930	7	5,932

Table 45 Summary of overdue area in broadleaves by aligned area

Aligned area	All broadleaves			
	FC	Private sector		Total
	area (000 ha)		SE%	area (000 ha)
England	1.2	239.0	2	240.1
Cumbria and Lancashire	< 0.1	13.5	7	13.5
Devon and Cornwall	< 0.1	20.7	6	20.7
East Anglia	< 0.1	26.4	7	26.4
East Midlands	< 0.1	9.7	10	9.8
Gtr Mancs Mersey and Ches	< 0.1	5.3	17	5.4
Herts and North London	< 0.1	7.1	15	7.1
Kent S London and E Sussex	< 0.1	16.1	9	16.1
Lincs and Northants	< 0.1	10.8	8	10.9
North East	< 0.1	9.4	12	9.5
Solent and South Downs	< 0.1	27.6	4	27.7
Thames	< 0.1	19.9	5	19.9
Wessex	0.1	25.6	6	25.7
West Midlands	0.6	28.3	6	28.9
Yorkshire	< 0.1	18.5	6	18.6

Part 2 – what our woodlands are like today

Table 46 Summary of overdue volume by aligned area

Aligned area	All species			
	FC	Private sector		Total
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)
England	1,087	114,759	2	115,846
Cumbria and Lancashire	141	5,868	9	6,009
Devon and Cornwall	8	11,722	8	11,729
East Anglia	43	9,667	8	9,710
East Midlands	39	4,181	14	4,220
Gtr Mancs Mersey and Ches	10	2,536	22	2,546
Herts and North London	2	2,934	23	2,936
Kent S London and E Sussex	42	7,635	10	7,677
Lincs and Northants	70	4,888	11	4,958
North East	237	4,074	13	4,311
Solent and South Downs	79	12,664	6	12,743
Thames	13	10,061	7	10,074
Wessex	66	13,488	7	13,554
West Midlands	228	17,486	8	17,714
Yorkshire	110	7,555	6	7,665

Table 47 Summary of overdue area by aligned area

Aligned area	All species			
	FC	Private sector		Total
	area (000 ha)		SE%	area (000 ha)
England	4.2	273.7	2	277.9
Cumbria and Lancashire	0.4	17.5	7	17.8
Devon and Cornwall	0.0	25.3	6	25.3
East Anglia	0.4	28.5	6	28.9
East Midlands	0.2	11.3	10	11.4
Gtr Mancs Mersey and Ches	0.1	5.7	16	5.8
Herts and North London	0.0	7.6	14	7.6
Kent S London and E Sussex	0.1	17.3	8	17.4
Lincs and Northants	0.3	11.6	8	11.8
North East	0.7	11.9	11	12.6
Solent and South Downs	0.3	29.8	4	30.1
Thames	0.1	22.2	5	22.3
Wessex	0.3	29.6	5	29.9
West Midlands	1.0	33.6	6	34.7
Yorkshire	0.5	21.9	5	22.4

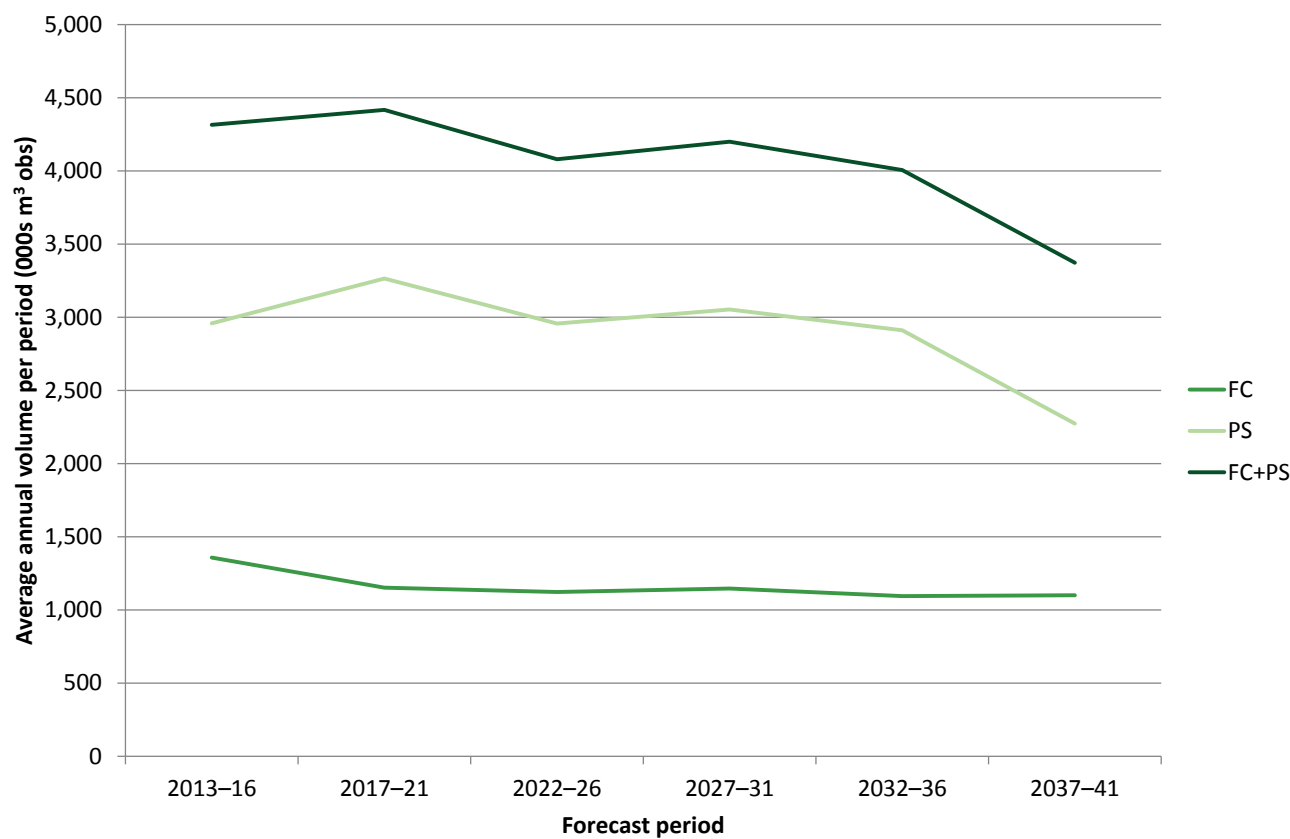
Part 3 – How our woodlands might change over time

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25-year softwood forecast

25-year forecast of softwood timber availability

Figure 55 Summary of 25-year forecast of softwood timber availability; average annual volume within period



Part 3 - how our woodlands might change

Figure 56 25-year forecast of softwood timber availability; average annual volume within period

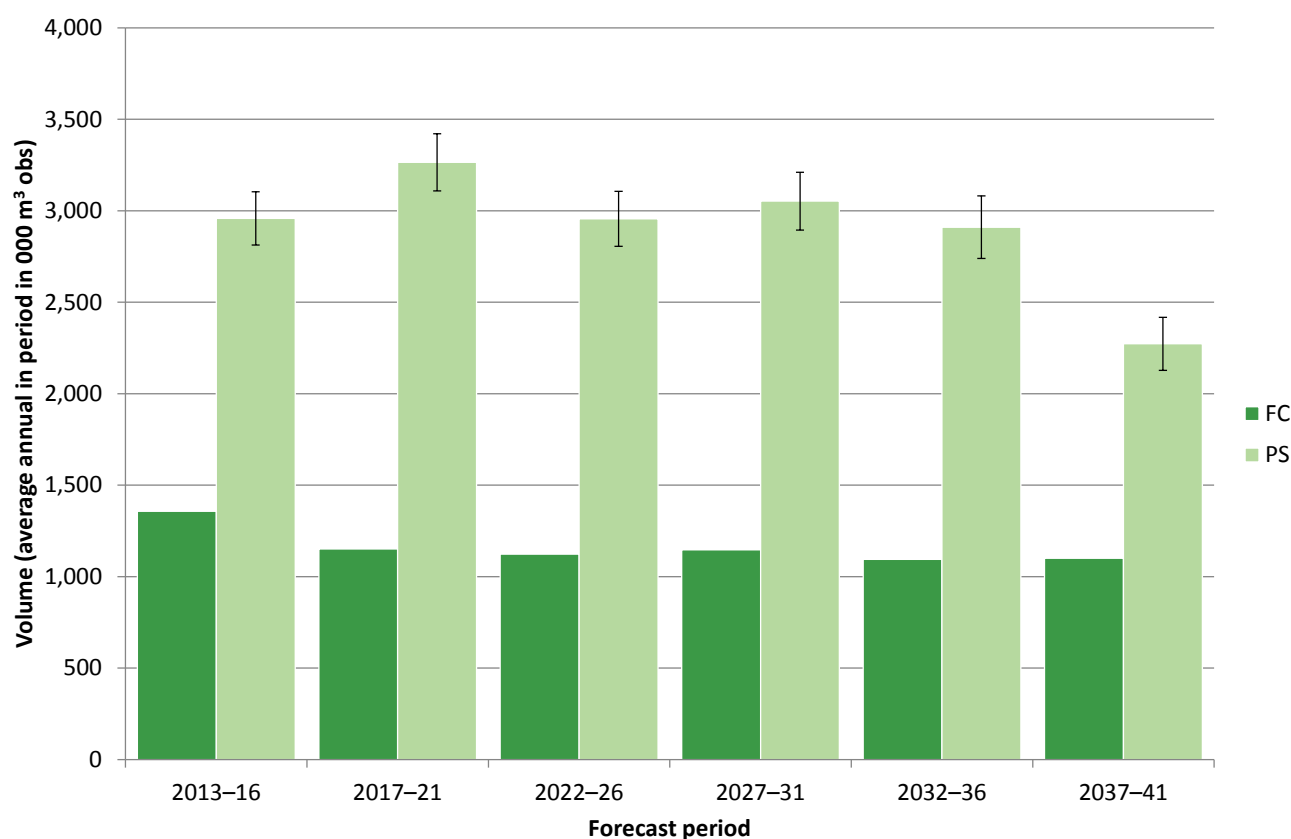


Table 48 25-year forecast of softwood availability; average annual volume within period

Forecast period	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
England				
2013-16	1,358	2,958	5	4,316
2017-21	1,151	3,265	5	4,416
2022-26	1,123	2,956	5	4,079
2027-31	1,146	3,053	5	4,199
2032-36	1,095	2,910	6	4,005
2037-41	1,100	2,273	6	3,373

Part 3 - how our woodlands might change

25-year forecast of softwood timber availability by principal species

Table 49 25-year forecast of softwood timber availability by principal species; average annual volume within period

Principal species	2013–16			2017–21		
	FC	Private sector		FC	Private sector	
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)		SE%
England						
All conifers	1,358	2,958	5	1,151	3,265	5
Sitka spruce	635	465	18	490	696	16
Scots pine	129	510	10	123	527	9
Corsican pine	267	318	15	256	315	15
Norway spruce	113	266	12	66	331	16
Larches	56	553	8	62	592	7
Douglas fir	63	440	16	68	361	12
Lodgepole pine	50	48	41	39	37	49
Other conifers	45	353	13	46	404	12

Table 49 (cont'd) 25-year forecast of softwood timber availability by principal species; average annual volume within period

Principal species	2022–26			2027–31		
	FC	Private sector		FC	Private sector	
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)		SE%
England						
All conifers	1,123	2,956	5	1,146	3,053	5
Sitka spruce	479	684	14	496	657	16
Scots pine	124	632	10	114	902	10
Corsican pine	261	244	20	256	192	22
Norway spruce	44	386	18	51	446	12
Larches	68	410	7	57	326	7
Douglas fir	74	239	14	99	197	15
Lodgepole pine	34	49	37	23	40	43
Other conifers	39	306	12	51	291	12

Part 3 - how our woodlands might change

Table 49 (cont'd) 25-year forecast of softwood timber availability by principal species; average annual volume within period

Principal species	2032–36			2037–41		
	FC	Private sector		FC	Private sector	
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)		SE%
England						
All conifers	1,095	2,910	6	1,100	2,273	6
Sitka spruce	458	697	18	433	475	19
Scots pine	97	832	10	95	778	12
Corsican pine	274	146	28	263	109	28
Norway spruce	35	454	15	56	247	13
Larches	62	307	8	65	189	9
Douglas fir	114	174	14	129	163	19
Lodgepole pine	17	21	51	5	80	42
Other conifers	37	272	17	56	225	18

25-year forecast of softwood timber availability % spruce

Table 50 25-year forecast of softwood timber availability % spruce

England		Top diameter class (cm)								Total
		7–14	14–16	16–18	18–24	24–34	34–44	44–54	54+	
2013–16	FC (%)	57	67	69	66	46	28	23	24	55
	PS (%)	38	34	33	29	24	17	14	9	25
2017–21	FC (%)	57	61	60	56	41	29	24	16	48
	PS (%)	34	32	32	32	33	30	28	28	31
2022–26	FC (%)	60	63	61	54	37	25	21	14	47
	PS (%)	45	45	45	42	36	30	27	23	36
2027–31	FC (%)	64	66	63	55	39	29	25	17	48
	PS (%)	45	45	45	41	36	32	30	26	36
2032–36	FC (%)	63	66	62	51	34	26	23	14	45
	PS (%)	49	52	50	48	41	35	30	20	40
2037–41	FC (%)	62	67	64	52	33	24	22	14	44
	PS (%)	41	51	50	42	29	23	21	17	32

Part 3 - how our woodlands might change

25-year forecast of softwood timber availability by top diameter class

Table 51 25-year forecast of softwood timber availability by top diameter class; average annual volume within period

Top diameter class (cm)	2013–16			2017–21		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
7–14	351	306	4	224	259	4
14–16	127	134	4	94	125	5
16–18	124	159	4	99	159	5
18–24	322	611	5	280	666	5
24–34	263	909	6	264	1,056	6
34–44	97	427	7	106	506	6
44–54	44	199	9	49	234	8
54+	30	212	12	34	260	12
Total	1,358	2,958	5	1,151	3,265	5

Table 51 (cont'd) 25-year forecast of softwood timber availability by top diameter class; average annual volume within period

Top diameter class (cm)	2022–26			2027–31		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
7–14	200	219	6	174	198	6
14–16	88	106	7	82	94	6
16–18	95	137	7	90	117	6
18–24	283	612	6	288	547	6
24–34	265	996	6	292	1,003	6
34–44	104	468	6	115	535	6
44–54	49	214	8	53	267	7
54+	40	206	10	53	293	10
Total	1,123	2,956	5	1,146	3,053	5

Part 3 - how our woodlands might change

Table 51 (cont'd) 25-year forecast of softwood timber availability by top diameter class; average annual volume within period

Top diameter class (cm)	2032–36			2037–41		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
7–14	175	190	6	200	247	8
14–16	76	86	8	72	83	11
16–18	83	105	8	75	95	11
18–24	269	507	8	241	402	9
24–34	288	993	7	280	706	8
34–44	111	523	6	119	365	7
44–54	47	248	7	54	175	8
54+	46	259	9	60	200	9
Total	1,095	2,910	6	1,100	2,273	6

Part 3 - how our woodlands might change

25-year forecast of standing volume in conifers

Figure 57 25-year forecast of standing volume in conifers

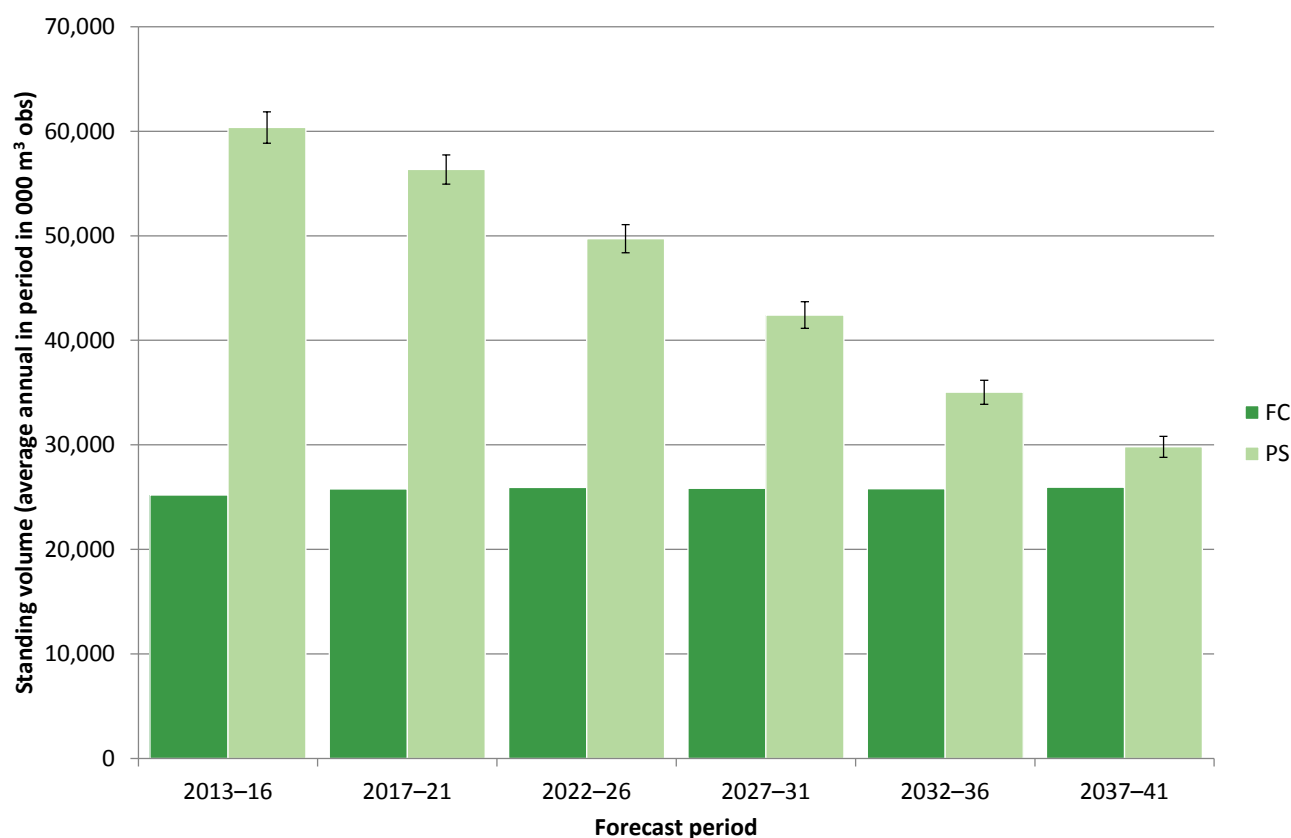


Table 52 25-year forecast of standing volume in conifers; average annual volume within period

Forecast period	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
England				
2013-16	25,207	60,358	2	85,565
2017-21	25,789	56,344	2	82,132
2022-26	25,916	49,720	3	75,636
2027-31	25,851	42,418	3	68,270
2032-36	25,800	35,035	3	60,835
2037-41	25,946	29,809	3	55,755

Part 3 - how our woodlands might change

25-year forecast of net increment in conifers

Figure 58 25-year forecast of net increment in conifers

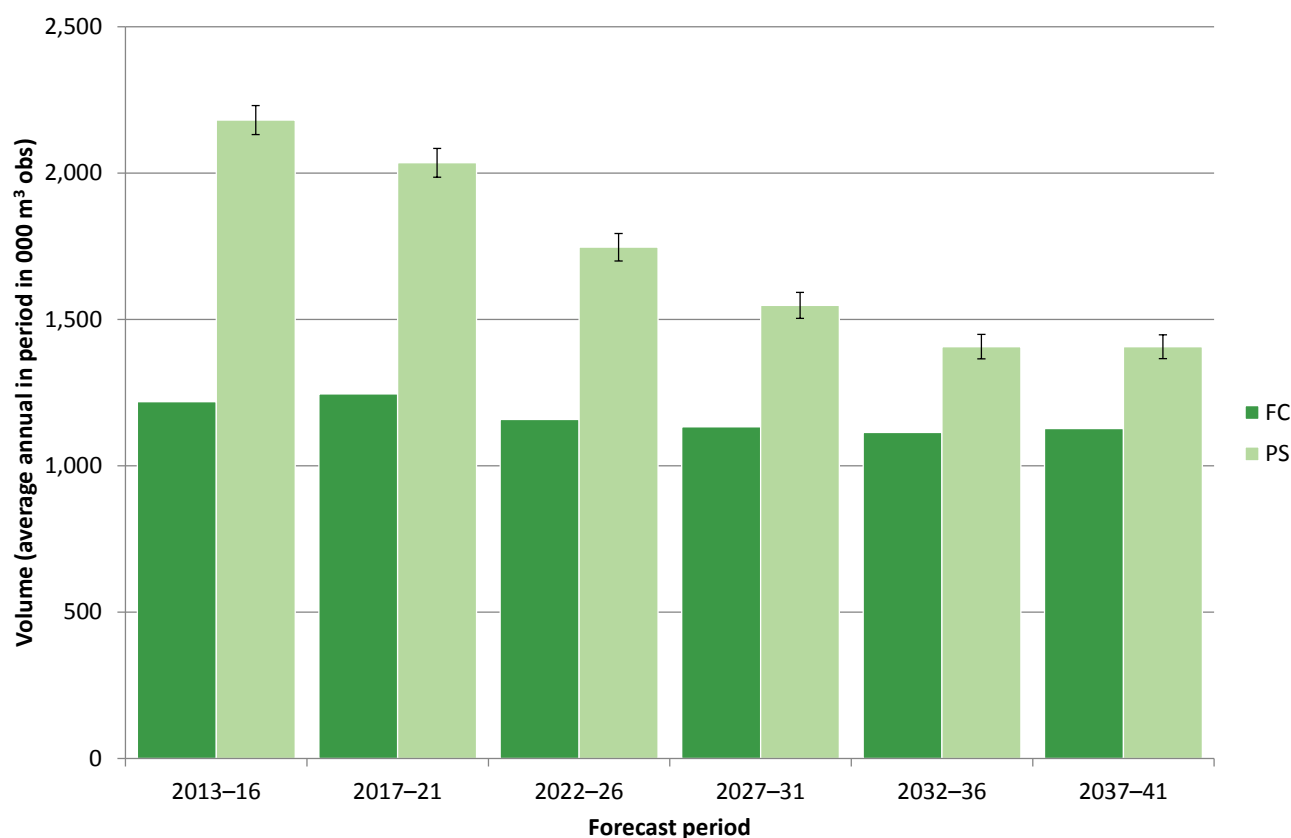


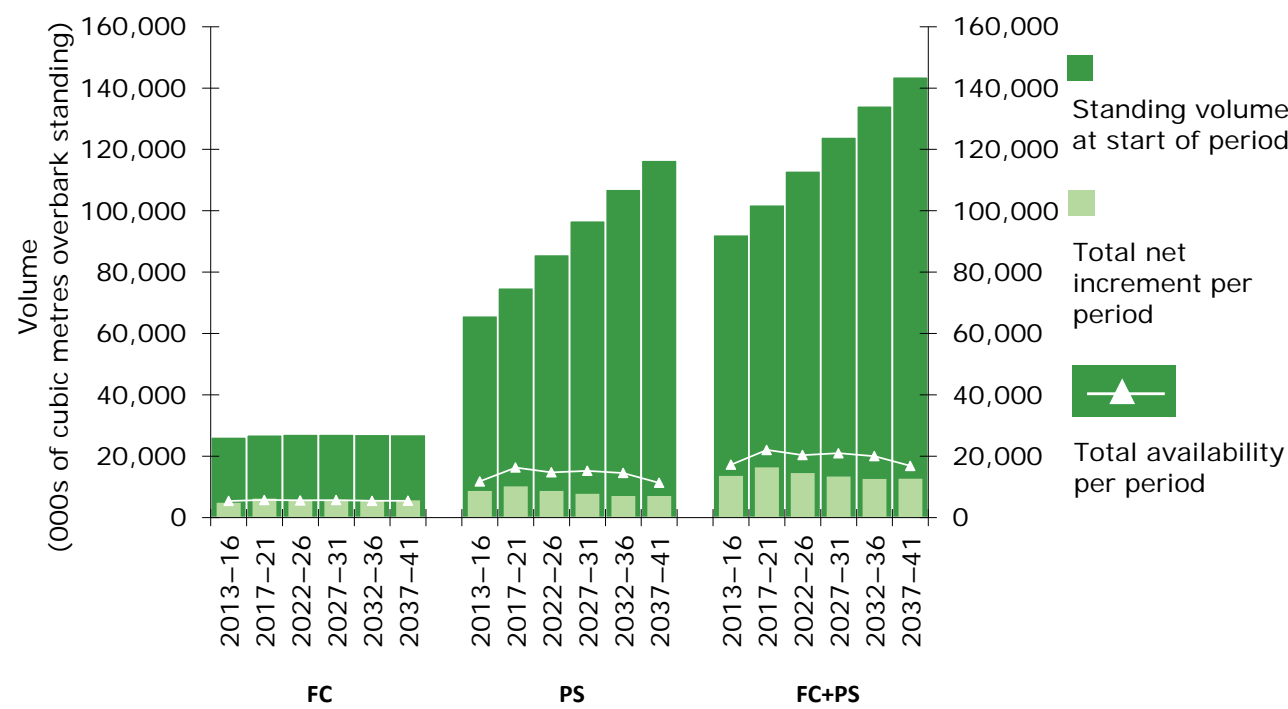
Table 53 25-year forecast of net increment in conifers; average annual volume within period

Forecast period	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
England				
2013–16	1,219	2,181	2	3,400
2017–21	1,246	2,035	2	3,281
2022–26	1,158	1,747	3	2,905
2027–31	1,133	1,548	3	2,681
2032–36	1,113	1,407	3	2,520
2037–41	1,127	1,407	3	2,534

Part 3 - how our woodlands might change

Combined standing volume, net increment and availability

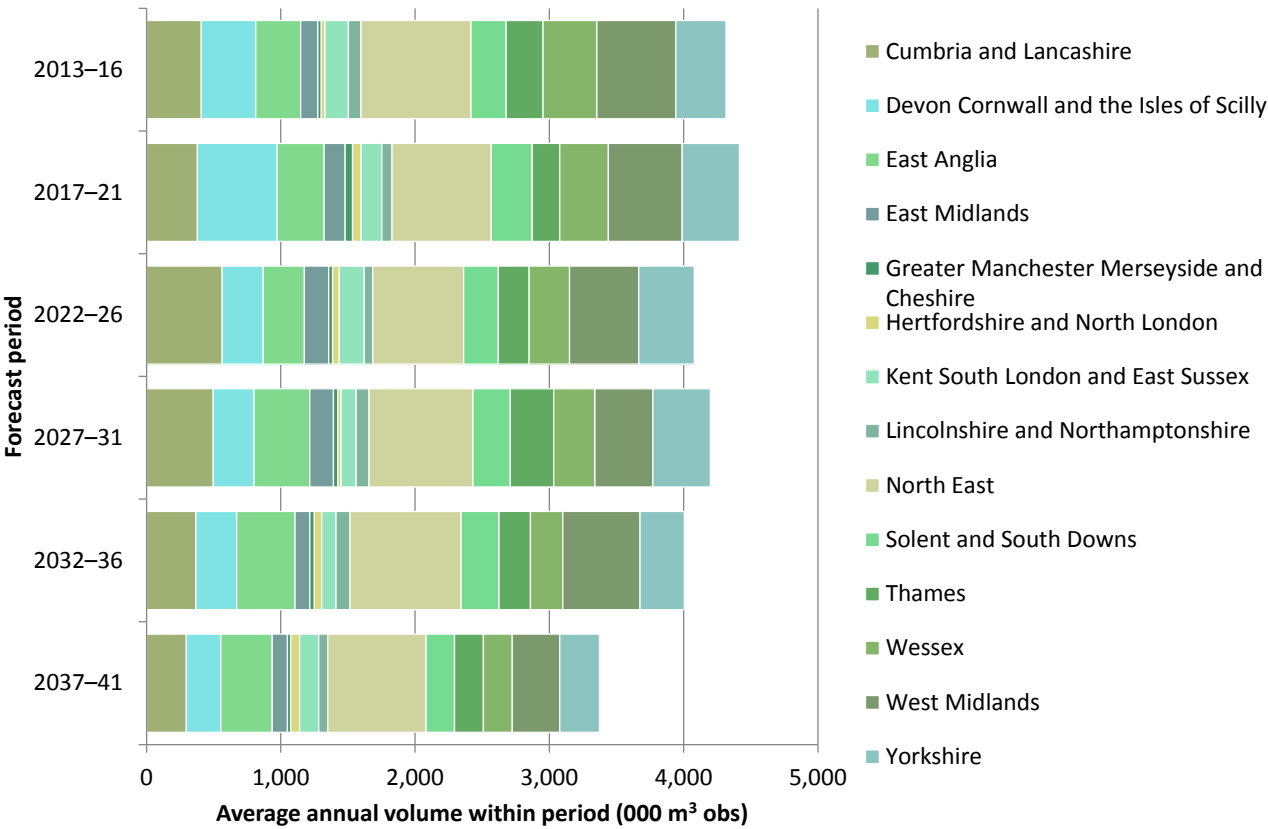
Figure 59 25-year forecast of standing volume, net increment and softwood availability



Part 3 - how our woodlands might change

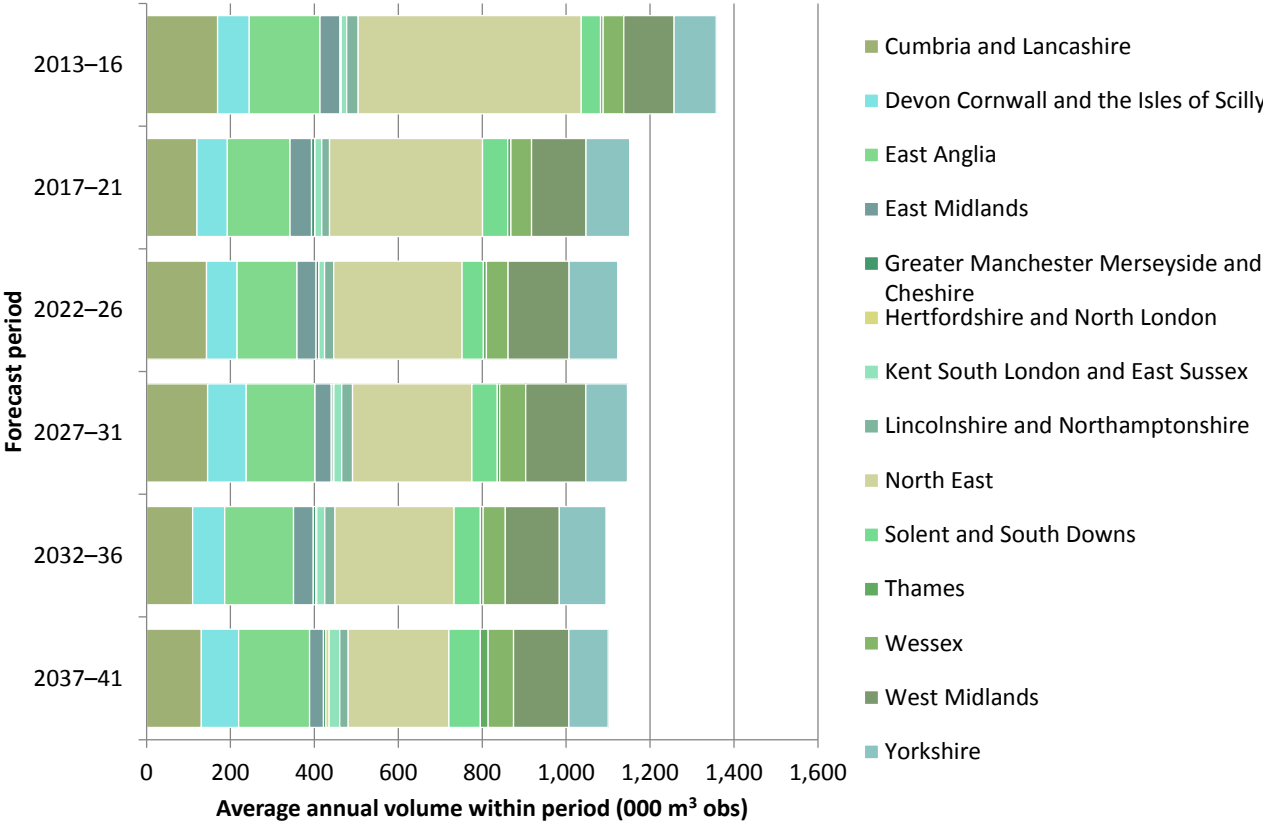
25-year softwood forecast aligned area summary

Figure 60 25-year softwood forecast showing contribution by aligned area (FC+PS)



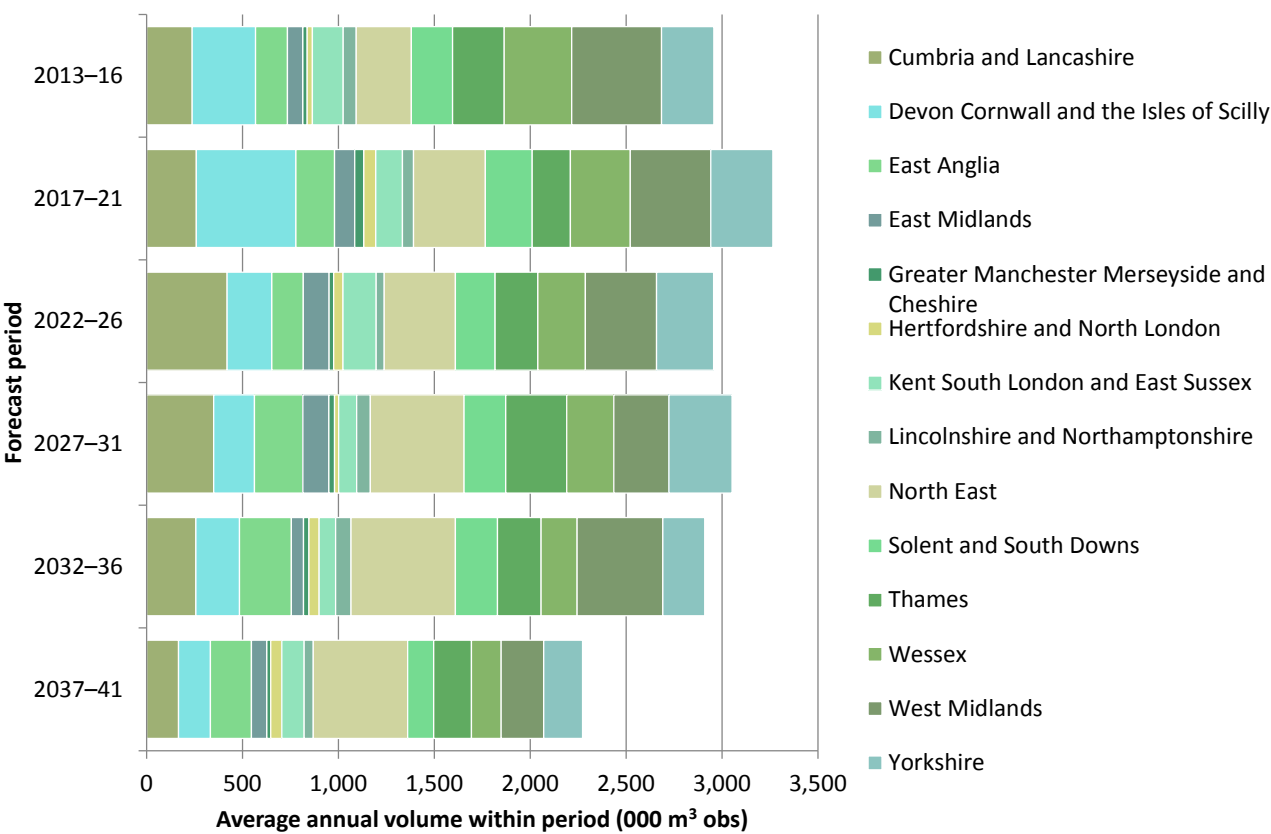
Part 3 - how our woodlands might change

Figure 61 25-year softwood forecast showing contribution by aligned area (FC)



Part 3 - how our woodlands might change

Figure 62 25-year softwood forecast showing contribution by aligned area (PS)



Part 3 - how our woodlands might change

Table 54 25-year softwood forecast by aligned area; average annual volume within period

Aligned Area	2013–16			2017–21		
	FC	Private sector		FC	Private sector	
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)		SE%
England	1,358	2,958	5	1,146	3,265	5
Cumbria and Lancashire	169	238	18	145	259	17
Devon and Cornwall	76	330	17	92	520	16
East Anglia	168	166	12	164	201	13
East Midlands	47	81	18	39	105	22
Gtr Mancs Mersey and Ches	3	23	30	5	48	30
Herts and North London	< 1	27	18	2	62	22
Kent S London and E Sussex	13	161	17	18	139	16
Lincs and Northants	27	67	19	26	58	18
North East	532	287	19	284	374	17
Solent and South Downs	46	216	13	61	245	11
Thames	6	269	17	5	199	11
Wessex	49	352	15	62	312	14
West Midlands	120	468	15	143	420	14
Yorkshire	100	273	11	99	323	15

Table 54 (cont'd) 25-year softwood forecast by aligned area; average annual volume within period

Aligned Area	2022–26			2027–31		
	FC	Private sector		FC	Private sector	
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)		SE%
England	1,123	2,956	5	1,146	3,053	5
Cumbria and Lancashire	143	420	18	145	350	16
Devon and Cornwall	73	232	12	92	212	15
East Anglia	143	164	18	164	252	18
East Midlands	45	135	30	39	136	22
Gtr Mancs Mersey and Ches	6	24	28	5	29	30
Herts and North London	< 1	49	30	2	22	24
Kent S London and E Sussex	14	173	18	18	94	23
Lincs and Northants	21	42	15	26	70	19
North East	306	371	17	284	489	19
Solent and South Downs	51	208	13	61	218	14
Thames	7	223	14	5	318	15
Wessex	52	248	16	62	245	12
West Midlands	145	371	18	143	287	15
Yorkshire	116	298	11	99	329	17

Part 3 - how our woodlands might change

Table 54 (cont'd) 25-year softwood forecast by aligned area; average annual volume within period

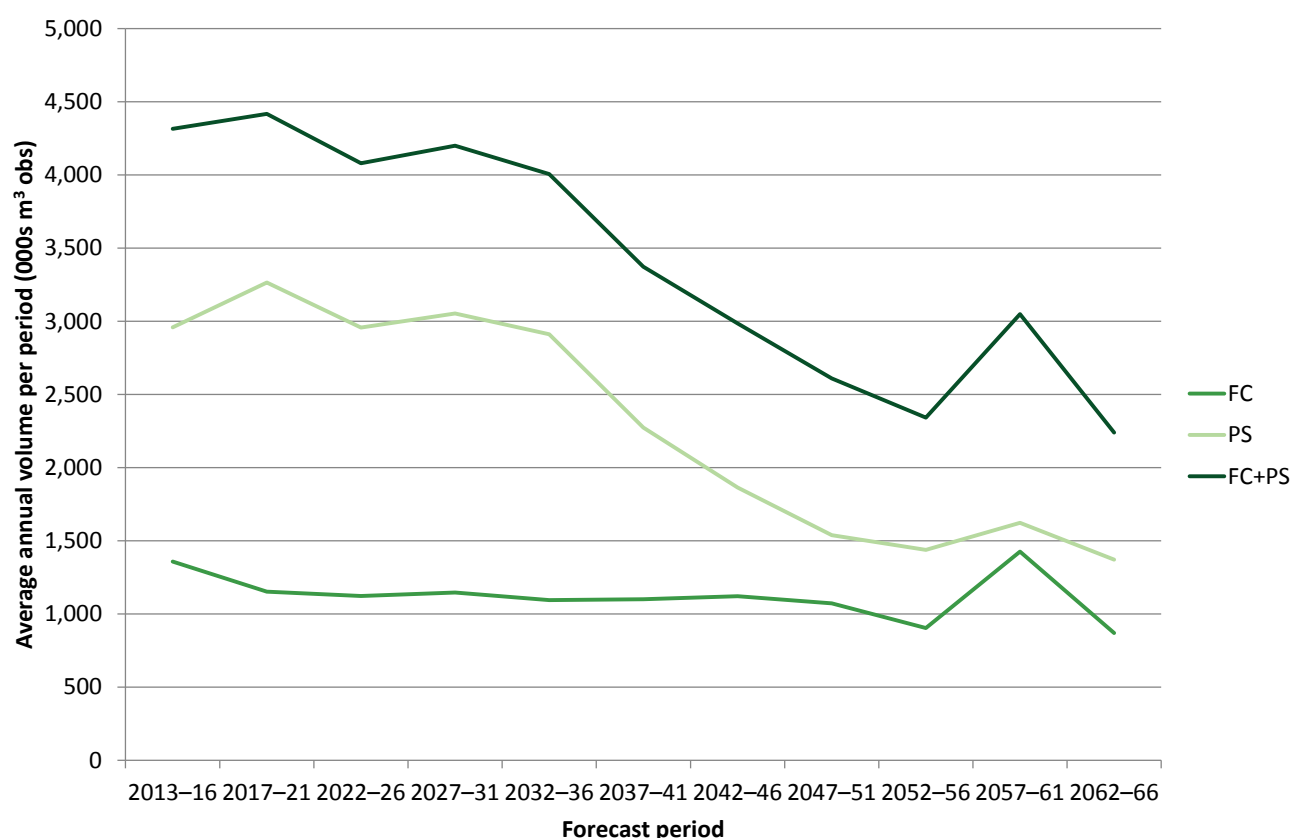
Aligned Area	2032–36			2037–41		
	FC	Private sector		FC	Private sector	
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)		SE%
England	1,095	2,910	6	1,100	2,273	6
Cumbria and Lancashire	110	257	20	131	166	15
Devon and Cornwall	77	228	15	89	167	21
East Anglia	164	270	17	169	214	20
East Midlands	47	63	21	33	80	40
Gtr Mancs Mersey and Ches	6	28	43	5	20	33
Herts and North London	2	53	58	8	58	34
Kent S London and E Sussex	19	87	25	25	117	23
Lincs and Northants	24	80	22	20	47	25
North East	284	544	19	240	491	19
Solent and South Downs	63	220	16	75	137	23
Thames	7	227	18	19	196	23
Wessex	53	188	13	61	156	12
West Midlands	129	447	18	132	222	21
Yorkshire	111	219	13	94	202	16

Part 3 - how our woodlands might change

50-year softwood forecast

50-year forecast of softwood timber availability

Figure 63 Summary of 50-year forecast of softwood timber availability; average annual volume within period



Part 3 - how our woodlands might change

Figure 64 50-year forecast of softwood timber availability; average annual volume within period

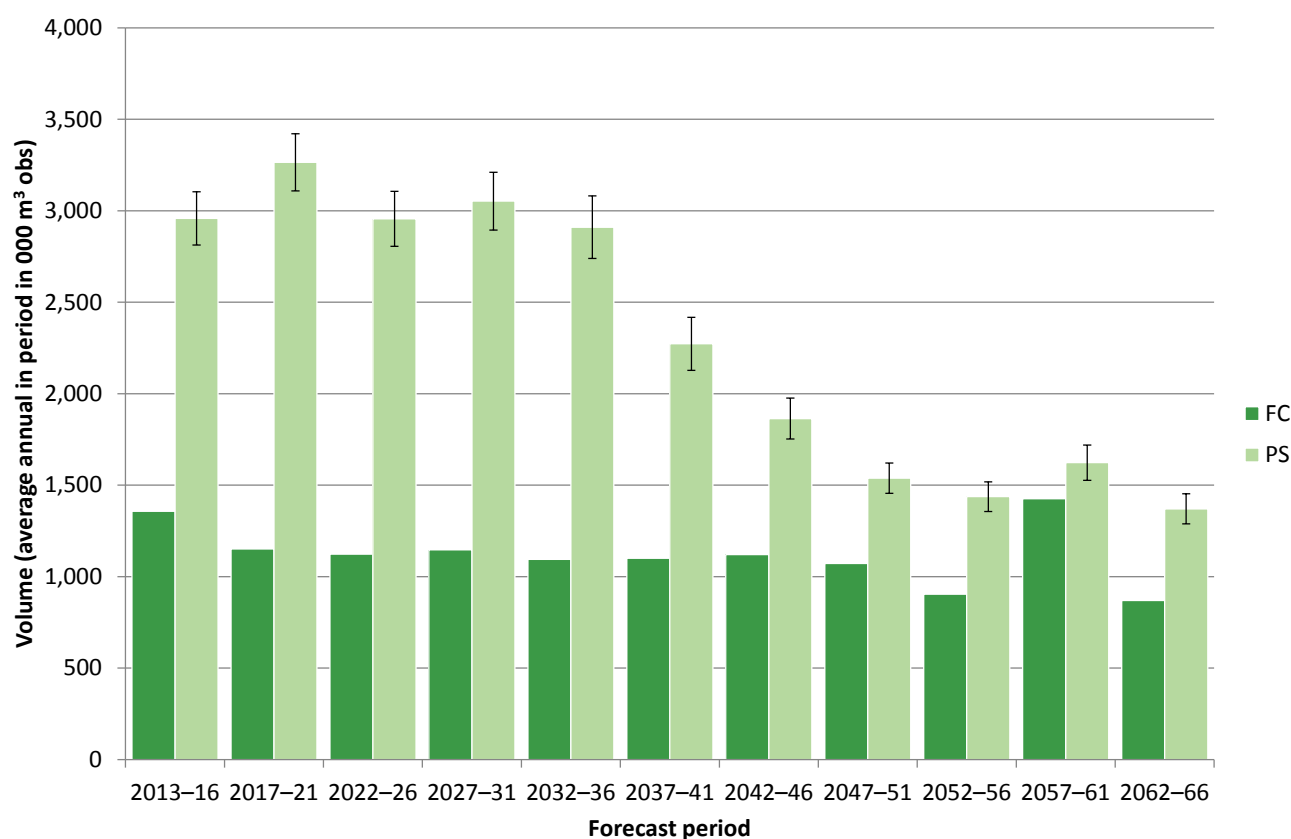


Table 55 Summary of 50-year forecast of softwood timber availability; average annual volume within period

Forecast period	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
England				
2013-16	1,358	2,958	5	4,316
2017-21	1,151	3,265	5	4,416
2022-26	1,123	2,956	5	4,079
2027-31	1,146	3,053	5	4,199
2032-36	1,095	2,910	6	4,005
2037-41	1,100	2,273	6	3,373
2042-46	1,121	1,864	6	2,985
2047-51	1,071	1,538	5	2,609
2052-56	904	1,437	6	2,341
2057-61	1,426	1,623	6	3,049
2062-66	869	1,371	6	2,240

Part 3 - how our woodlands might change

50-year forecast of softwood timber availability by principal species

Table 56 50-year forecast of softwood timber availability by principal species; average annual volume within period

Principal species	2013–16			2017–21		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
All conifers	1,358	2,958	5	1,151	3,265	5
Sitka spruce	635	465	18	490	696	16
Scots pine	129	510	10	123	527	9
Corsican pine	267	318	15	256	315	15
Norway spruce	113	266	12	66	331	16
Larches	56	553	8	62	592	7
Douglas fir	63	440	16	68	361	12
Lodgepole pine	50	48	41	39	37	49
Other conifers	45	353	13	46	404	12

Table 56 (cont'd) 50-year forecast of softwood timber availability by principal species; average annual volume within period

Principal species	2022–26			2027–31		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
All conifers	1,123	2,956	5	1,146	3,053	5
Sitka spruce	479	684	14	496	657	16
Scots pine	124	632	10	114	902	10
Corsican pine	261	244	20	256	192	22
Norway spruce	44	386	18	51	446	12
Larches	68	410	7	57	326	7
Douglas fir	74	239	14	99	197	15
Lodgepole pine	34	49	37	23	40	43
Other conifers	39	306	12	51	291	12

Part 3 - how our woodlands might change

Table 56 (cont'd) 50-year forecast of softwood timber availability by principal species; average annual volume within period

Principal species	2032–36			2037–41		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
All conifers	1,095	2,910	6	1,100	2,273	6
Sitka spruce	458	697	18	433	475	19
Scots pine	97	832	10	95	778	12
Corsican pine	274	146	28	263	109	28
Norway spruce	35	454	15	56	247	13
Larches	62	307	8	65	189	9
Douglas fir	114	174	14	129	163	19
Lodgepole pine	17	21	51	5	80	42
Other conifers	37	272	17	56	225	18

Table 56 (cont'd) 50-year forecast of softwood timber availability by principal species; average annual volume within period

Principal species	2042–46			2047–51		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
All conifers	1,121	1,864	6	1,071	1,538	5
Sitka spruce	456	348	16	458	268	10
Scots pine	93	482	13	99	471	12
Corsican pine	225	78	26	194	37	36
Norway spruce	59	380	15	59	251	16
Larches	87	143	8	68	152	9
Douglas fir	134	166	13	125	143	7
Lodgepole pine	5	38	43	6	7	52
Other conifers	61	224	18	61	207	10

Part 3 - how our woodlands might change

Table 56 (cont'd) 50-year forecast of softwood timber availability by principal species; average annual volume within period

Principal species	2052–56			2057–61		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
All conifers	904	1,437	6	1,426	1,623	6
Sitka spruce	371	304	11	657	450	16
Scots pine	94	306	11	167	360	12
Corsican pine	131	52	42	123	52	58
Norway spruce	58	265	21	123	187	16
Larches	52	136	8	100	148	8
Douglas fir	128	172	11	146	195	9
Lodgepole pine	7	6	27	10	3	32
Other conifers	61	195	8	64	228	8

Table 56 (cont'd) 50-year forecast of softwood timber availability by principal species; average annual volume within period

Principal species	2062–66		
	FC	Private sector	
	volume (000 m ³ obs)		SE%
England			
All conifers	869	1,371	6
Sitka spruce	285	426	16
Scots pine	113	272	11
Corsican pine	74	11	30
Norway spruce	62	154	14
Larches	41	71	6
Douglas fir	179	191	8
Lodgepole pine	6	10	58
Other conifers	109	235	5

Part 3 - how our woodlands might change

50-year forecast of softwood timber availability % spruce

Table 57 50-year forecast of softwood timber availability % spruce

England		Top diameter class (cm)								Total
		7-14	14-16	16-18	18-24	24-34	34-44	44-54	54+	
2013-16	FC (%)	57	67	69	66	46	28	23	24	55
	PS (%)	38	34	33	29	24	17	14	9	25
2017-21	FC (%)	57	61	60	56	41	29	24	16	48
	PS (%)	34	32	32	32	33	30	28	28	31
2022-26	FC (%)	60	63	61	54	37	25	21	14	47
	PS (%)	45	45	45	42	36	30	27	23	36
2027-31	FC (%)	64	66	63	55	39	29	25	17	48
	PS (%)	45	45	45	41	36	32	30	26	36
2032-36	FC (%)	63	66	62	51	34	26	23	14	45
	PS (%)	49	52	50	48	41	35	30	20	40
2037-41	FC (%)	62	67	64	52	33	24	22	14	44
	PS (%)	41	51	50	42	29	23	21	17	32
2042-46	FC (%)	64	69	66	55	31	22	21	16	46
	PS (%)	36	43	44	43	40	40	40	28	39
2047-51	FC (%)	61	68	67	58	36	26	24	17	48
	PS (%)	32	35	37	41	38	33	29	18	34
2052-56	FC (%)	57	64	65	60	37	23	22	17	47
	PS (%)	34	36	34	36	44	46	48	43	40
2057-61	FC (%)	58	66	67	66	54	37	29	22	55
	PS (%)	36	39	36	35	43	47	48	33	39
2062-66	FC (%)	43	48	50	49	41	28	23	19	40
	PS (%)	35	41	40	37	48	60	66	46	42

Part 3 - how our woodlands might change

50-year forecast of standing volume in conifers

Figure 65 50-year forecast of standing volume in conifers; average annual volume within period

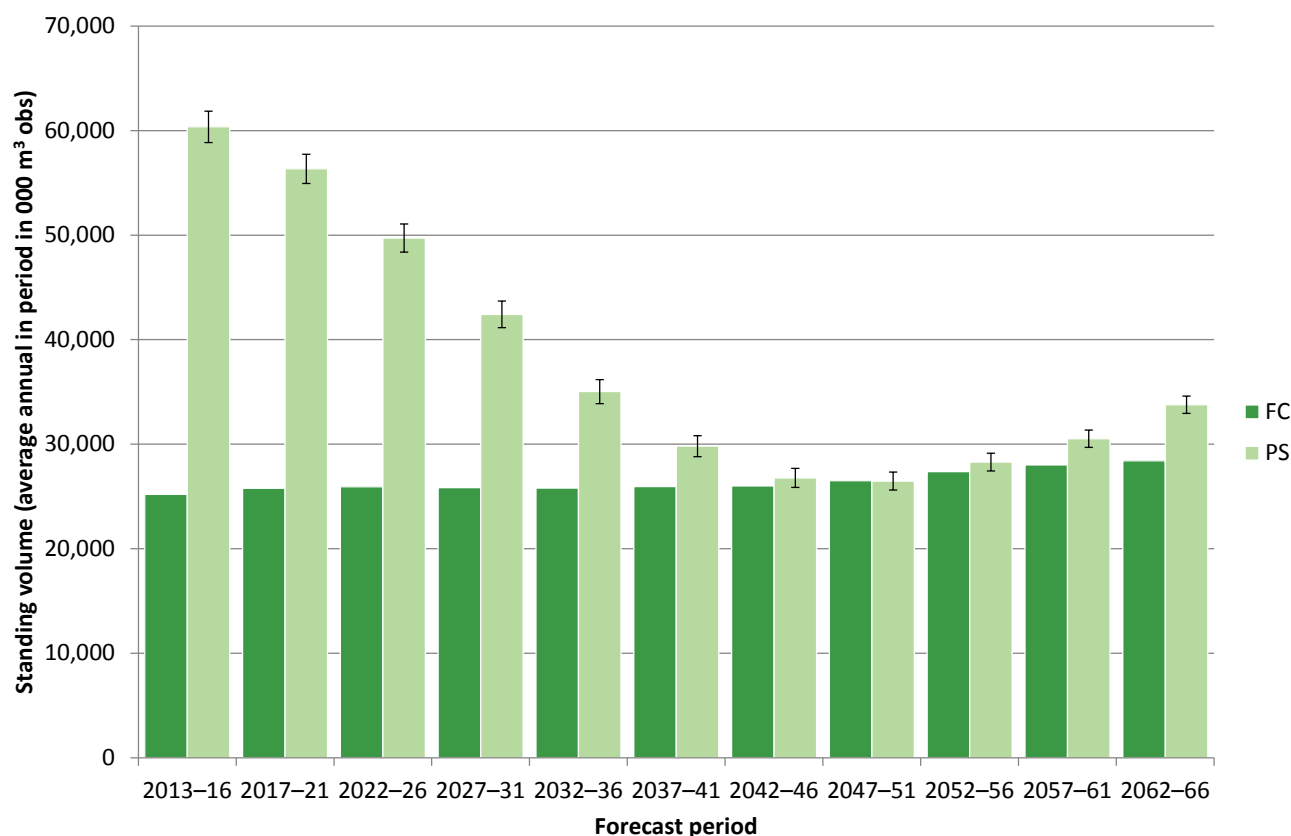


Table 58 50-year forecast of standing volume in conifers; average annual volume within period

Forecast period	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
England				
2013-16	25,207	60,358	2	85,565
2017-21	25,789	56,344	2	82,132
2022-26	25,916	49,720	3	75,636
2027-31	25,851	42,418	3	68,270
2032-36	25,800	35,035	3	60,835
2037-41	25,946	29,809	3	55,755
2042-46	26,006	26,772	3	52,778
2047-51	26,504	26,468	3	52,972
2052-56	27,378	28,291	3	55,669
2057-61	28,016	30,517	3	58,534
2062-66	28,408	33,765	2	62,173

Part 3 - how our woodlands might change

50-year forecast of net increment in conifers

Figure 66 50-year forecast of net increment in conifers; average annual volume within period

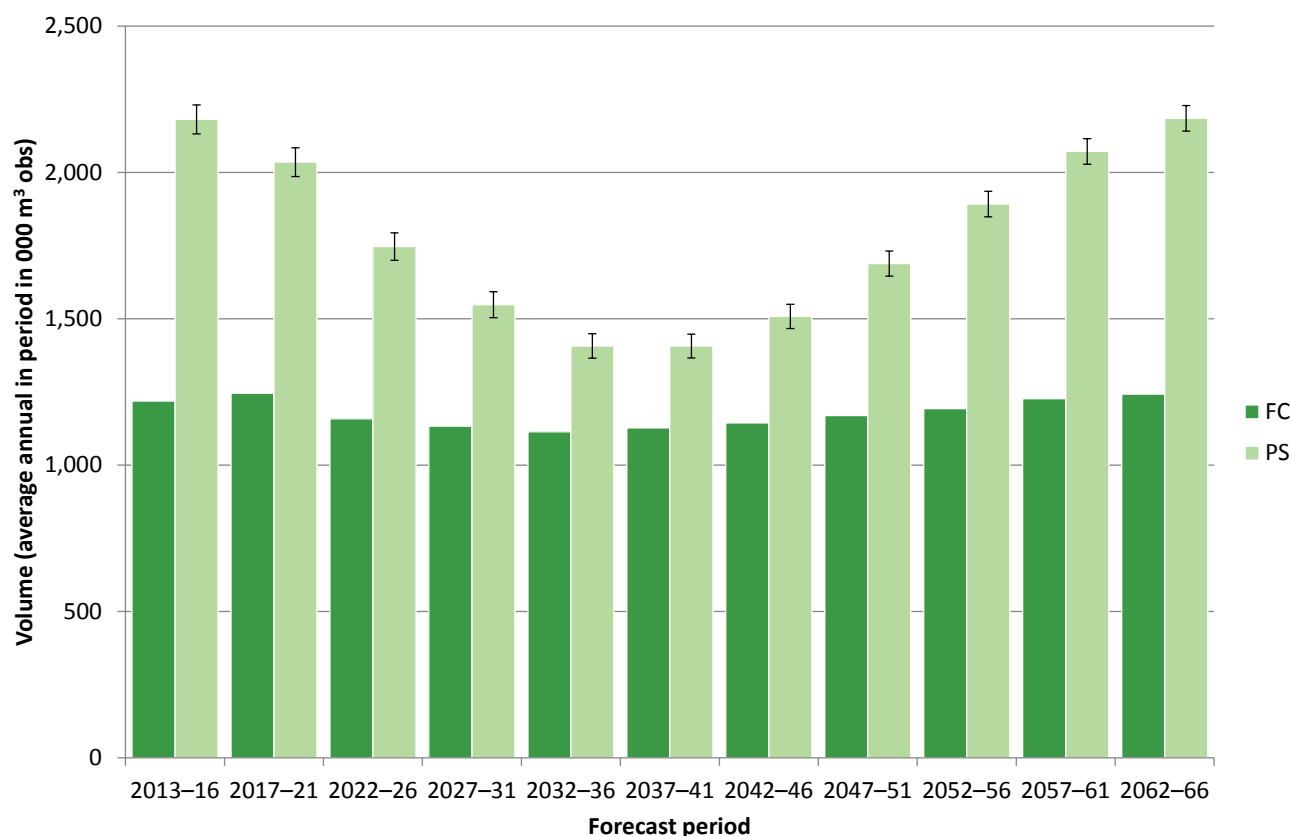


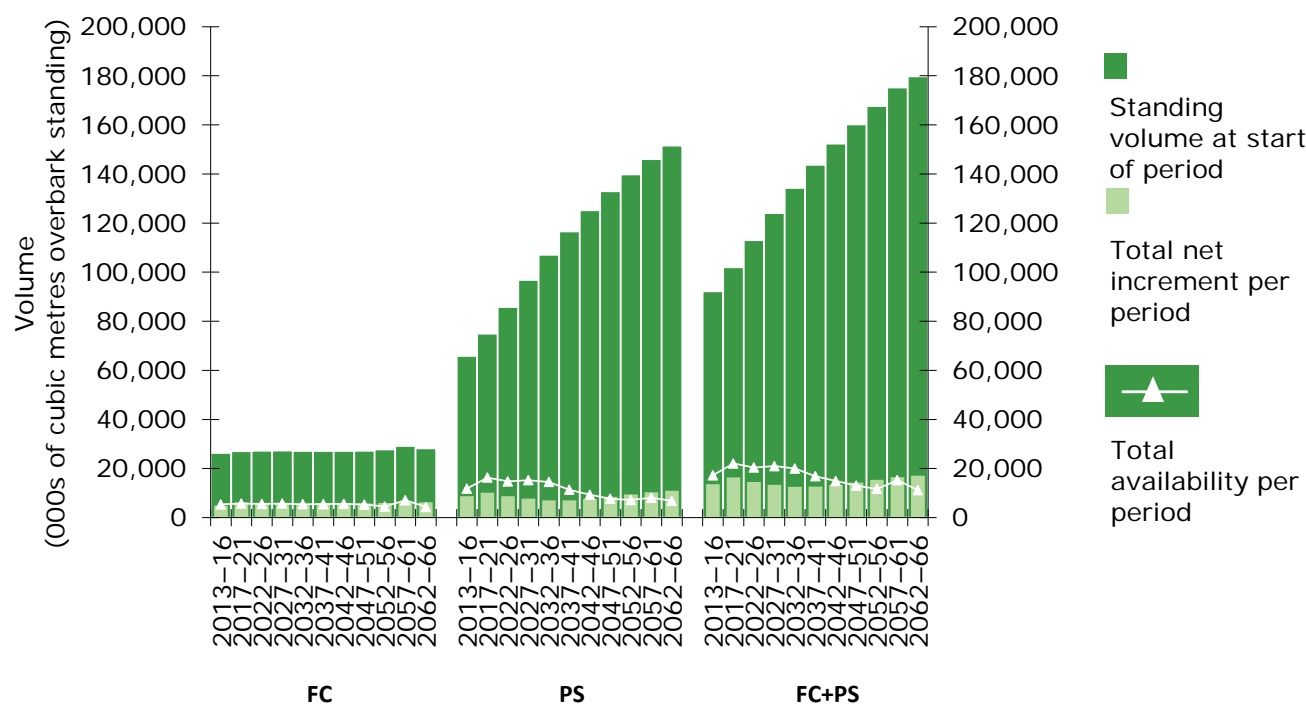
Table 59 50-year forecast of net increment in conifers; average annual volume within period

	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000m³ obs)
England				
2013-16	1,219	2,181	2	3,400
2017-21	1,246	2,035	2	3,281
2022-26	1,158	1,747	3	2,905
2027-31	1,133	1,548	3	2,681
2032-36	1,113	1,407	3	2,520
2037-41	1,127	1,407	3	2,534
2042-46	1,144	1,508	3	2,652
2047-51	1,169	1,688	3	2,858
2052-56	1,193	1,892	2	3,084
2057-61	1,227	2,071	2	3,299
2062-66	1,242	2,185	2	3,427

Part 3 - how our woodlands might change

Combined standing volume, net increment and availability

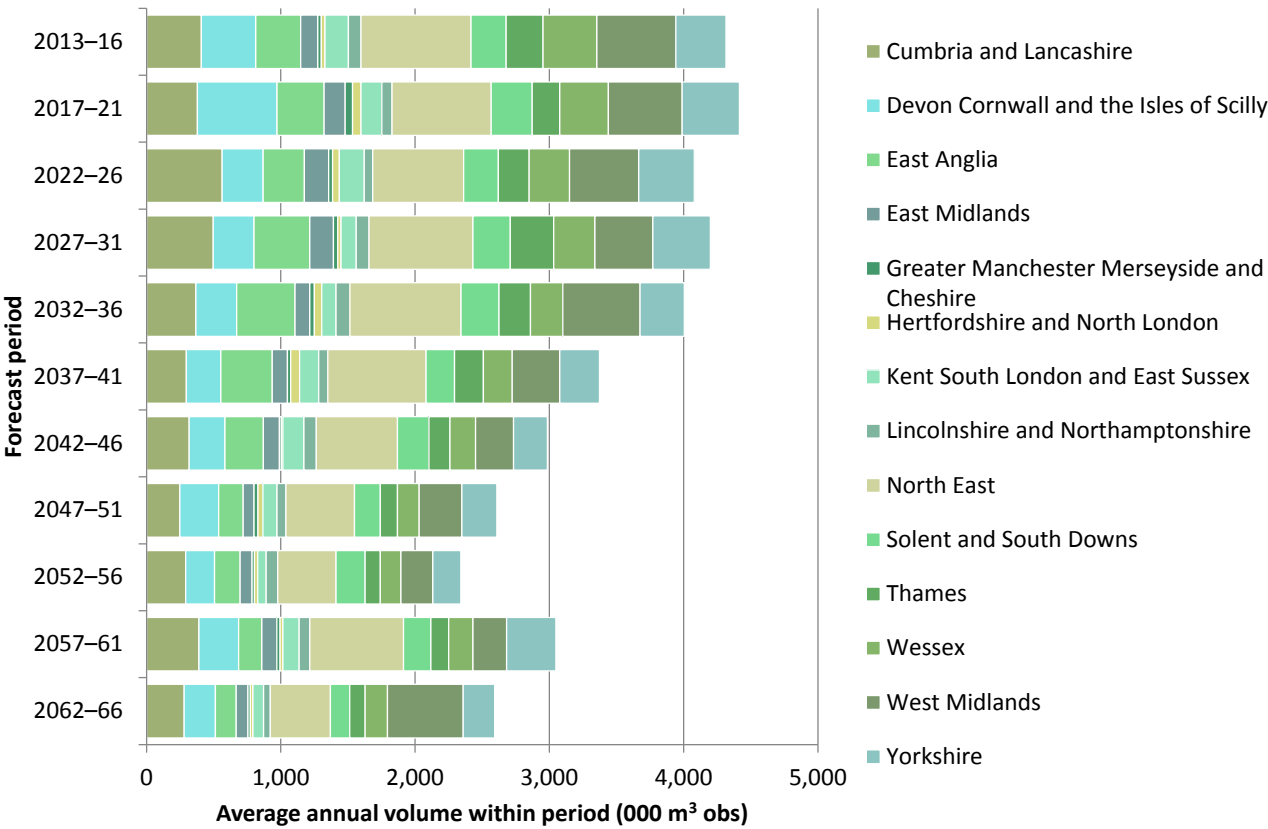
Figure 67 50-year forecast of standing volume, net increment and softwood availability



Part 3 - how our woodlands might change

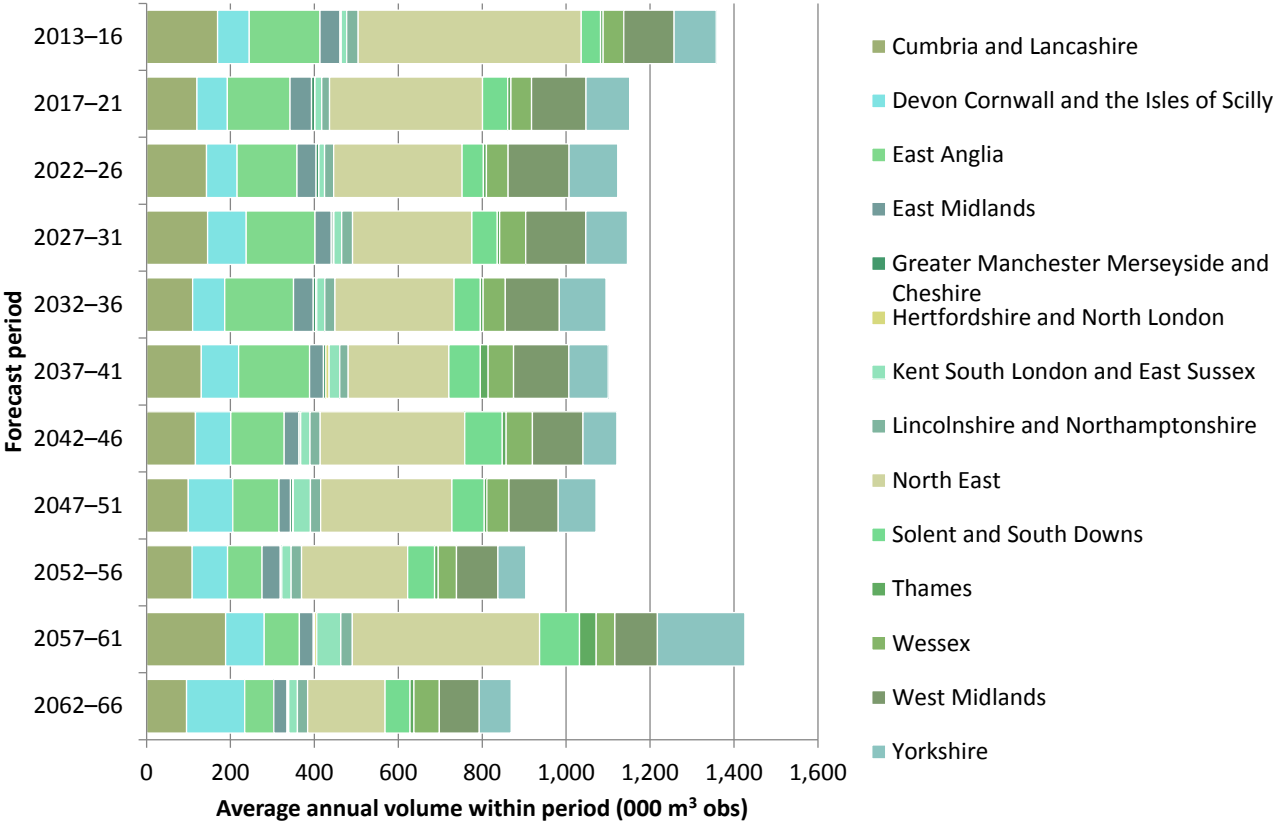
50-year softwood forecast aligned area summary

Figure 68 50-year softwood forecast showing contribution by aligned area (FC+PS)



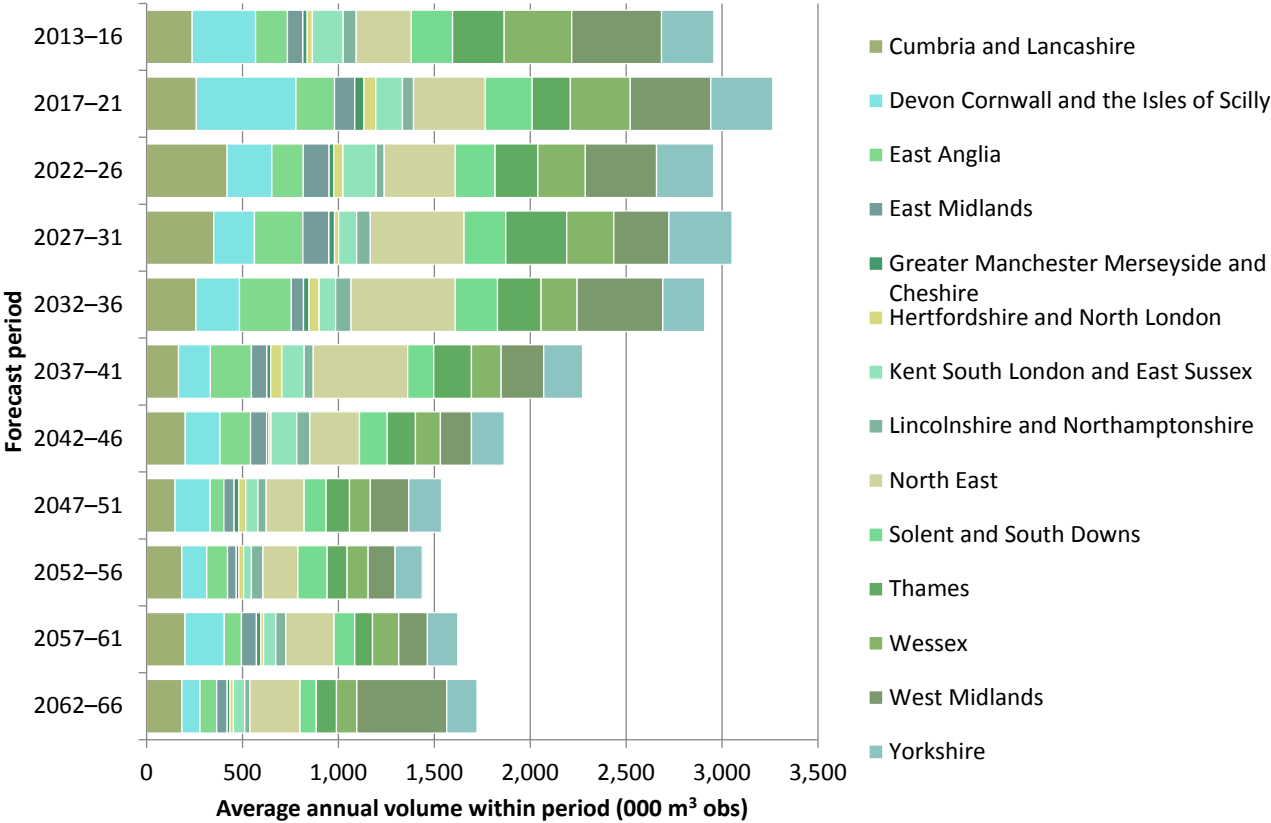
Part 3 - how our woodlands might change

Figure 69 50-year softwood forecast showing contribution by aligned area (FC)



Part 3 - how our woodlands might change

Figure 70 50-year softwood forecast showing contribution by aligned area (PS)



Part 3 - how our woodlands might change

Table 60 50-year softwood forecast by aligned area; average annual volume within period

Aligned Area	2013–16			2017–21		
	FC	Private sector		FC	Private sector	
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)		SE%
England	1,358	2,958	5	1,146	3,265	5
Cumbria and Lancashire	169	238	18	145	259	17
Devon and Cornwall	76	330	17	92	520	16
East Anglia	168	166	12	164	201	13
East Midlands	47	81	18	39	105	22
Gtr Mancs Mersey and Ches	3	23	30	5	48	30
Herts and North London	< 1	27	18	2	62	22
Kent S London and E Sussex	13	161	17	18	139	16
Lincs and Northants	27	67	19	26	58	18
North East	532	287	19	284	374	17
Solent and South Downs	46	216	13	61	245	11
Thames	6	269	17	5	199	11
Wessex	49	352	15	62	312	14
West Midlands	120	468	15	143	420	14
Yorkshire	100	273	11	99	323	15

Table 60 (cont'd) 50-year softwood forecast by aligned area; average annual volume within period

Aligned Area	2022–26			2027–31		
	FC	Private sector		FC	Private sector	
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)		SE%
England	1,123	2,956	5	1,146	3,053	5
Cumbria and Lancashire	143	420	18	145	350	16
Devon and Cornwall	73	232	12	92	212	15
East Anglia	143	164	18	164	252	18
East Midlands	45	135	30	39	136	22
Gtr Mancs Mersey and Ches	6	24	28	5	29	30
Herts and North London	< 1	49	30	2	22	24
Kent S London and E Sussex	14	173	18	18	94	23
Lincs and Northants	21	42	15	26	70	19
North East	306	371	17	284	489	19
Solent and South Downs	51	208	13	61	218	14
Thames	7	223	14	5	318	15
Wessex	52	248	16	62	245	12
West Midlands	145	371	18	143	287	15
Yorkshire	116	298	11	99	329	17

Part 3 - how our woodlands might change

Table 60 (cont'd) 50-year softwood forecast by aligned area; average annual volume within period

Aligned Area	2032–36			2037–41		
	FC	Private sector		FC	Private sector	
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)		SE%
England	1,095	2,910	6	1,100	2,273	6
Cumbria and Lancashire	110	257	20	131	166	15
Devon and Cornwall	77	228	15	89	167	21
East Anglia	164	270	17	169	214	20
East Midlands	47	63	21	33	80	40
Gtr Mancs Mersey and Ches	6	28	43	5	20	33
Herts and North London	2	53	58	8	58	34
Kent S London and E Sussex	19	87	25	25	117	23
Lincs and Northants	24	80	22	20	47	25
North East	284	544	19	240	491	19
Solent and South Downs	63	220	16	75	137	23
Thames	7	227	18	19	196	23
Wessex	53	188	13	61	156	12
West Midlands	129	447	18	132	222	21
Yorkshire	111	219	13	94	202	16

Table 60 (cont'd) 50-year softwood forecast by aligned area; average annual volume within period

Aligned Area	2042–46			2047–51		
	FC	Private sector		FC	Private sector	
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)		SE%
England	1,121	1,864	6	1,071	1,538	5
Cumbria and Lancashire	116	201	18	100	148	15
Devon and Cornwall	85	182	15	106	184	15
East Anglia	127	159	20	110	71	22
East Midlands	34	84	34	28	53	24
Gtr Mancs Mersey and Ches	4	11	28	5	25	42
Herts and North London	< 1	11	24	< 1	36	42
Kent S London and E Sussex	22	135	28	41	63	19
Lincs and Northants	25	68	27	24	43	30
North East	344	260	21	313	197	16
Solent and South Downs	90	145	18	77	115	18
Thames	9	147	21	6	123	25
Wessex	63	129	21	52	108	11
West Midlands	121	162	18	118	201	19
Yorkshire	81	170	14	90	171	13

Part 3 - how our woodlands might change

Table 60 (cont'd) 50-year softwood forecast by aligned area; average annual volume within period

Aligned Area	2052–56			2057–61		
	FC	Private sector		FC	Private sector	
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)		SE%
England	904	1,437	6	1,426	1,623	6
Cumbria and Lancashire	109	183	17	188	201	22
Devon and Cornwall	84	130	16	92	204	19
East Anglia	82	108	24	83	89	16
East Midlands	44	46	15	33	78	38
Gtr Mancs Mersey and Ches	3	14	26	3	22	30
Herts and North London	< 1	24	30	5	15	21
Kent S London and E Sussex	22	41	13	58	64	21
Lincs and Northants	25	61	36	27	52	40
North East	253	181	18	446	252	21
Solent and South Downs	64	153	27	95	108	14
Thames	9	105	19	40	93	9
Wessex	44	109	8	44	136	11
West Midlands	99	140	18	102	150	13
Yorkshire	66	142	9	208	158	11

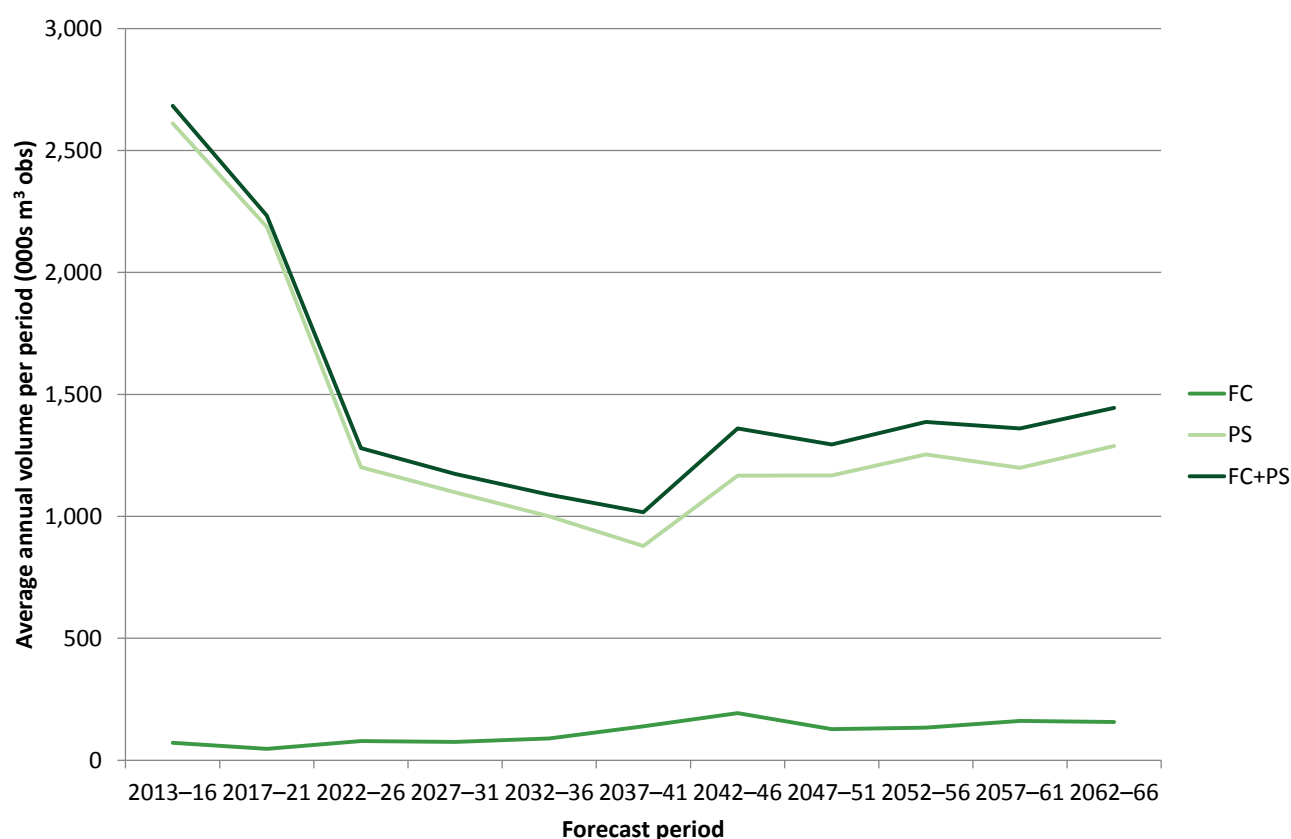
Table 60 (cont'd) 50-year softwood forecast by aligned area; average annual volume within period

Aligned Area	2062–66		
	FC	Private sector	
	volume (000 m ³ obs)		SE%
England	869	1,371	6
Cumbria and Lancashire	95	185	20
Devon and Cornwall	139	94	6
East Anglia	69	86	9
East Midlands	32	54	19
Gtr Mancs Mersey and Ches	3	16	26
Herts and North London	1	18	19
Kent S London and E Sussex	21	59	15
Lincs and Northants	24	27	18
North East	184	262	24
Solent and South Downs	59	84	8
Thames	10	106	15
Wessex	60	106	7
West Midlands	95	468	15
Yorkshire	76	159	13

50-year hardwood forecast

50-year forecast of hardwood timber availability

Figure 71 Summary of 50-year forecast of hardwood timber availability; average annual volume within period



Part 3 - how our woodlands might change

Figure 72 50-year forecast of hardwood timber availability; average annual volume within period

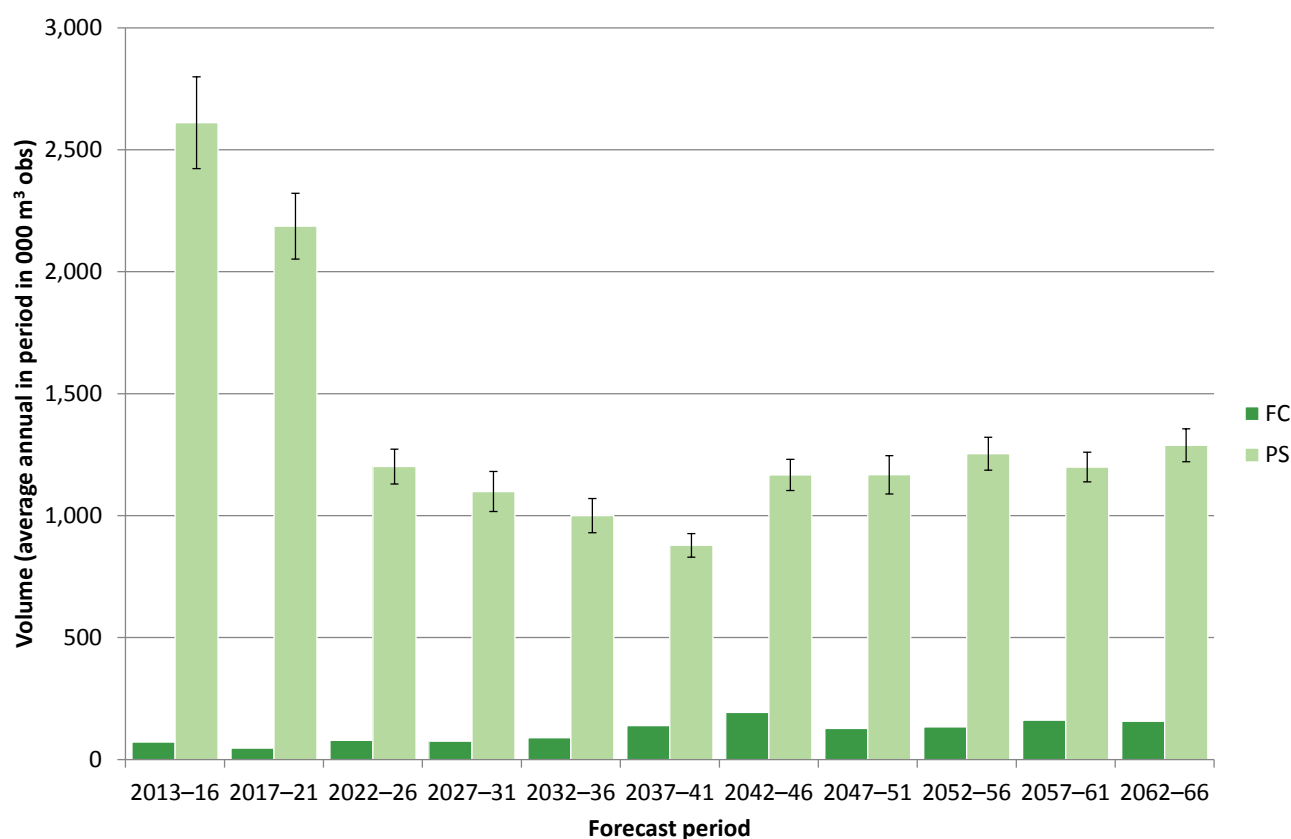


Table 61 50-year forecast of hardwood timber availability; average annual volume within period

Forecast period	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
England				
2013-16	72	2,611	7	2,683
2017-21	46	2,187	6	2,233
2022-26	79	1,201	6	1,280
2027-31	75	1,099	7	1,174
2032-36	89	1,000	7	1,089
2037-41	139	878	6	1,017
2042-46	193	1,167	5	1,360
2047-51	127	1,167	7	1,295
2052-56	133	1,254	5	1,387
2057-61	161	1,199	5	1,361
2062-66	156	1,289	5	1,445

Part 3 - how our woodlands might change

50-year forecast of hardwood timber availability by principal species

Table 62 50-year forecast of hardwood timber availability by principal species; average annual volume within period

Principal species	2013–16			2017–21		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
All broadleaves	72	2,611	7	46	2,187	6
Oak	21	442	13	12	515	13
Beech	24	229	20	15	326	23
Sycamore	2	620	19	2	391	12
Ash	6	686	13	3	419	8
Birch	5	219	11	4	259	18
Sweet chestnut	2	139	38	2	29	13
Hazel	< 1	21	22	< 1	25	19
Hawthorn	0	15	19	0	15	15
Alder	< 1	56	27	< 1	49	28
Willow	0	7	24	0	9	20
Other broadleaves	11	173	17	8	163	16

Table 62 (cont'd) 50-year forecast of hardwood timber availability by principal species; average annual volume within period

Principal species	2022–26			2027–31		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
All broadleaves	79	1,201	6	75	1,099	7
Oak	22	304	13	18	435	13
Beech	29	229	14	30	197	22
Sycamore	2	161	15	3	75	15
Ash	5	150	12	5	80	12
Birch	5	114	13	5	70	15
Sweet chestnut	3	69	30	2	59	31
Hazel	< 1	38	26	< 1	27	20
Hawthorn	0	15	14	0	15	14
Alder	< 1	18	27	< 1	15	30
Willow	< 1	11	17	< 1	16	20
Other broadleaves	12	100	17	11	111	21

Part 3 - how our woodlands might change

Table 62 (cont'd) 50-year forecast of hardwood timber availability by principal species; average annual volume within period

Principal species	2032–36			2037–41		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
All broadleaves	89	1,000	7	139	878	6
Oak	21	276	17	28	166	12
Beech	35	232	18	75	165	16
Sycamore	3	78	11	3	103	12
Ash	7	102	12	6	116	7
Birch	6	71	12	8	75	10
Sweet chestnut	2	88	27	3	56	47
Hazel	< 1	29	22	< 1	37	16
Hawthorn	0	16	12	0	24	21
Alder	< 1	11	28	< 1	11	17
Willow	< 1	17	13	< 1	20	12
Other broadleaves	13	84	7	15	106	8

Table 62 (cont'd) 50-year forecast of hardwood timber availability by principal species; average annual volume within period

Principal species	2042–46			2047–51		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
All broadleaves	193	1,167	5	127	1,167	7
Oak	75	210	20	38	256	21
Beech	48	203	17	44	215	20
Sycamore	6	146	10	4	133	11
Ash	23	169	6	10	159	7
Birch	11	126	7	9	117	8
Sweet chestnut	3	70	24	2	58	41
Hazel	< 1	33	12	< 1	53	11
Hawthorn	0	21	13	0	24	15
Alder	1	23	15	< 1	20	15
Willow	< 1	25	15	< 1	18	12
Other broadleaves	25	137	8	19	123	11

Part 3 - how our woodlands might change

Table 62 (cont'd) 50-year forecast of hardwood timber availability by principal species; average annual volume within period

Principal species	2052–56			2057–61		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
All broadleaves	133	1,254	5	161	1,199	5
Oak	41	176	11	45	182	12
Beech	44	215	18	62	193	18
Sycamore	4	187	14	3	182	13
Ash	8	255	9	9	247	9
Birch	13	111	10	19	130	12
Sweet chestnut	3	90	33	3	61	24
Hazel	< 1	35	18	< 1	32	21
Hawthorn	0	21	13	0	31	21
Alder	< 1	17	21	< 1	22	33
Willow	< 1	24	15	< 1	25	21
Other broadleaves	19	141	10	19	103	11

Table 62 (cont'd) 50-year forecast of hardwood timber availability by principal species; average annual volume within period

Principal species	2062–66		
	FC	Private sector	
	volume (000 m³ obs)		SE%
England			
All broadleaves	156	1,289	5
Oak	55	187	14
Beech	57	152	19
Sycamore	3	206	11
Ash	7	213	9
Birch	15	204	13
Sweet chestnut	3	29	26
Hazel	< 1	22	18
Hawthorn	0	42	22
Alder	1	19	21
Willow	< 1	54	32
Other broadleaves	16	163	13

Part 3 - how our woodlands might change

50-year forecast of hardwood timber availability by top diameter class

Table 63 50-year forecast of hardwood timber availability by top diameter class; average annual volume within period

Top diameter class (cm)	2013–16			2017–21		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
7–14	28	245	5	15	239	4
14–16	5	81	6	3	69	5
16–18	5	97	6	3	83	6
18–24	13	380	6	10	337	5
24–34	12	642	7	10	602	6
34–44	5	422	9	4	355	8
44–54	2	234	10	1	182	9
54+	1	508	15	1	318	17
Total	72	2,611	7	46	2,187	6

Table 63 (cont'd) 50-year forecast of hardwood timber availability by top diameter class; average annual volume within period

Top diameter class (cm)	2022–26			2027–31		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
7–14	23	222	5	18	246	4
14–16	6	44	7	4	37	6
16–18	6	46	7	5	40	8
18–24	17	172	7	16	148	9
24–34	18	287	7	19	257	11
34–44	6	173	9	7	154	11
44–54	2	91	10	3	79	12
54+	1	165	13	2	138	17
Total	79	1,201	6	75	1,099	7

Part 3 - how our woodlands might change

Table 63 (cont'd) 50-year forecast of hardwood timber availability by top diameter class; average annual volume within period

Top diameter class (cm)	2032–36			2037–41		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
7–14	23	296	4	18	322	3
14–16	6	41	6	4	48	4
16–18	6	36	8	5	42	5
18–24	17	118	12	16	113	6
24–34	18	197	12	19	141	9
34–44	6	126	11	7	86	12
44–54	2	70	13	3	46	13
54+	1	116	14	2	81	20
Total	79	1,000	7	75	878	6

Table 63 (cont'd) 50-year forecast of hardwood timber availability by top diameter class; average annual volume within period

Top diameter class (cm)	2042–46			2047–51		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
7–14	46	335	3	37	290	3
14–16	15	74	4	9	68	4
16–18	15	75	4	9	71	4
18–24	40	215	4	26	211	5
24–34	41	203	9	27	200	8
34–44	18	109	13	10	118	13
44–54	9	60	15	4	67	15
54+	10	96	20	4	142	23
Total	193	1,167	5	127	1,167	7

Part 3 - how our woodlands might change

Table 63 (cont'd) 50-year forecast of hardwood timber availability by top diameter class; average annual volume within period

Top diameter class (cm)	2052–56			2057–61		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
7–14	44	258	4	52	239	4
14–16	10	62	4	14	57	4
16–18	9	67	4	13	61	4
18–24	23	216	5	33	200	5
24–34	24	282	7	29	281	7
34–44	11	162	9	11	158	8
44–54	6	84	11	5	76	9
54+	6	123	11	4	127	12
Total	133	1,254	5	161	1,199	5

Table 63 (cont'd) 50-year forecast of hardwood timber availability by top diameter class; average annual volume within period

Top diameter class (cm)	2062–66		
	FC	Private sector	
	volume (000 m³ obs)		SE%
England			
7–14	49	259	4
14–16	13	69	4
16–18	12	78	5
18–24	30	265	5
24–34	29	308	7
34–44	12	147	9
44–54	6	65	11
54+	6	97	19
Total	156	1,289	5

Part 3 - how our woodlands might change

50-year forecast of standing volume in broadleaves

Figure 73 50-year forecast of standing volume in broadleaves; average annual volume within period

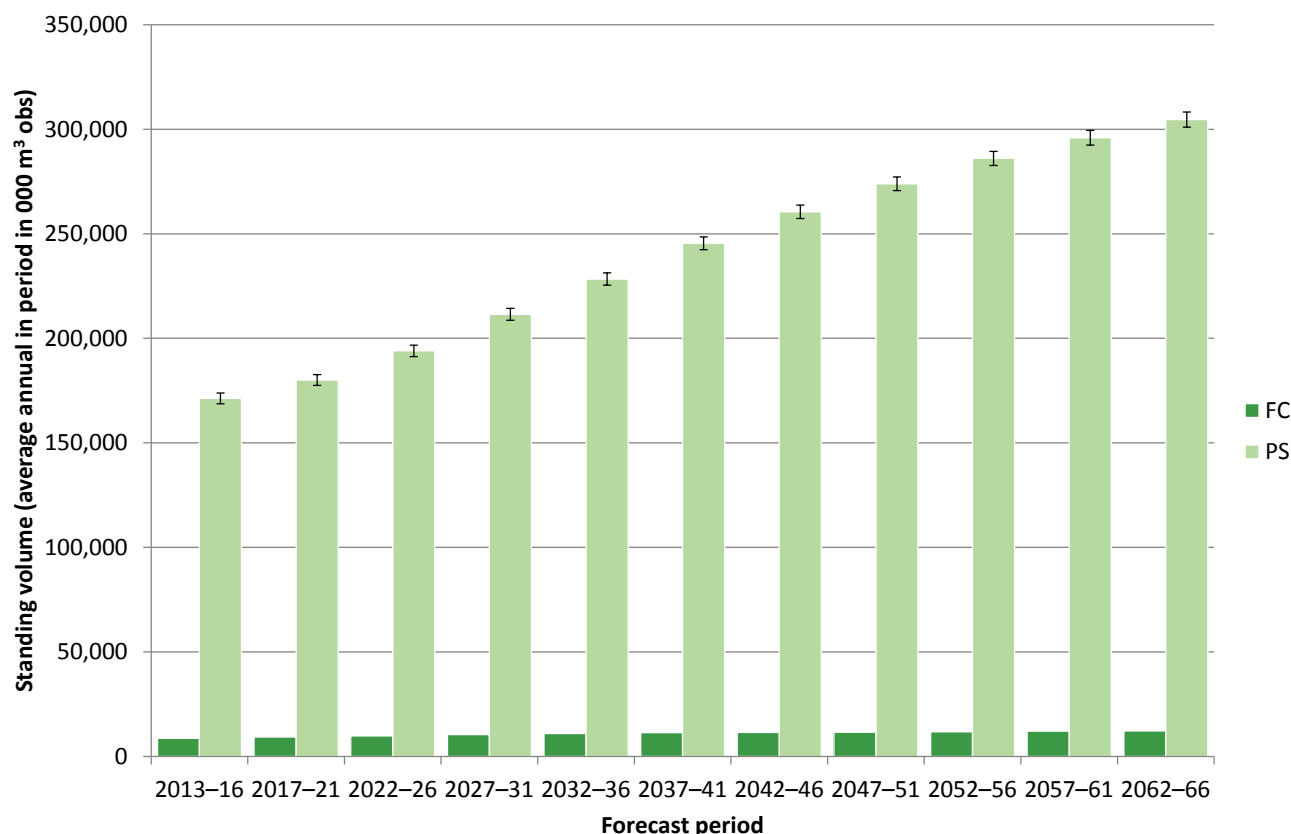


Table 64 50-year forecast of standing volume in broadleaves; average annual volume within period

Forecast period	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
England				
2013-16	8,618	171,247	2	179,865
2017-21	9,282	180,048	1	189,330
2022-26	9,826	194,000	1	203,826
2027-31	10,433	211,447	1	221,880
2032-36	10,912	228,330	1	239,242
2037-41	11,322	245,430	1	256,752
2042-46	11,441	260,523	1	271,964
2047-51	11,553	273,910	1	285,464
2052-56	11,802	286,054	1	297,856
2057-61	12,049	295,930	1	307,980
2062-66	12,189	304,599	1	316,788

Part 3 - how our woodlands might change

Table 65 50-year forecast of standing volume in broadleaves by principal species; average annual volume within period

Principal species	2013–16			2017–21		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
All broadleaves	8,618	164,011	2	9,282	172,792	2
Oak	3,309	49,316	4	3,464	50,789	3
Beech	2,718	18,557	6	2,969	18,832	6
Sycamore	143	13,955	6	150	13,727	6
Ash	403	28,039	4	426	28,821	4
Birch	492	11,061	4	554	12,158	4
Sweet Chestnut	124	7,991	8	135	8,710	8
Hazel	49	5,010	5	55	5,791	5
Hawthorn	< 1	2,838	6	< 1	3,509	6
Alder	66	6,177	8	70	6,586	8
Willow	< 1	5,002	8	1	5,786	7
Other broadleaves	1,314	16,145	5	1,457	18,111	5

Table 65 (cont'd) 50-year forecast of standing volume in broadleaves by principal species; average annual volume within period

Principal species	2022–26			2027–31		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
All broadleaves	9,826	186,379	1	10,433	203,265	1
Oak	3,575	52,888	3	3,712	54,962	3
Beech	3,163	19,518	6	3,358	20,415	6
Sycamore	153	14,085	6	157	15,474	6
Ash	438	30,591	4	457	33,430	4
Birch	615	13,624	4	685	15,458	4
Sweet Chestnut	142	9,631	8	151	10,541	8
Hazel	61	6,681	5	66	7,610	5
Hawthorn	< 1	4,406	6	< 1	5,437	6
Alder	74	7,177	8	78	7,799	7
Willow	2	6,850	7	2	7,973	6
Other broadleaves	1,604	20,878	5	1,767	24,073	4

Part 3 - how our woodlands might change

Table 65 (cont'd) 50-year forecast of standing volume in broadleaves by principal species; average annual volume within period

Principal species	2032–36			2037–41		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
All broadleaves	10,912	219,510	1	11,322	235,933	1
Oak	3,818	56,922	3	3,936	59,557	3
Beech	3,488	21,259	6	3,521	22,211	6
Sycamore	158	16,850	5	163	18,158	5
Ash	472	36,170	4	497	38,730	4
Birch	750	17,175	4	816	18,801	4
Sweet Chestnut	154	11,290	8	161	12,126	8
Hazel	71	8,454	4	75	9,121	4
Hawthorn	< 1	6,524	6	< 1	7,616	6
Alder	81	8,356	7	84	8,844	7
Willow	3	9,105	6	3	10,223	6
Other broadleaves	1,917	27,248	4	2,065	30,358	4

Table 65 (cont'd) 50-year forecast of standing volume in broadleaves by principal species; average annual volume within period

Principal species	2042–46			2047–51		
	FC	Private sector		FC	Private sector	
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)		SE%
England						
All broadleaves	11,441	250,368	1	11,553	263,379	1
Oak	3,917	62,025	3	3,842	64,383	3
Beech	3,521	22,890	6	3,610	23,626	6
Sycamore	161	19,254	5	158	20,178	5
Ash	487	40,861	4	455	42,656	3
Birch	867	20,154	4	917	21,286	4
Sweet Chestnut	163	12,944	8	167	13,628	8
Hazel	79	9,702	4	82	10,127	4
Hawthorn	< 1	8,682	6	< 1	9,708	6
Alder	86	9,242	7	86	9,551	7
Willow	3	11,292	6	4	12,321	6
Other broadleaves	2,156	33,131	4	2,231	35,690	4

Part 3 - how our woodlands might change

Table 65 (cont'd) 50-year forecast of standing volume in broadleaves by principal species; average annual volume within period

Principal species	2052–56			2057–61		
	FC	Private sector		FC	Private sector	
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)		SE%
England						
All broadleaves	11,802	274,993	1	12,049	284,381	1
Oak	3,889	66,617	3	3,953	68,795	3
Beech	3,685	24,362	6	3,775	24,865	6
Sycamore	158	20,855	5	159	21,136	5
Ash	465	43,942	3	475	44,444	3
Birch	960	22,284	4	976	23,100	4
Sweet Chestnut	172	14,338	8	175	14,837	8
Hazel	84	10,475	4	87	10,768	4
Hawthorn	< 1	10,683	7	< 1	11,597	7
Alder	87	9,834	7	89	10,034	7
Willow	4	13,287	6	5	14,164	6
Other broadleaves	2,297	38,040	4	2,356	40,232	4

Table 65 (cont'd) 50-year forecast of standing volume in broadleaves by principal species; average annual volume within period

Principal species	2062–66		
	FC	Private sector	
	volume (000 m³ obs)		SE%
England			
All broadleaves	12,189	292,632	1
Oak	3,961	70,928	3
Beech	3,837	25,697	6
Sycamore	161	21,113	5
Ash	483	44,754	4
Birch	983	23,411	4
Sweet Chestnut	180	15,547	8
Hazel	87	11,118	4
Hawthorn	< 1	12,413	7
Alder	88	10,223	7
Willow	5	14,865	6
Other broadleaves	2,404	42,115	4

Part 3 - how our woodlands might change

50-year forecast of net increment in broadleaves

Figure 74 50-year forecast of net increment in broadleaves; average annual volume within period

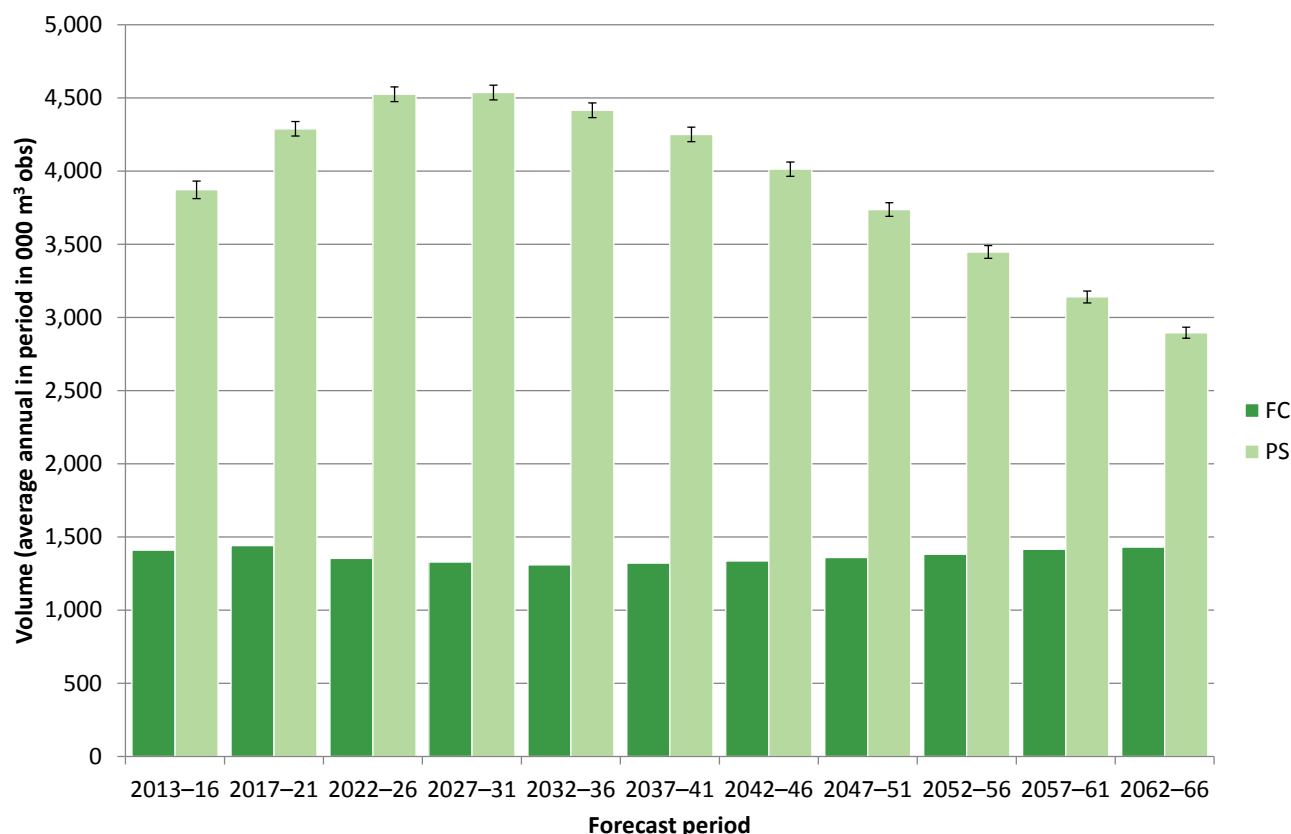


Table 66 50-year forecast of net increment in broadleaves; average annual volume within period

Forecast period	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
England				
2013-16	1,410	3,872	2	5,282
2017-21	1,441	4,289	1	5,730
2022-26	1,353	4,525	1	5,877
2027-31	1,329	4,537	1	5,865
2032-36	1,309	4,416	1	5,725
2037-41	1,321	4,250	1	5,571
2042-46	1,335	4,013	1	5,348
2047-51	1,359	3,737	1	5,096
2052-56	1,382	3,447	1	4,829
2057-61	1,416	3,140	1	4,555
2062-66	1,430	2,895	1	4,325

Part 3 - how our woodlands might change

Table 67 50-year forecast of net increment in broadleaves by principal species; average annual volume within period

Principal species	2013–16			2017–21		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
All broadleaves	191	3,872	2	196	4,289	1
Oak	44	780	4	44	806	3
Beech	73	348	9	73	391	5
Sycamore	3	308	5	3	338	4
Ash	8	598	4	8	630	4
Birch	18	477	4	20	502	4
Sweet Chestnut	4	197	9	4	223	8
Hazel	1	188	5	1	208	5
Hawthorn	< 1	147	6	< 1	179	5
Alder	2	124	9	1	148	7
Willow	< 1	161	8	< 1	211	6
Other broadleaves	38	542	4	41	649	3

Table 67 (cont'd) 50-year forecast of net increment in broadleaves by principal species; average annual volume within period

Principal species	2022–26			2027–31		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
All broadleaves	191	3,872	2	196	4,289	1
Oak	44	780	4	44	806	3
Beech	73	348	9	73	391	5
Sycamore	3	308	5	3	338	4
Ash	8	598	4	8	630	4
Birch	18	477	4	20	502	4
Sweet Chestnut	4	197	9	4	223	8
Hazel	1	188	5	1	208	5
Hawthorn	< 1	147	6	< 1	179	5
Alder	2	124	9	1	148	7
Willow	< 1	161	8	< 1	211	6
Other broadleaves	38	542	4	41	649	3

Part 3 - how our woodlands might change

Table 67 (cont'd) 50-year forecast of net increment in broadleaves by principal species; average annual volume within period

Principal species	2032–36			2037–41		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
All broadleaves	196	4,416	1	194	4,250	1
Oak	45	745	3	46	722	3
Beech	65	388	5	64	375	5
Sycamore	4	368	5	4	367	5
Ash	10	654	3	11	622	3
Birch	21	442	4	21	419	4
Sweet Chestnut	4	237	7	4	228	8
Hazel	1	194	4	< 1	169	4
Hawthorn	< 1	245	8	< 1	246	8
Alder	1	131	7	1	115	7
Willow	< 1	255	5	< 1	252	6
Other broadleaves	44	749	3	42	728	3

Table 67 (cont'd) 50-year forecast of net increment in broadleaves by principal species; average annual volume within period

Principal species	2042–46			2047–51		
	FC	Private sector		FC	Private sector	
	volume (000 m³ obs)		SE%	volume (000 m³ obs)		SE%
England						
All broadleaves	191	4,013	1	190	3,737	1
Oak	47	705	3	48	685	3
Beech	63	359	5	64	348	4
Sycamore	4	350	6	4	320	6
Ash	12	565	4	12	503	4
Birch	21	388	4	21	353	4
Sweet Chestnut	4	219	8	4	206	8
Hazel	< 1	146	5	< 1	125	5
Hawthorn	< 1	240	9	< 1	231	9
Alder	1	102	7	1	88	7
Willow	< 1	245	6	< 1	232	6
Other broadleaves	39	689	3	36	642	3

Part 3 - how our woodlands might change

Table 67 (cont'd) 50-year forecast of net increment in broadleaves by principal species; average annual volume within period

Principal species	2052–56			2057–61		
	FC	Private sector		FC	Private sector	
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)		SE%
England						
All broadleaves	189	3,447	1	189	3,140	1
Oak	50	658	3	53	639	3
Beech	66	338	4	68	327	4
Sycamore	4	284	6	4	233	5
Ash	11	433	4	10	343	4
Birch	20	315	4	19	280	4
Sweet Chestnut	4	195	8	4	182	8
Hazel	< 1	107	5	< 1	95	5
Hawthorn	< 1	221	9	< 1	210	9
Alder	< 1	77	7	< 1	66	7
Willow	< 1	219	6	< 1	205	6
Other broadleaves	32	598	3	29	556	3

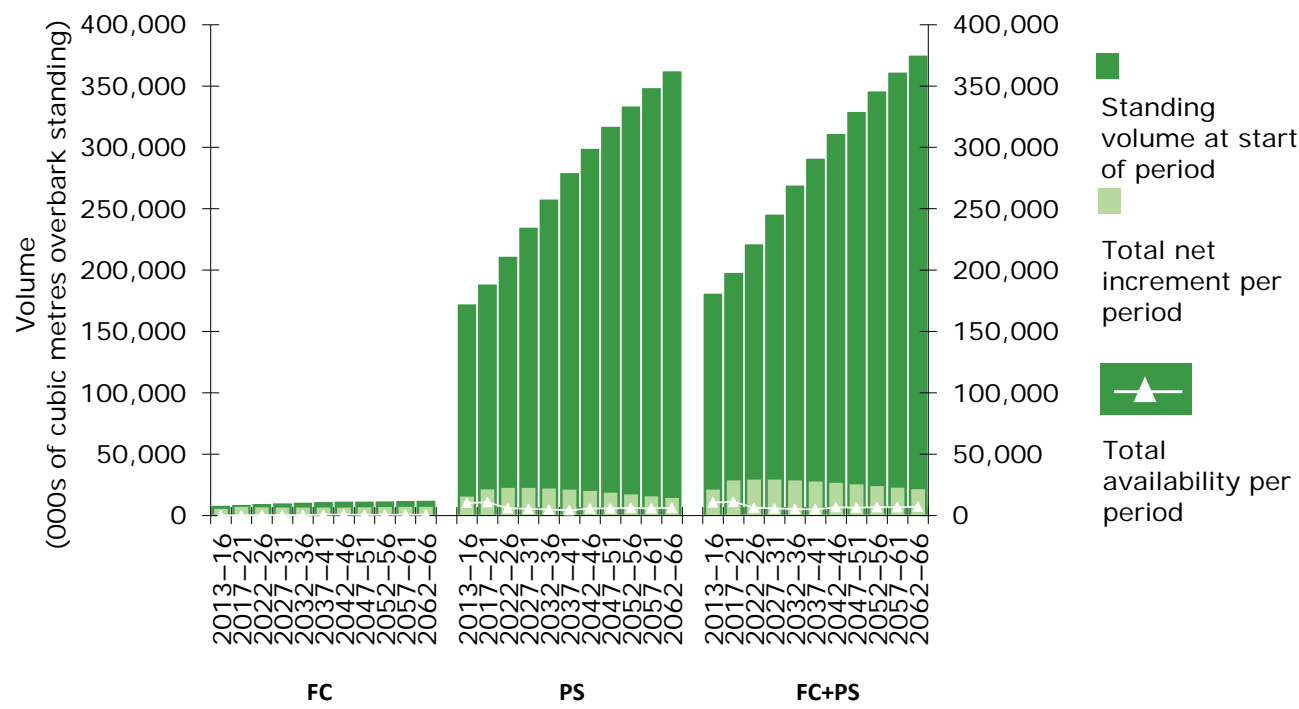
Table 67 (cont'd) 50-year forecast of net increment in broadleaves by principal species; average annual volume within period

Principal species	2062–66		
	FC	Private sector	
	volume (000 m³ obs)		SE%
England			
All broadleaves	188	2,895	1
Oak	54	621	3
Beech	71	326	4
Sycamore	4	191	5
Ash	9	282	3
Birch	18	244	4
Sweet Chestnut	4	173	8
Hazel	< 1	89	5
Hawthorn	< 1	199	9
Alder	< 1	58	7
Willow	< 1	189	6
Other broadleaves	27	520	3

Part 3 - how our woodlands might change

Combined standing volume, net increment and availability

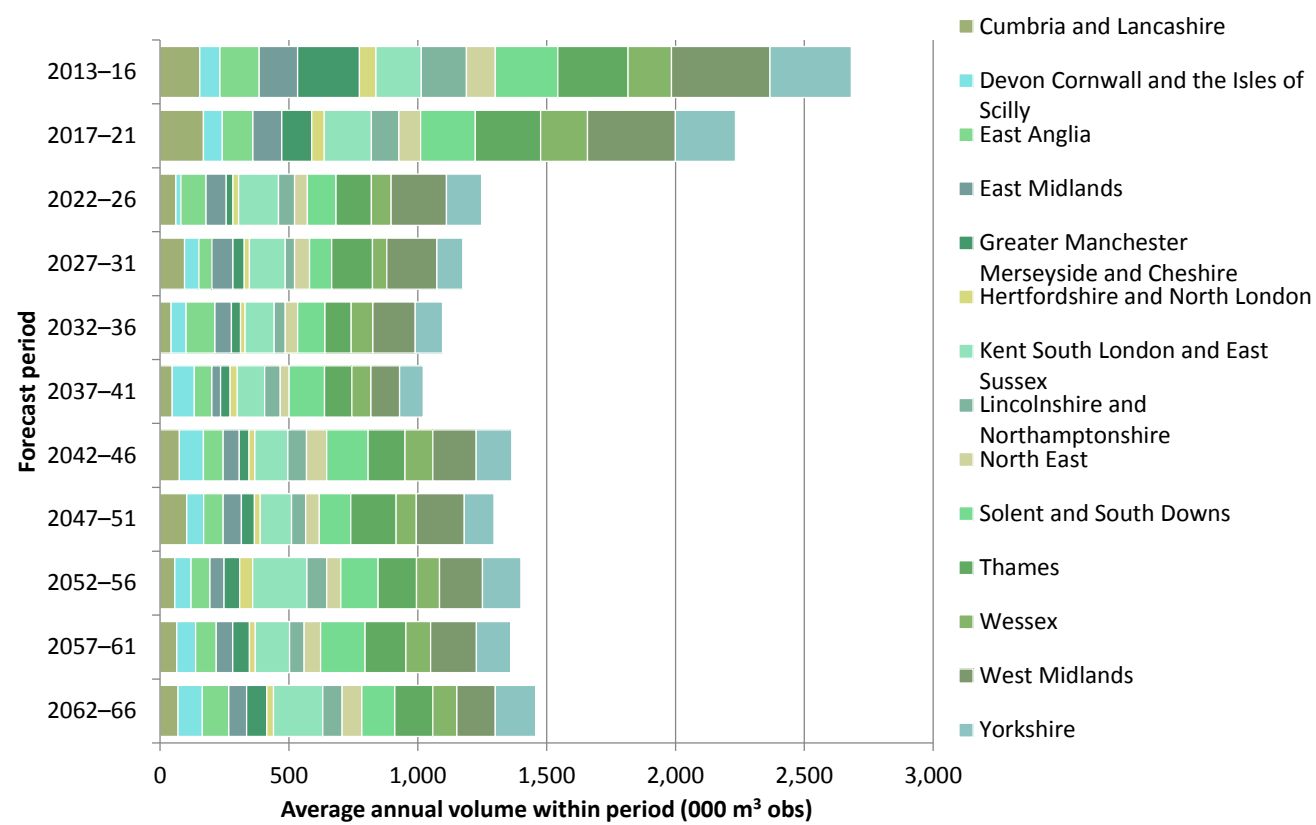
Figure 75 combined hardwood standing volume, net increment and availability



Part 3 - how our woodlands might change

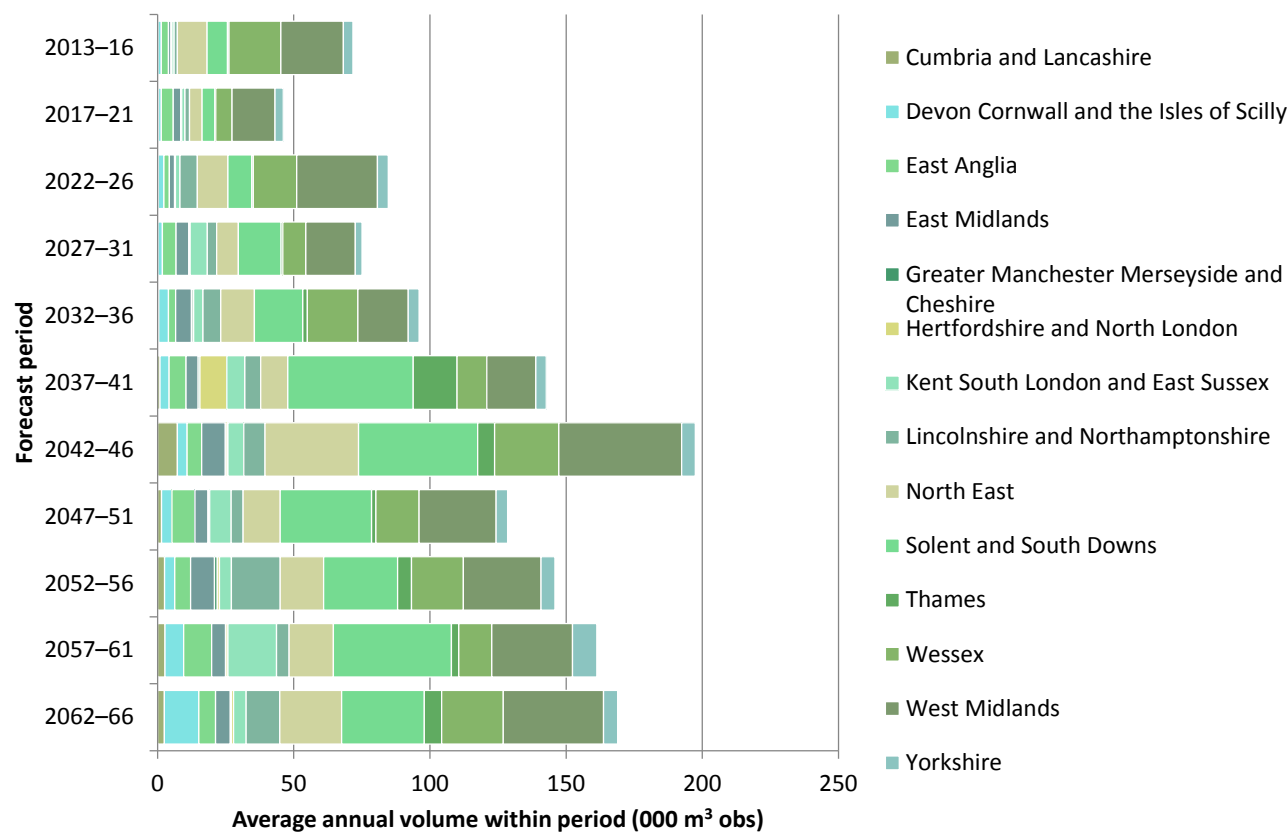
50-year hardwood forecast aligned area summary

Figure 76 50-year hardwood forecast for aligned areas (FC+PS)



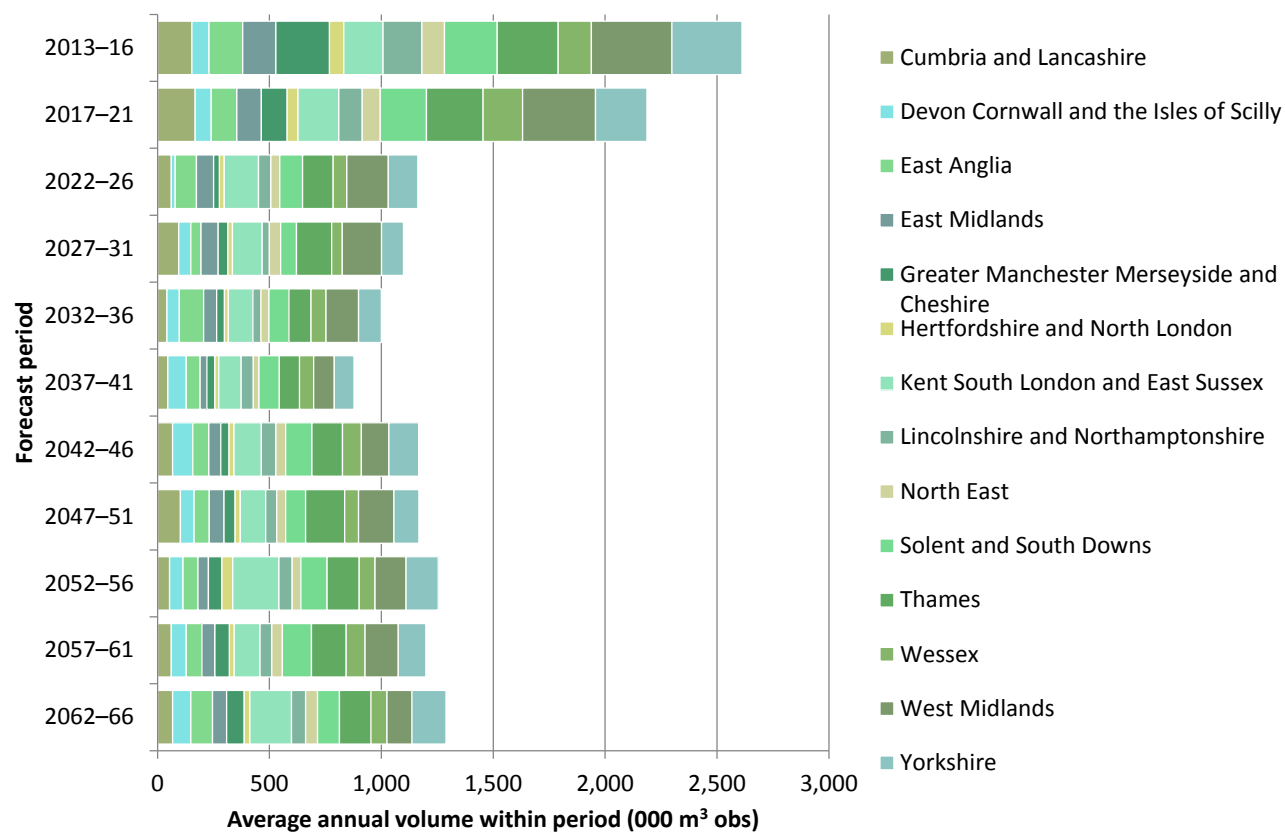
Part 3 - how our woodlands might change

Figure 77 50-year hardwood forecast for aligned areas (FC)



Part 3 - how our woodlands might change

Figure 78 50-year hardwood forecast for aligned areas (PS)



Part 3 - how our woodlands might change

Table 68 50-year hardwood forecast by aligned area; average annual volume within period

Aligned Area	2013–16			2017–21		
	FC	Private sector		FC	Private sector	
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)		SE%
England	72	2,958	5	75	3,265	5
Cumbria and Lancashire	< 1	154	17	< 1	168	17
Devon and Cornwall	1	77	23	2	72	17
East Anglia	3	150	33	5	115	21
East Midlands	< 1	148	29	5	109	21
Gtr Mancs Mersey and Ches	< 1	240	43	< 1	116	42
Herts and North London	< 1	64	54	< 1	49	35
Kent S London and E Sussex	< 1	175	16	6	182	19
Lincs and Northants	1	174	37	3	105	21
North East	11	101	28	8	80	26
Solent and South Downs	7	236	15	16	207	14
Thames	< 1	272	16	< 1	253	15
Wessex	19	149	23	9	176	42
West Midlands	23	359	21	18	326	17
Yorkshire	3	313	17	2	230	11

Table 68 (cont'd) 50-year hardwood forecast by aligned area; average annual volume within period

Aligned Area	2022–26			2027–31		
	FC	Private sector		FC	Private sector	
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)		SE%
England	79	2,956	5	75	3,053	5
Cumbria and Lancashire	< 1	61	25	< 1	95	32
Devon and Cornwall	2	17	24	2	54	18
East Anglia	2	95	25	5	45	18
East Midlands	2	76	30	5	77	33
Gtr Mancs Mersey and Ches	< 1	26	27	< 1	44	49
Herts and North London	< 1	21	30	< 1	20	32
Kent S London and E Sussex	2	153	16	6	133	23
Lincs and Northants	6	56	26	3	32	23
North East	11	39	27	8	51	31
Solent and South Downs	9	103	16	16	70	14
Thames	< 1	136	19	< 1	158	27
Wessex	16	61	20	9	47	19
West Midlands	30	185	18	18	176	19
Yorkshire	4	132	15	2	98	15

Part 3 - how our woodlands might change

Table 68 (cont'd) 50-year hardwood forecast by aligned area; average annual volume within period

Aligned Area	2032–36			2037–41		
	FC	Private sector		FC	Private sector	
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)		SE%
England	89	2,910	6	139	2,273	6
Cumbria and Lancashire	< 1	42	25	< 1	46	15
Devon and Cornwall	4	55	20	3	82	33
East Anglia	3	109	34	6	62	26
East Midlands	6	59	34	4	30	17
Gtr Mancs Mersey and Ches	< 1	35	25	< 1	36	21
Herts and North London	< 1	17	22	10	18	21
Kent S London and E Sussex	3	110	21	7	99	16
Lincs and Northants	7	36	20	6	55	20
North East	12	36	23	10	24	15
Solent and South Downs	18	89	20	46	91	17
Thames	2	99	13	16	91	12
Wessex	19	66	28	11	63	24
West Midlands	18	145	23	18	93	12
Yorkshire	4	102	14	4	88	12

Table 68 (cont'd) 50-year hardwood forecast by aligned area; average annual volume within period

Aligned Area	2042–46			2047–51		
	FC	Private sector		FC	Private sector	
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)		SE%
England	193	1,864	6	127	1,538	5
Cumbria and Lancashire	7	67	26	1	102	42
Devon and Cornwall	4	90	17	4	61	14
East Anglia	5	72	14	8	67	21
East Midlands	9	53	16	5	66	36
Gtr Mancs Mersey and Ches	< 1	37	21	< 1	50	22
Herts and North London	< 1	22	19	< 1	23	19
Kent S London and E Sussex	6	122	24	8	114	13
Lincs and Northants	8	65	21	4	50	34
North East	34	44	16	14	40	16
Solent and South Downs	44	117	14	34	89	14
Thames	6	136	16	2	174	19
Wessex	24	84	23	16	63	11
West Midlands	45	123	23	28	158	23
Yorkshire	5	133	12	4	112	12

Part 3 - how our woodlands might change

Table 68 (cont'd) 50-year hardwood forecast by aligned area; average annual volume within period

Aligned Area	2052–56			2057–61		
	FC	Private sector		FC	Private sector	
	volume (000 m ³ obs)		SE%	volume (000 m ³ obs)		SE%
England	133	1,437	6	161	1,623	6
Cumbria and Lancashire	3	54	14	3	62	15
Devon and Cornwall	4	60	15	7	66	17
East Anglia	6	67	17	10	70	18
East Midlands	9	46	24	5	59	22
Gtr Mancs Mersey and Ches	1	59	32	< 1	65	31
Herts and North London	< 1	49	31	< 1	22	25
Kent S London and E Sussex	4	206	21	18	115	14
Lincs and Northants	18	59	26	5	52	19
North East	16	38	21	16	47	24
Solent and South Downs	27	118	14	43	130	16
Thames	5	143	14	3	155	16
Wessex	19	71	12	12	84	20
West Midlands	29	138	12	30	149	18
Yorkshire	5	144	14	9	124	11

Table 68 (cont'd) 50-year hardwood forecast by aligned area; average annual volume within period

Aligned Area	2062–66		
	FC	Private sector	
	volume (000 m ³ obs)		SE%
England	156	1,371	6
Cumbria and Lancashire	2	67	11
Devon and Cornwall	13	81	21
East Anglia	6	97	17
East Midlands	5	63	19
Gtr Mancs Mersey and Ches	< 1	78	34
Herts and North London	< 1	26	27
Kent S London and E Sussex	5	186	18
Lincs and Northants	12	63	24
North East	23	54	20
Solent and South Downs	30	98	12
Thames	6	140	19
Wessex	23	71	20
West Midlands	37	112	12
Yorkshire	5	152	11

Part 4 – Tree health

Ash..... 158

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Larch 198

Ash

Figure 79 Stocked area of ash by age class

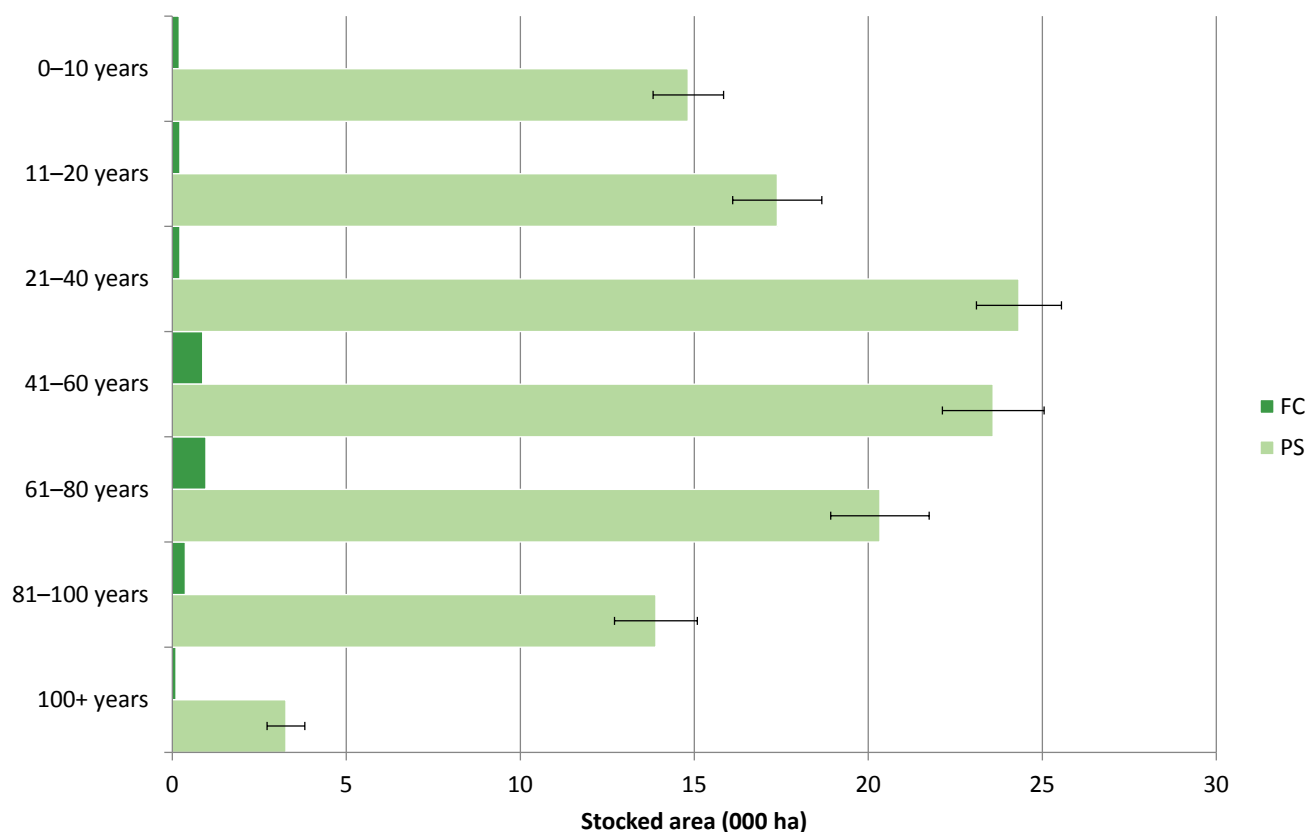


Table 69 Stocked area of ash by age class

Age class (years)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
England				
0–10	0.2	14.8	7	15.0
11–20	0.2	17.4	7	17.6
21–40	0.2	24.3	5	24.5
41–60	0.9	23.6	6	24.5
61–80	1.0	20.3	7	21.3
81–100	0.4	13.9	9	14.3
100+	0.1	3.3	17	3.4
Total	2.9	117.6	3	120.6

Part 4 – Tree health

Figure 80 Stocked area of ash by mean stand dbh class

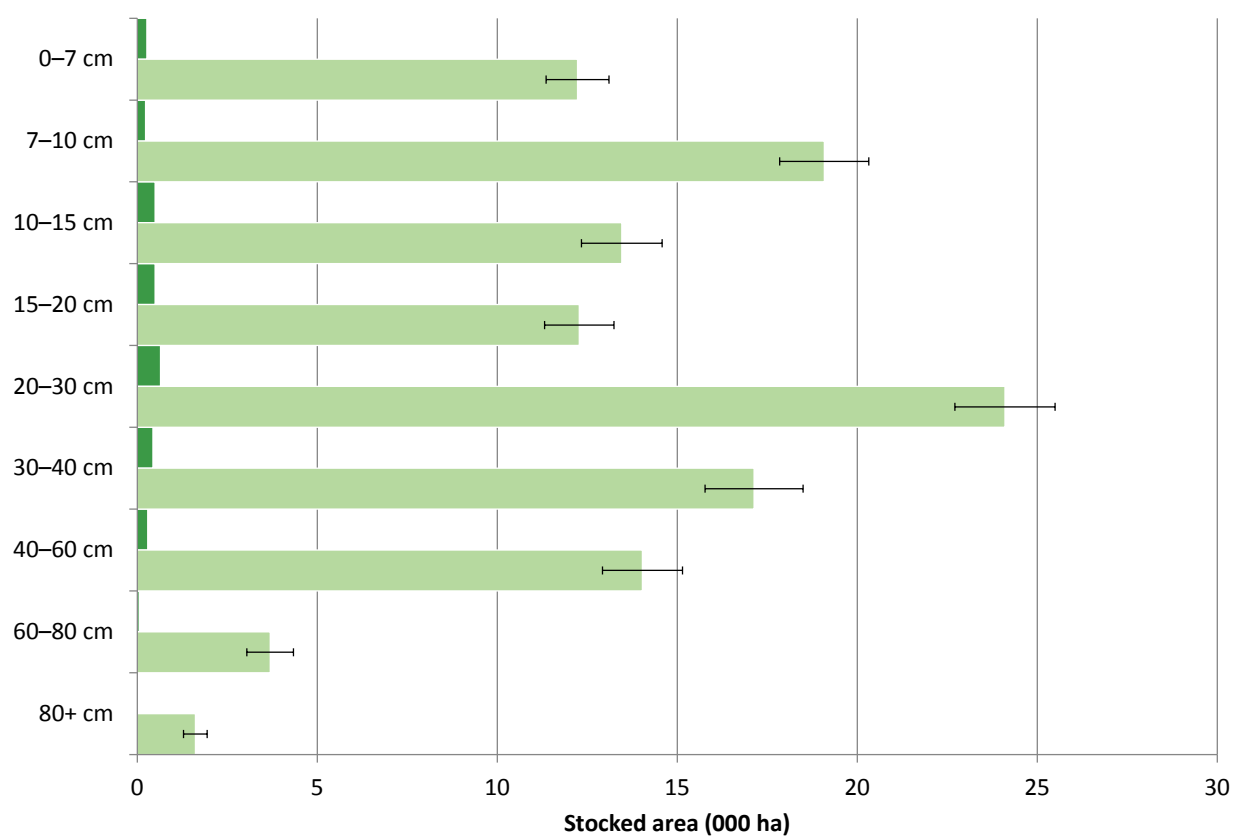


Table 70 Stocked area of ash by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
England				
0-7	0.3	12.2	7	12.5
7-10	0.2	19.1	6	19.3
10-15	0.5	13.5	8	13.9
15-20	0.5	12.3	8	12.8
20-30	0.6	24.1	6	24.7
30-40	0.4	17.1	8	17.6
40-60	0.3	14.0	8	14.3
60-80	< 0.1	3.7	18	3.7
80+	< 0.1	1.6	21	1.7
Total	2.9	117.6	3	120.6

Part 4 – Tree health

Figure 81 Standing volume of ash by age class

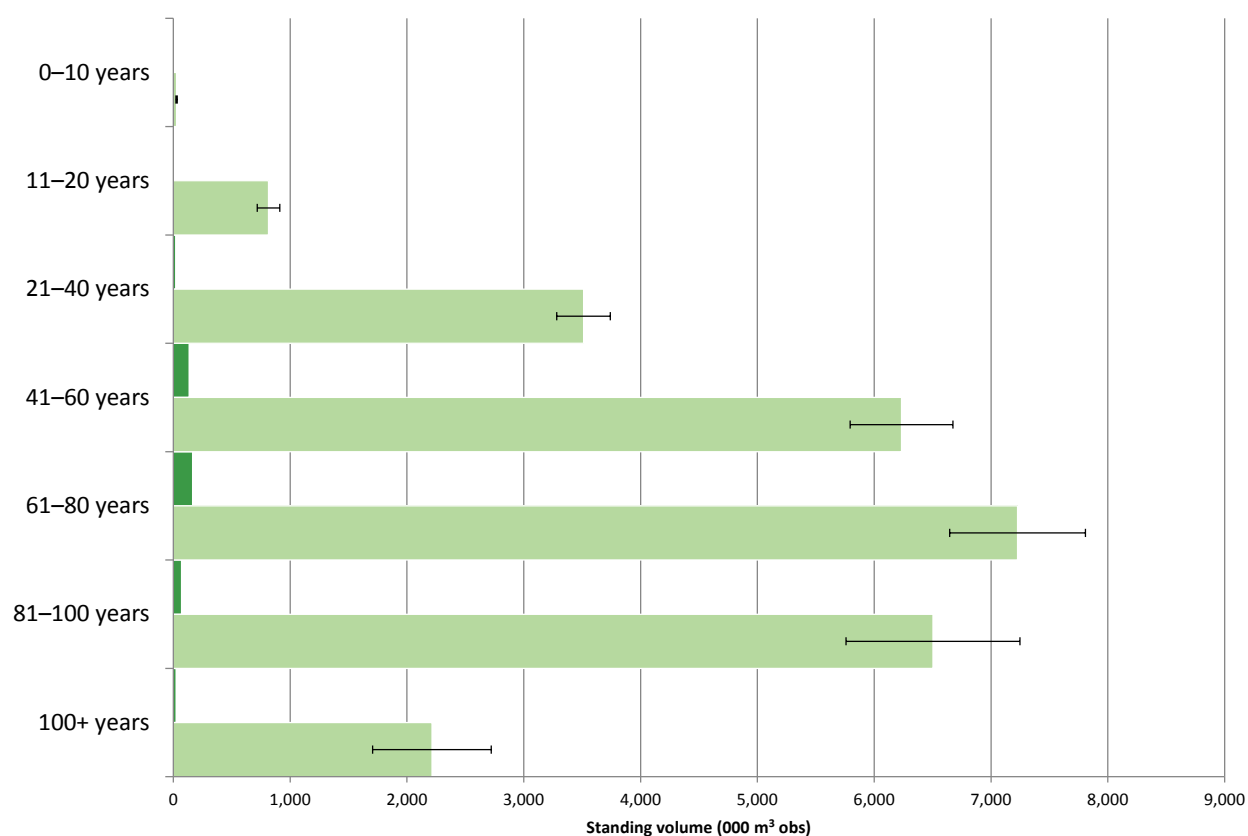


Table 71 Standing volume of ash by age class

Age class (years)	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
England				
0–10	< 1	28	20	28
11–20	3	815	12	817
21–40	21	3,512	7	3,532
41–60	134	6,234	7	6,369
61–80	166	7,227	8	7,393
81–100	70	6,503	11	6,573
100+	24	2,214	23	2,237
Total	417	29,305	4	29,722

Part 4 – Tree health

Figure 82 Standing volume of ash by mean stand dbh class

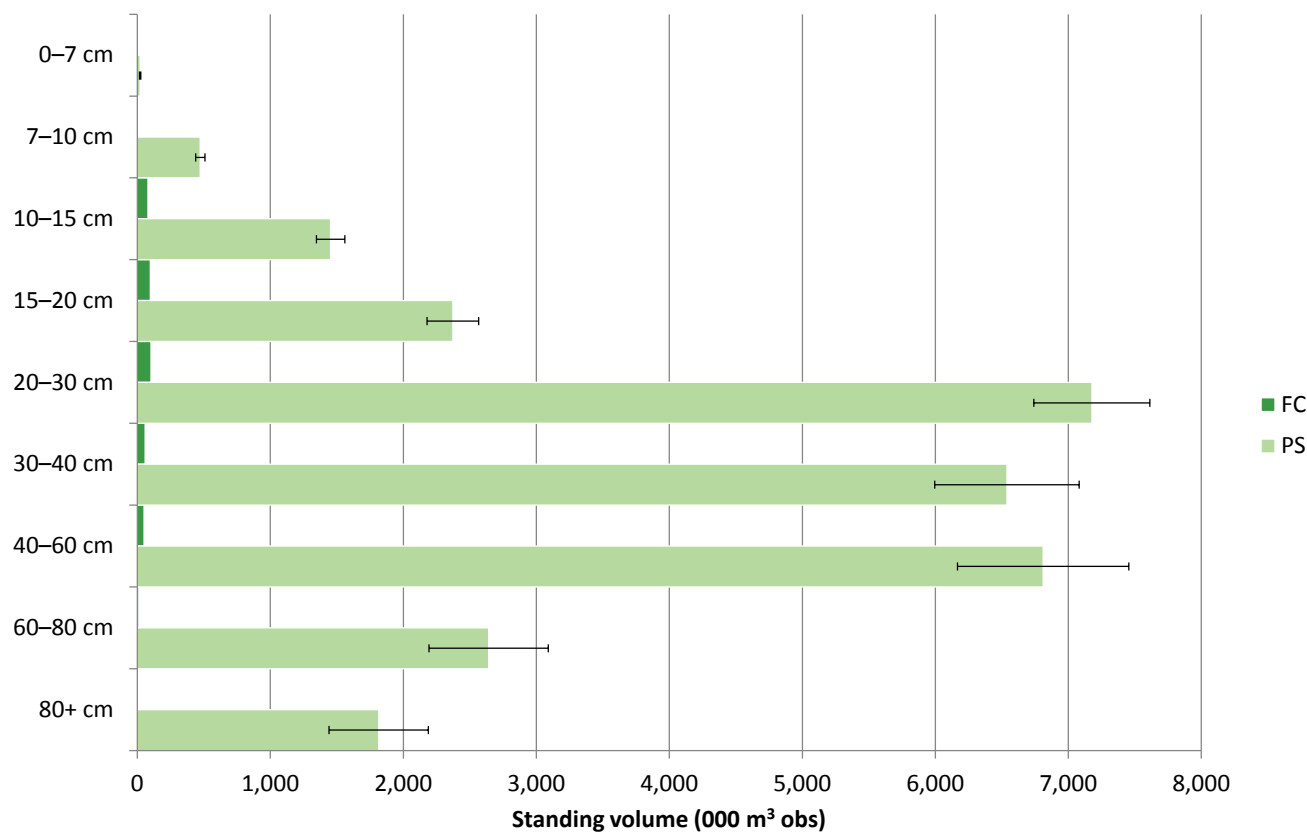


Table 72 Standing volume of ash by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
England				
0-7	< 1	22	22	22
7-10	6	474	7	479
10-15	81	1,453	7	1,534
15-20	99	2,372	8	2,471
20-30	103	7,177	6	7,281
30-40	59	6,539	8	6,597
40-60	51	6,810	9	6,861
60-80	12	2,642	17	2,654
80+	8	1,815	21	1,823
Total	417	29,305	4	29,722

Part 4 – Tree health

Figure 83 Number of ash trees by age class

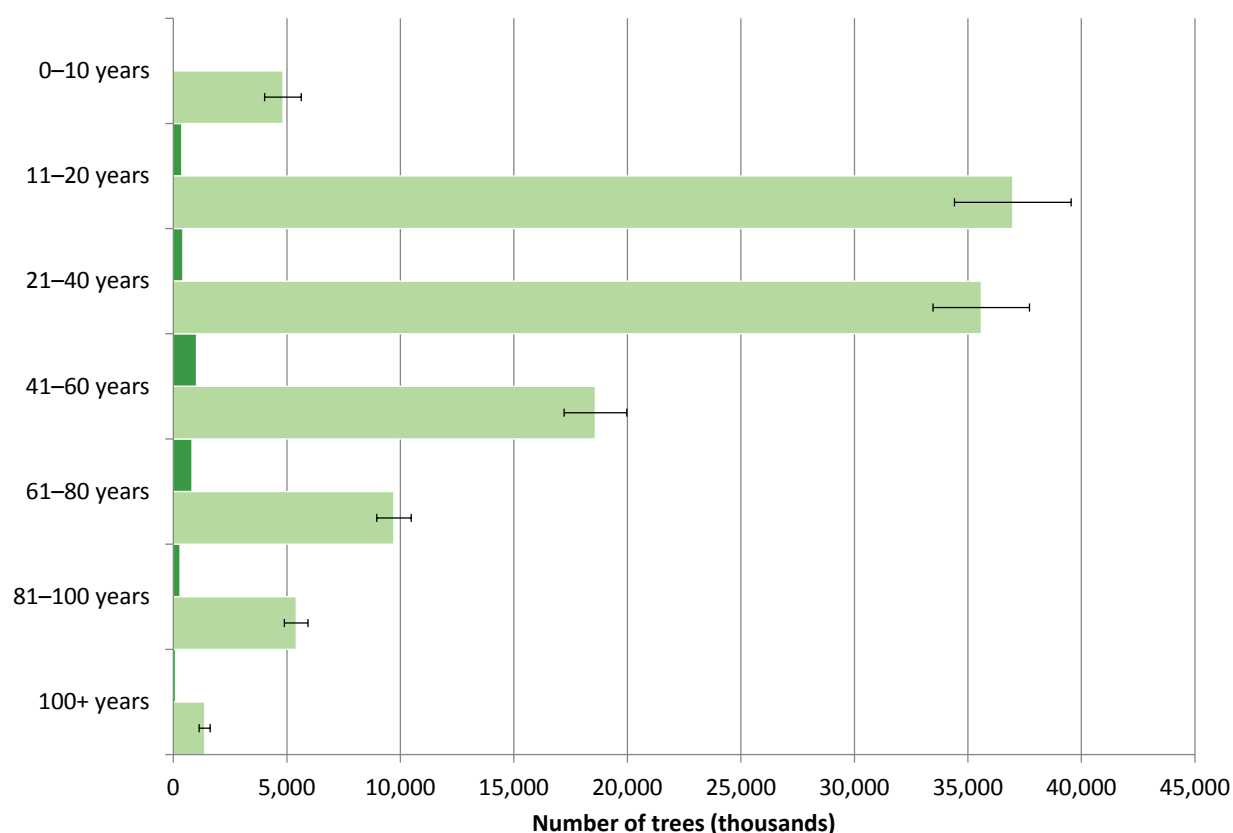


Table 73 Number of ash trees by age class

Age class (years)	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
England				
0–10	25	4,830	17	4,855
11–20	374	36,976	7	37,350
21–40	420	35,588	6	36,008
41–60	1,024	18,592	7	19,616
61–80	825	9,716	8	10,541
81–100	296	5,413	10	5,709
100+	96	1,383	18	1,479
Total	3,085	112,497	4	115,581

Part 4 – Tree health

Figure 84 Number of ash trees by mean stand dbh class

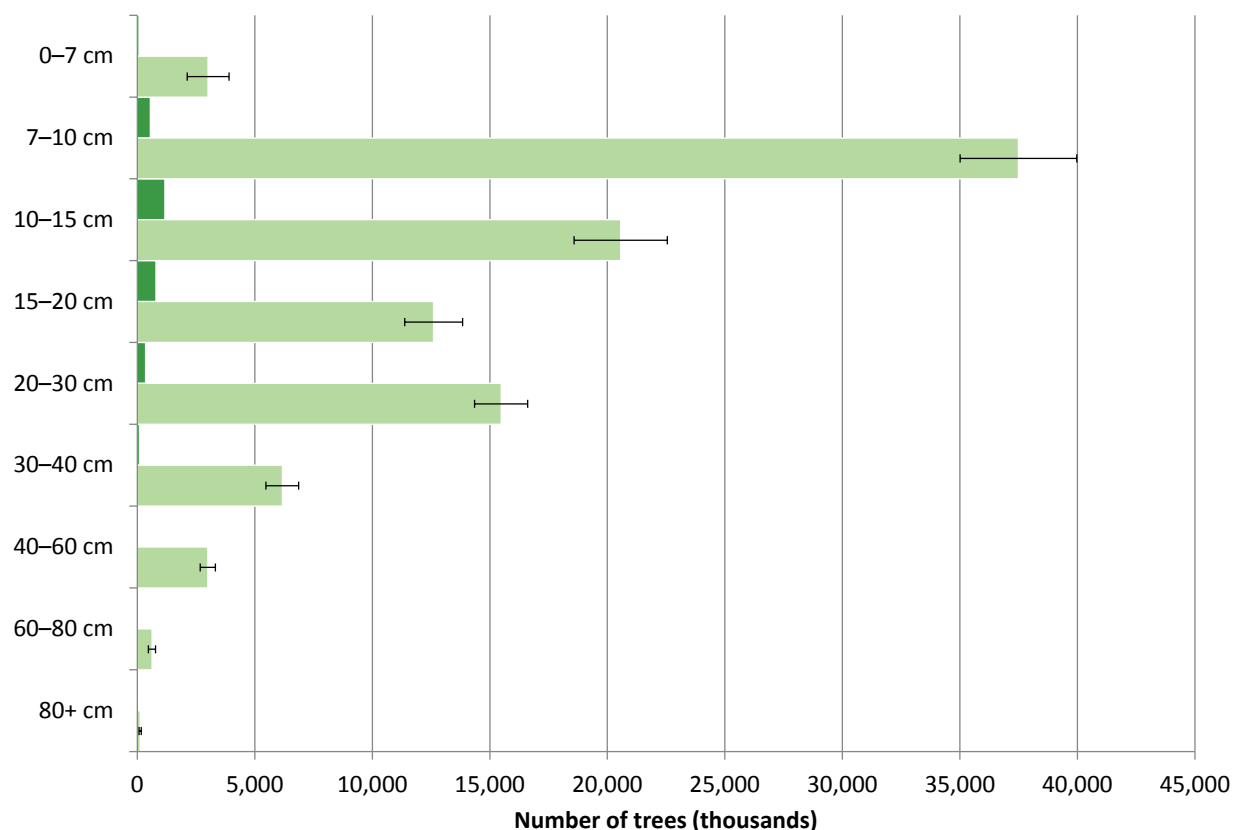
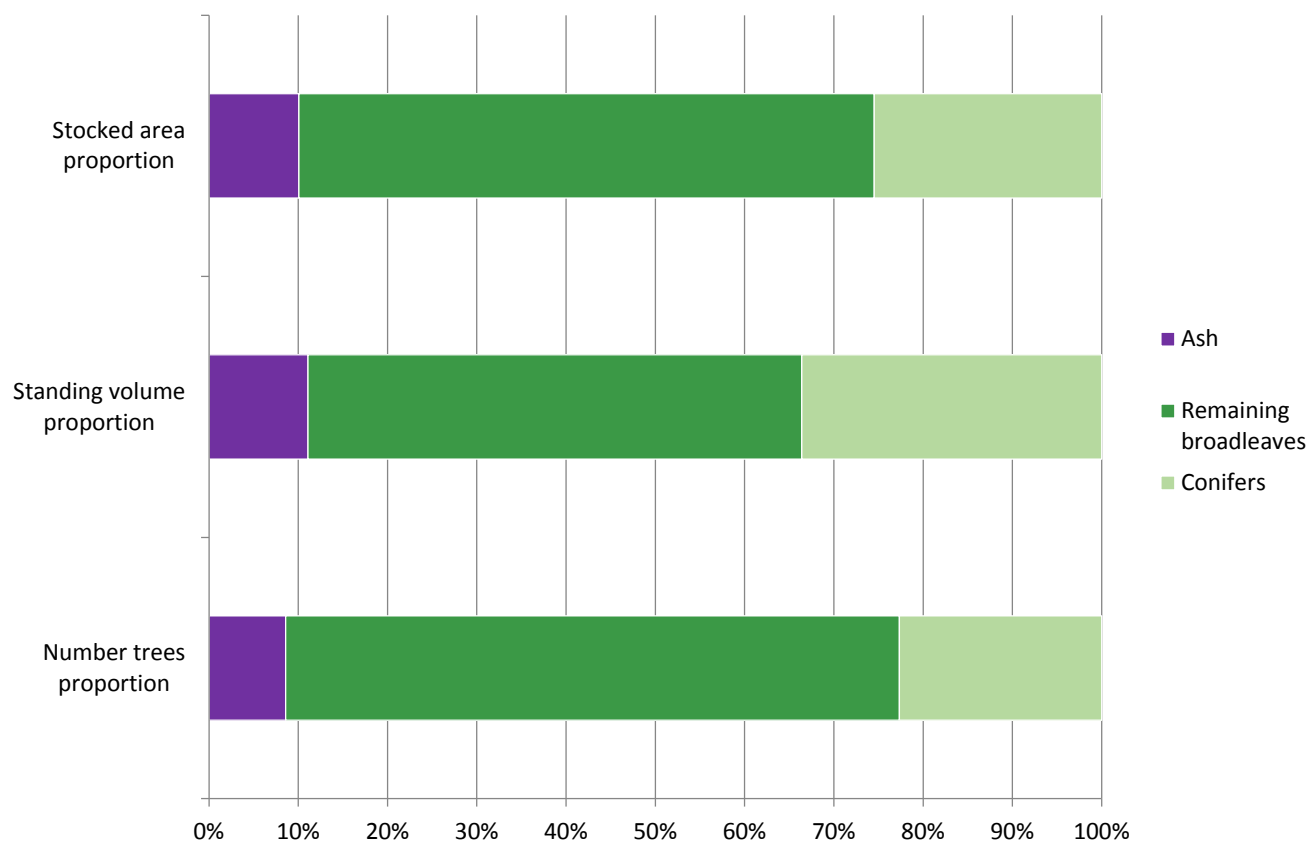


Table 74 Number of ash trees by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
England				
0-7	76	3,013	30	3,089
7-10	552	37,487	7	38,040
10-15	1,171	20,567	10	21,737
15-20	795	12,608	10	13,403
20-30	354	15,479	7	15,834
30-40	95	6,169	11	6,265
40-60	35	3,002	11	3,037
60-80	4	626	24	631
80+	1	121	36	122
Total	3,085	112,497	4	115,581

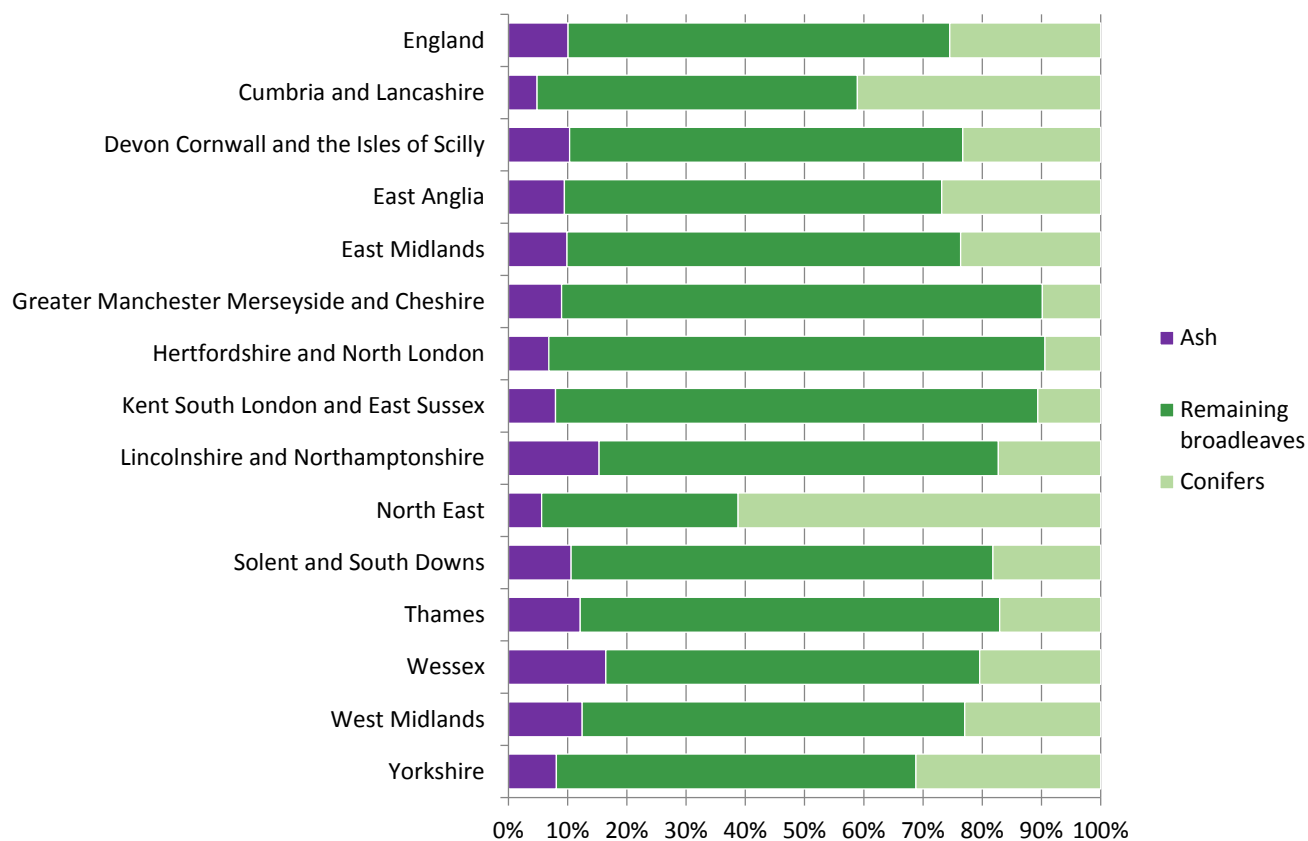
Part 4 – Tree health

Figure 85 Ash as a proportion of woodland



Part 4 – Tree health

Figure 86 Ash as a proportion of woodland within aligned areas (based on stocked area)



Part 4 – Tree health

Table 75 Ash as a proportion of woodland within aligned areas (based on stocked area)

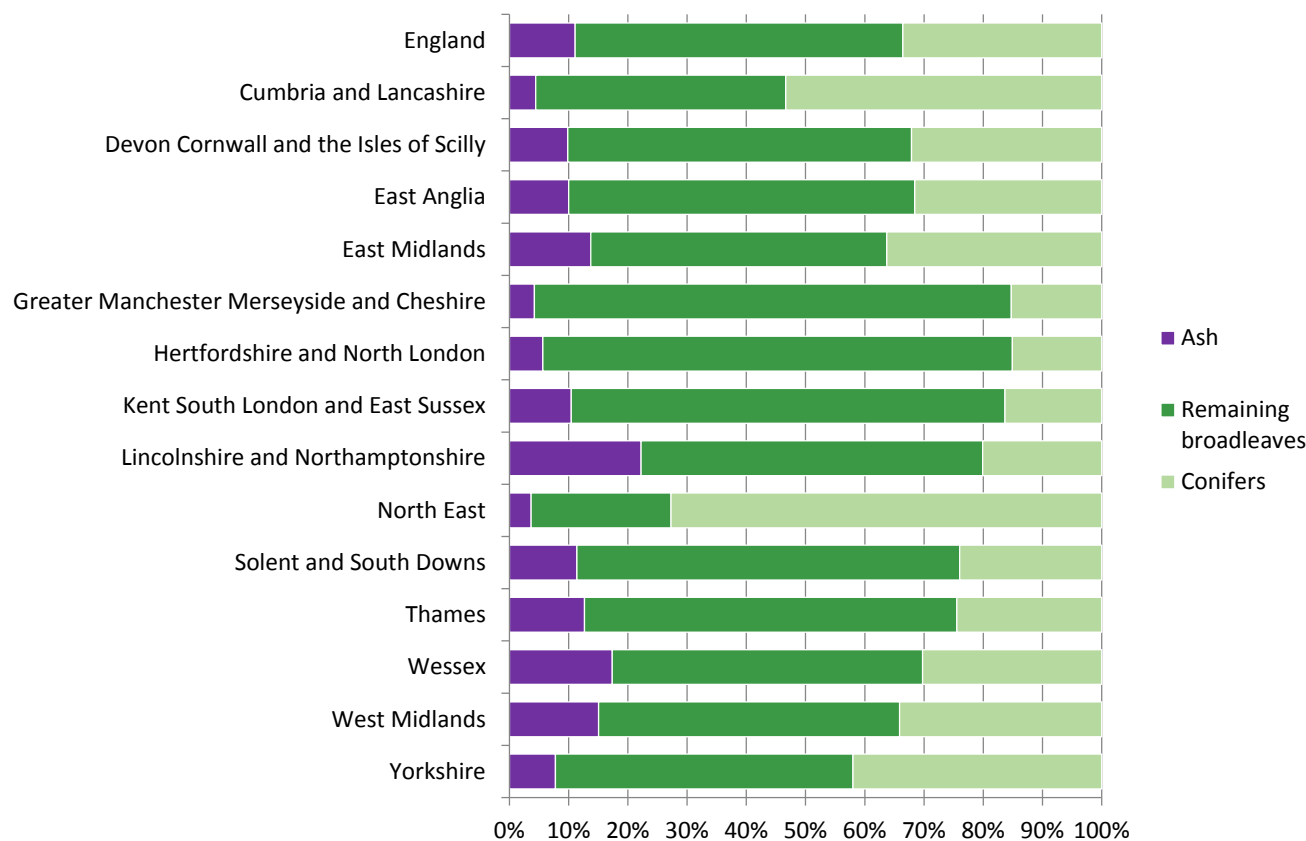
Country/Aligned area	Stocked area of ash			
	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
England	2.9	117.6	3	120.6
Cumbria and Lancashire	0.2	3.5	13	3.7
Devon and Cornwall	< 0.1	11.0	9	11.0
East Anglia	0.2	11.5	10	11.7
East Midlands	0.1	4.9	14	5.1
Gtr Mancs Mersey and Ches	< 0.1	2.4	27	2.4
Herts and North London	< 0.1	2.2	20	2.3
Kent S London and E Sussex	0.1	7.6	13	7.7
Lincs and Northants	0.9	6.3	11	7.2
North East	< 0.1	5.6	16	5.6
Solent and South Downs	0.3	11.7	7	12.1
Thames	< 0.1	10.7	8	10.8
Wessex	0.3	16.3	8	16.6
West Midlands	0.4	15.9	7	16.3
Yorkshire	0.2	8.0	8	8.2

Table 75 (cont'd) Ash as a proportion of woodland within aligned areas (based on stocked area)

Country/Aligned area	Stocked area of all broadleaves and all species			
	Total of all broadleaves	Total of all species	Percentage of ash in all broadleaves	Percentage of ash in all species
	area (000 ha)	area (000 ha)	(percent)	(percent)
England	892.5	1,197.5	14	10
Cumbria and Lancashire	44.8	76.2	8	5
Devon and Cornwall	81.7	106.7	13	10
East Anglia	90.9	124.2	13	9
East Midlands	39.1	51.2	13	10
Gtr Mancs Mersey and Ches	24.2	26.9	10	9
Herts and North London	30.1	33.2	8	7
Kent S London and E Sussex	86.3	96.6	9	8
Lincs and Northants	38.8	46.9	18	15
North East	38.9	100.3	14	6
Solent and South Downs	93.4	114.3	13	11
Thames	73.6	88.6	15	12
Wessex	80.4	100.8	21	16
West Midlands	101.0	130.8	16	12
Yorkshire	69.4	100.9	12	8

Part 4 – Tree health

Figure 87 Ash as a proportion of woodland within aligned areas (based on standing volume)



Part 4 – Tree health

Table 76 Ash as a proportion of woodland within aligned areas (based on standing volume)

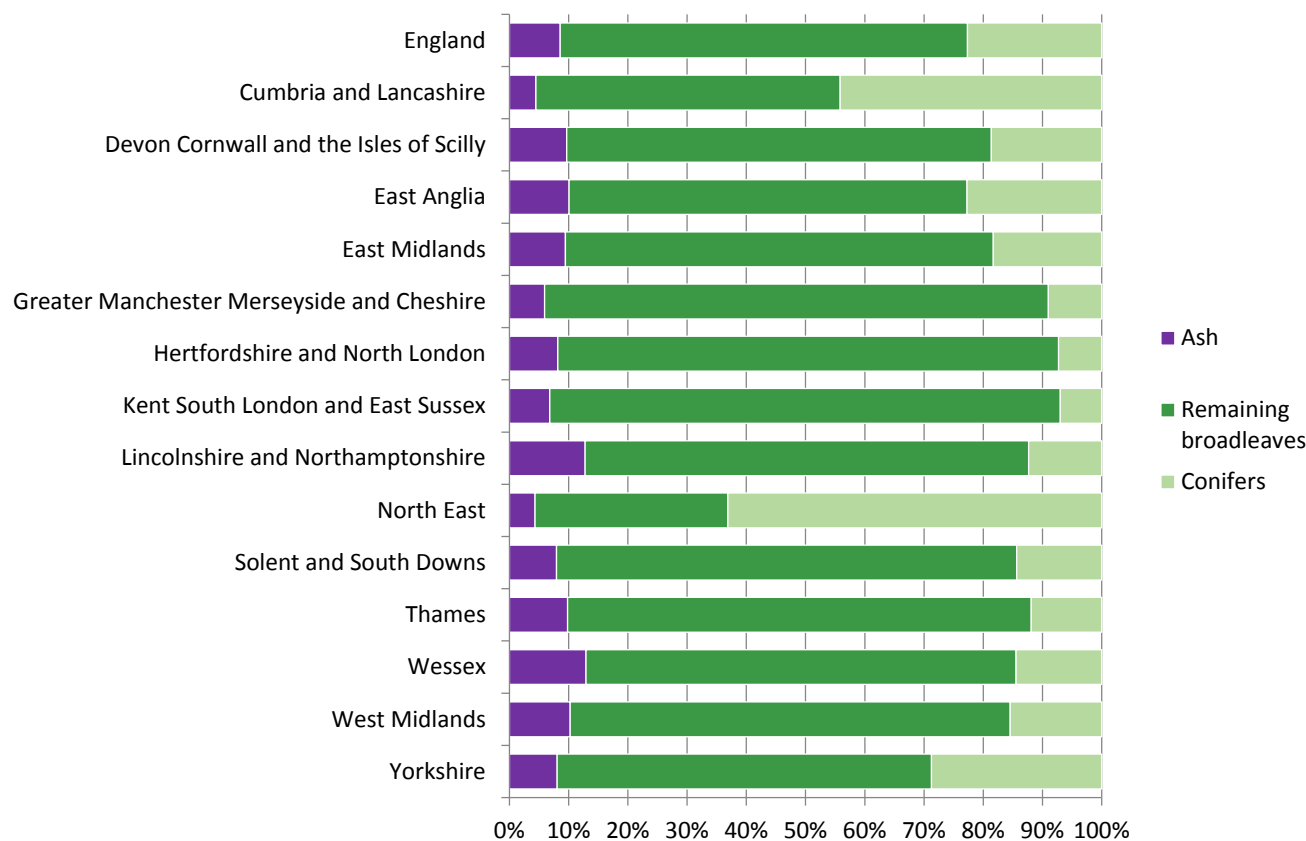
Country/Aligned area	Standing volume of ash			
	FC	Private sector		Total
	volume (000 m ³ obs)	volume (000 m ³ obs)	SE%	volume (000 m ³ obs)
England	417	29,305	4	29,722
Cumbria and Lancashire	28	704	17	732
Devon and Cornwall	2	2,533	11	2,535
East Anglia	36	2,326	14	2,362
East Midlands	13	1,314	23	1,327
Gtr Mancs Mersey and Ches	< 1	201	42	202
Herts and North London	2	362	36	364
Kent S London and E Sussex	13	2,133	17	2,147
Lincs and Northants	130	1,930	16	2,060
North East	< 1	748	18	748
Solent and South Downs	42	3,228	10	3,271
Thames	16	2,783	10	2,798
Wessex	46	4,395	11	4,441
West Midlands	56	5,130	13	5,186
Yorkshire	31	1,518	11	1,549

Table 76 (cont'd) Ash as a proportion of woodland within aligned areas (based on standing volume)

Country/Aligned area	Standing volume of all broadleaves and all species			
	Total of all broadleaves	Total of all species	Percentage of ash in all broadleaves	Percentage of ash in all species
	volume (000 m ³ obs)	volume (000 m ³ obs)	(percent)	(percent)
England	177,942	267,859	17	11
Cumbria and Lancashire	7,726	16,572	9	4
Devon and Cornwall	17,451	25,734	15	10
East Anglia	16,181	23,651	15	10
East Midlands	6,149	9,648	22	14
Gtr Mancs Mersey and Ches	4,046	4,775	5	4
Herts and North London	5,489	6,465	7	6
Kent S London and E Sussex	17,222	20,588	12	10
Lincs and Northants	7,405	9,282	28	22
North East	5,557	20,395	13	4
Solent and South Downs	21,855	28,762	15	11
Thames	16,691	22,055	17	13
Wessex	17,864	25,542	25	17
West Midlands	22,719	34,429	23	15
Yorkshire	11,588	19,962	13	8

Part 4 – Tree health

Figure 88 Ash as a proportion of woodland within aligned areas (based on number of trees)



Part 4 – Tree health

Table 77 Ash as a proportion of woodland within aligned areas (based on number of trees)

Country/Aligned Area	Numbers of ash trees			
	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
England	3,085	112,497	4	115,581
Cumbria and Lancashire	331	3,637	16	3,968
Devon and Cornwall	13	11,990	10	12,003
East Anglia	276	12,706	13	12,982
East Midlands	53	4,747	19	4,800
Gtr Mancs Mersey and Ches	25	1,389	31	1,414
Herts and North London	20	2,443	21	2,463
Kent S London and E Sussex	111	9,039	16	9,150
Lincs and Northants	940	5,801	12	6,741
North East	3	5,916	22	5,919
Solent and South Downs	439	9,674	9	10,113
Thames	134	9,108	11	9,242
Wessex	197	13,424	11	13,621
West Midlands	405	13,914	8	14,319
Yorkshire	138	8,708	11	8,846

Table 77 (cont'd) Ash as a proportion of woodland within aligned areas (based on number of trees)

Country/Aligned area	Number of trees of all broadleaves and all species			
	Total of all broadleaves	Total of all species	Percentage of ash in all broadleaves	Percentage of ash in all species
	number of trees (thousands)	number of trees (thousands)	(percent)	(percent)
England	1,041,479	1,347,451	11	9
Cumbria and Lancashire	49,491	88,712	8	4
Devon and Cornwall	101,036	124,157	12	10
East Anglia	99,654	129,037	13	10
East Midlands	41,422	50,700	12	9
Gtr Mancs Mersey and Ches	21,688	23,832	7	6
Herts and North London	27,972	30,175	9	8
Kent S London and E Sussex	125,248	134,692	7	7
Lincs and Northants	46,182	52,732	15	13
North East	50,374	136,669	12	4
Solent and South Downs	108,875	127,564	9	8
Thames	82,950	94,267	11	10
Wessex	90,018	105,232	15	13
West Midlands	118,195	139,638	12	10
Yorkshire	78,373	110,045	11	8

Part 4 – Tree health

Oak

Figure 89 Stocked area of oak by age class

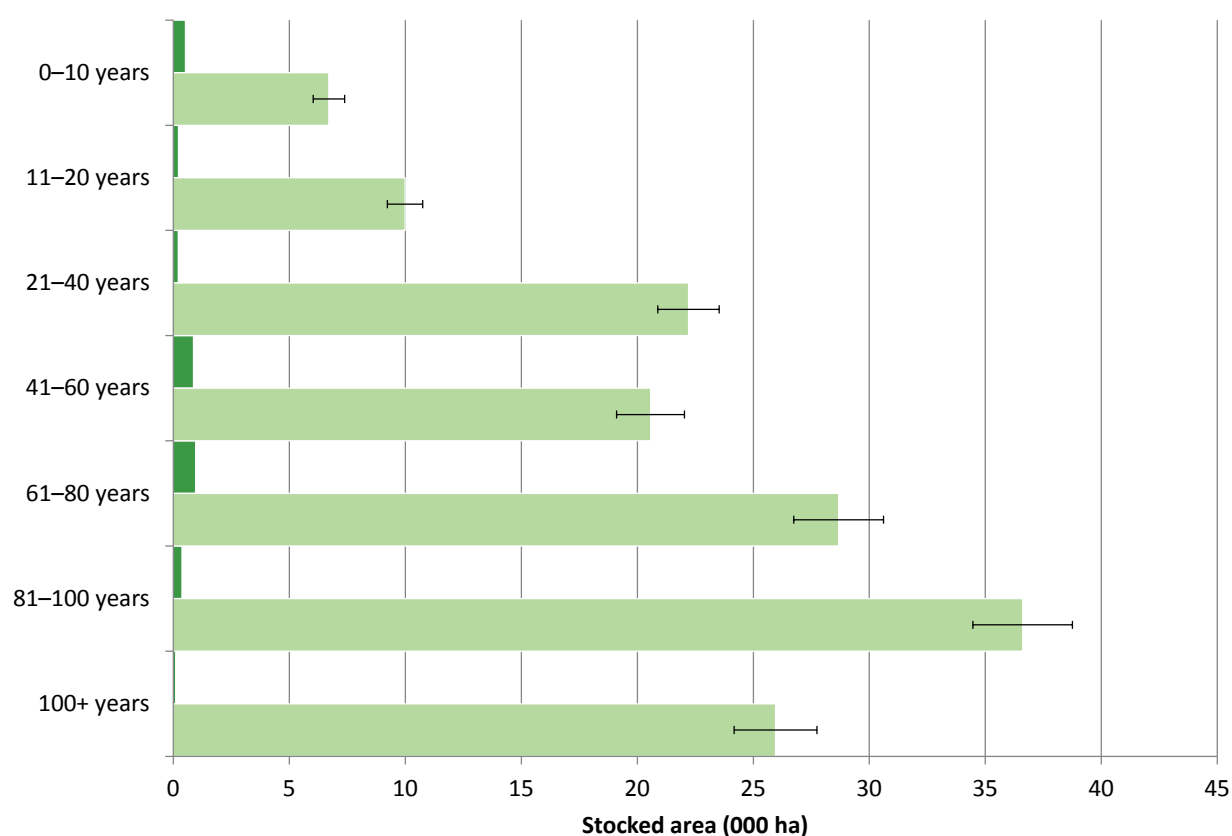


Table 78 Stocked area of oak by age class

Age class (years)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
England				
0-10	0.5	6.7	10	7.2
11-20	0.2	10.0	8	10.2
21-40	0.2	22.2	6	22.4
41-60	0.9	20.6	7	21.4
61-80	1.0	28.7	7	29.6
81-100	0.4	36.6	6	37.0
100+	0.1	26.0	7	26.1
Total	15.7	150.7	3	166.4

Part 4 – Tree health

Figure 90 Stocked area of oak by mean stand dbh class

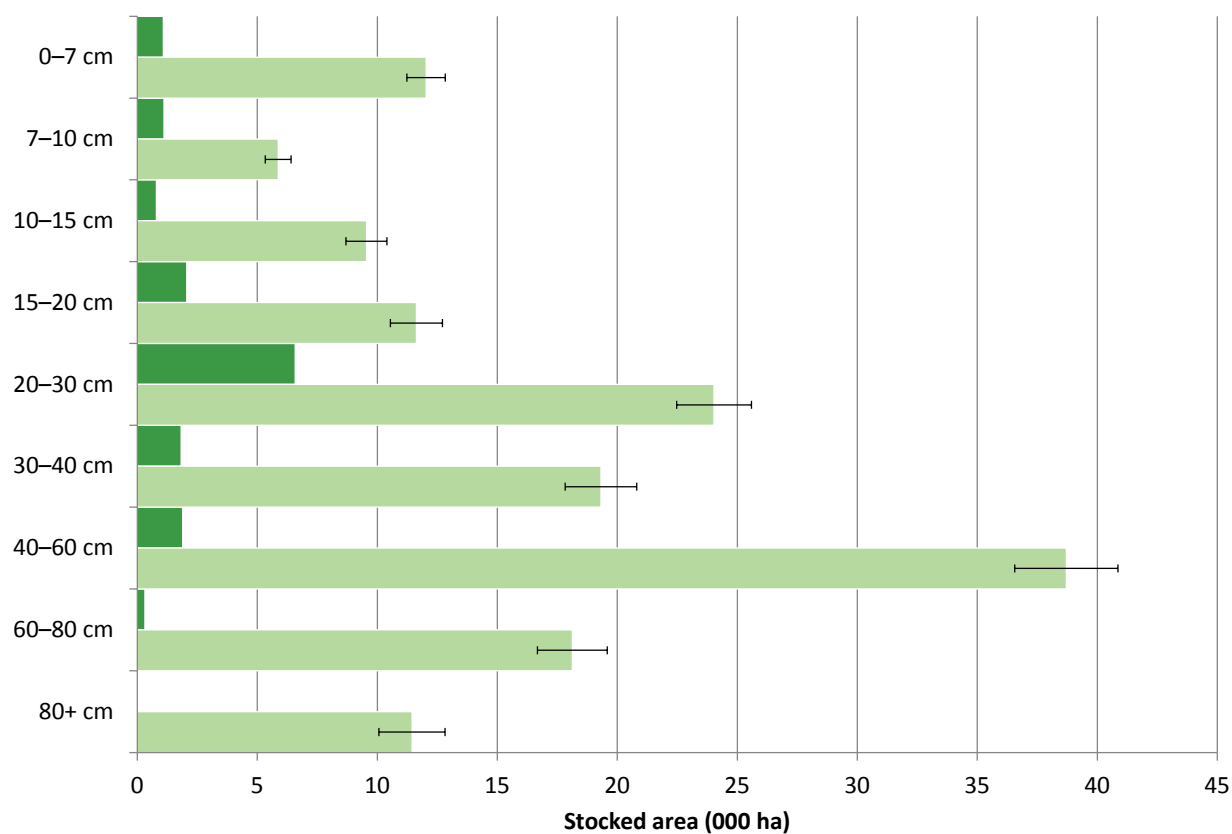


Table 79 Stocked area of oak by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
England				
0-7	1.1	12.0	7	13.1
7-10	1.1	5.9	9	7.0
10-15	0.8	9.5	9	10.3
15-20	2.1	11.6	9	13.7
20-30	6.6	24.0	6	30.6
30-40	1.8	19.3	8	21.1
40-60	1.9	38.7	6	40.6
60-80	0.3	18.1	8	18.4
80+	< 0.1	11.4	12	11.5
Total	15.7	150.7	3	166.4

Part 4 – Tree health

Figure 91 Standing volume of oak by age class

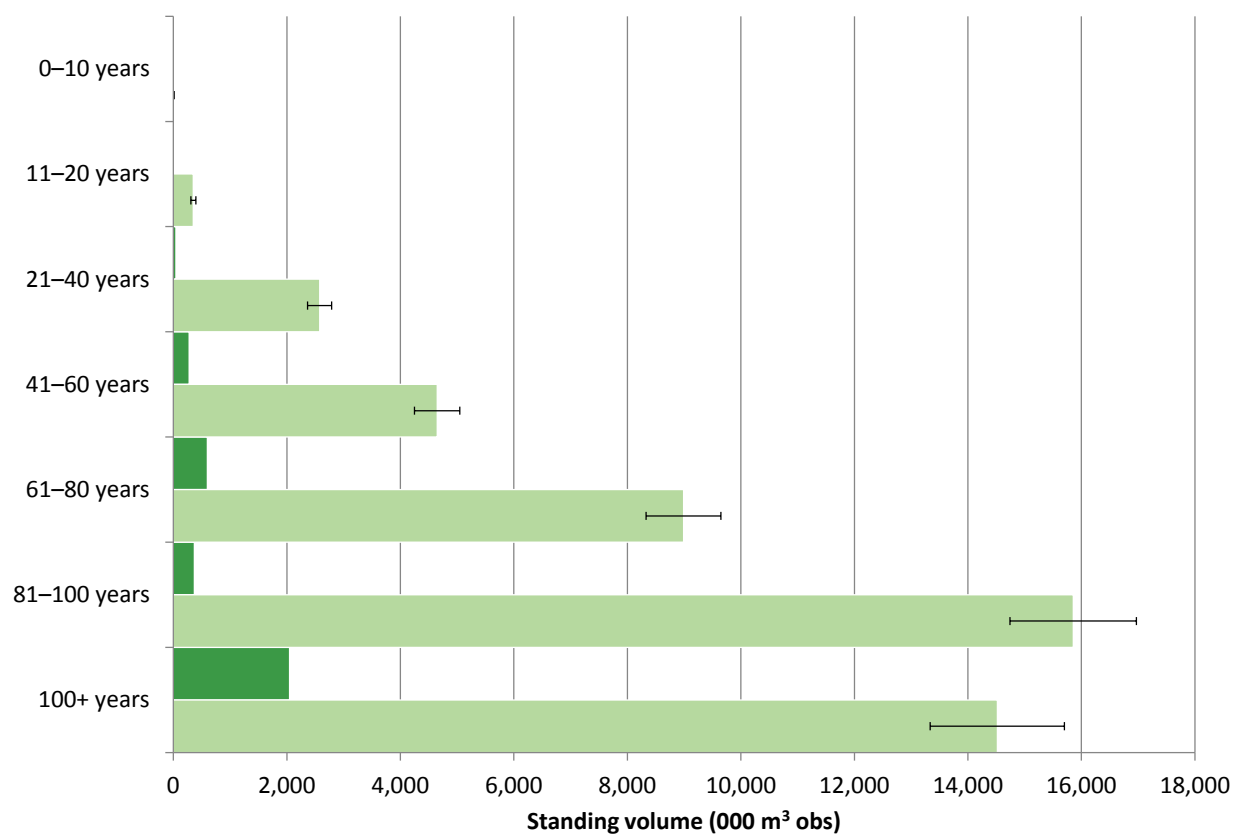


Table 80 Standing volume of oak by age class

Age class (years)	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
England				
0-10	0	8	50	8
11-20	4	352	13	355
21-40	47	2,577	8	2,624
41-60	279	4,648	9	4,927
61-80	600	8,989	7	9,589
81-100	370	15,855	7	16,225
100+	2,046	14,518	8	16,564
Total	3,345	50,885	3	54,230

Part 4 – Tree health

Figure 92 Standing volume of oak by mean stand dbh class

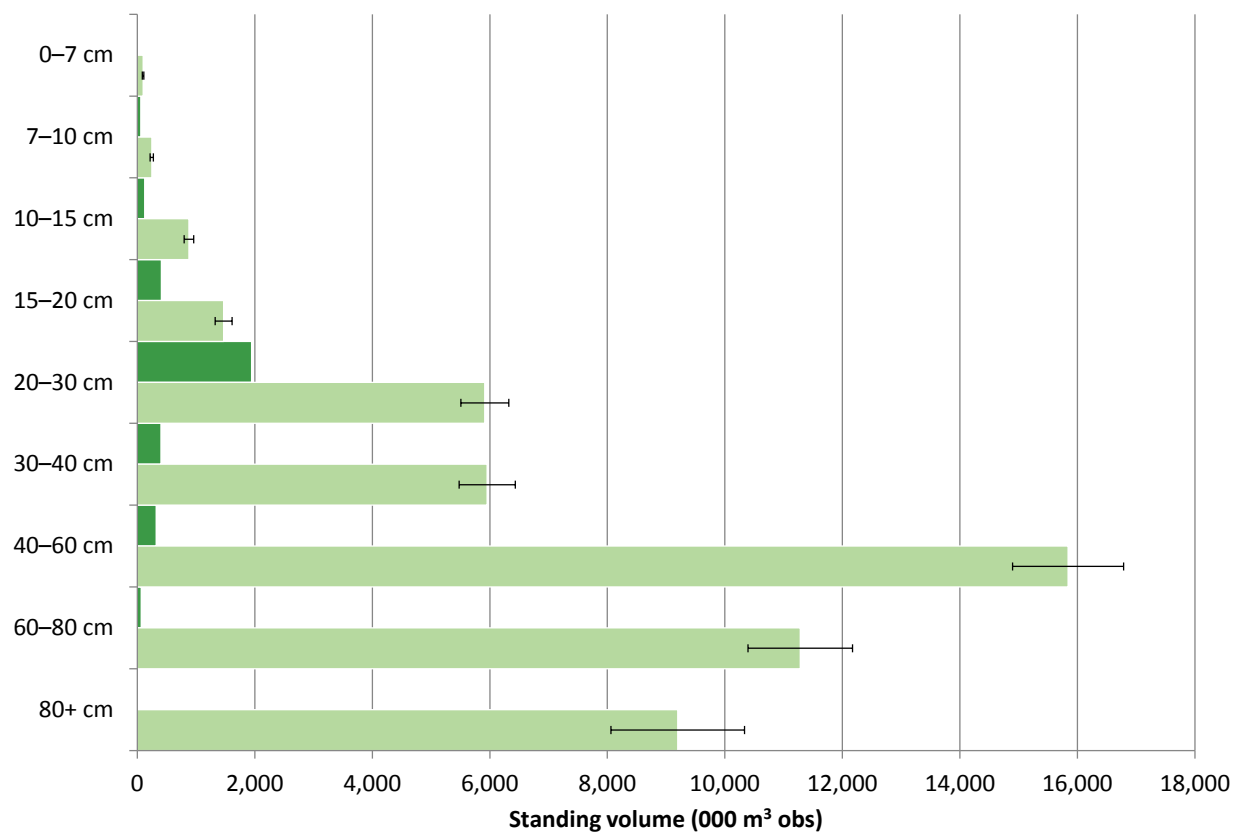


Table 81 Standing volume of oak by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
England				
0-7	6	98	12	105
7-10	60	246	11	306
10-15	124	880	9	1,003
15-20	412	1,468	10	1,880
20-30	< 1	5,914	7	5,914
30-40	404	5,955	8	6,359
40-60	321	15,842	6	16,163
60-80	66	11,284	8	11,350
80+	6	9,199	12	9,205
Total	3,345	50,885	3	54,230

Part 4 – Tree health

Figure 93 Number of oak trees by age class

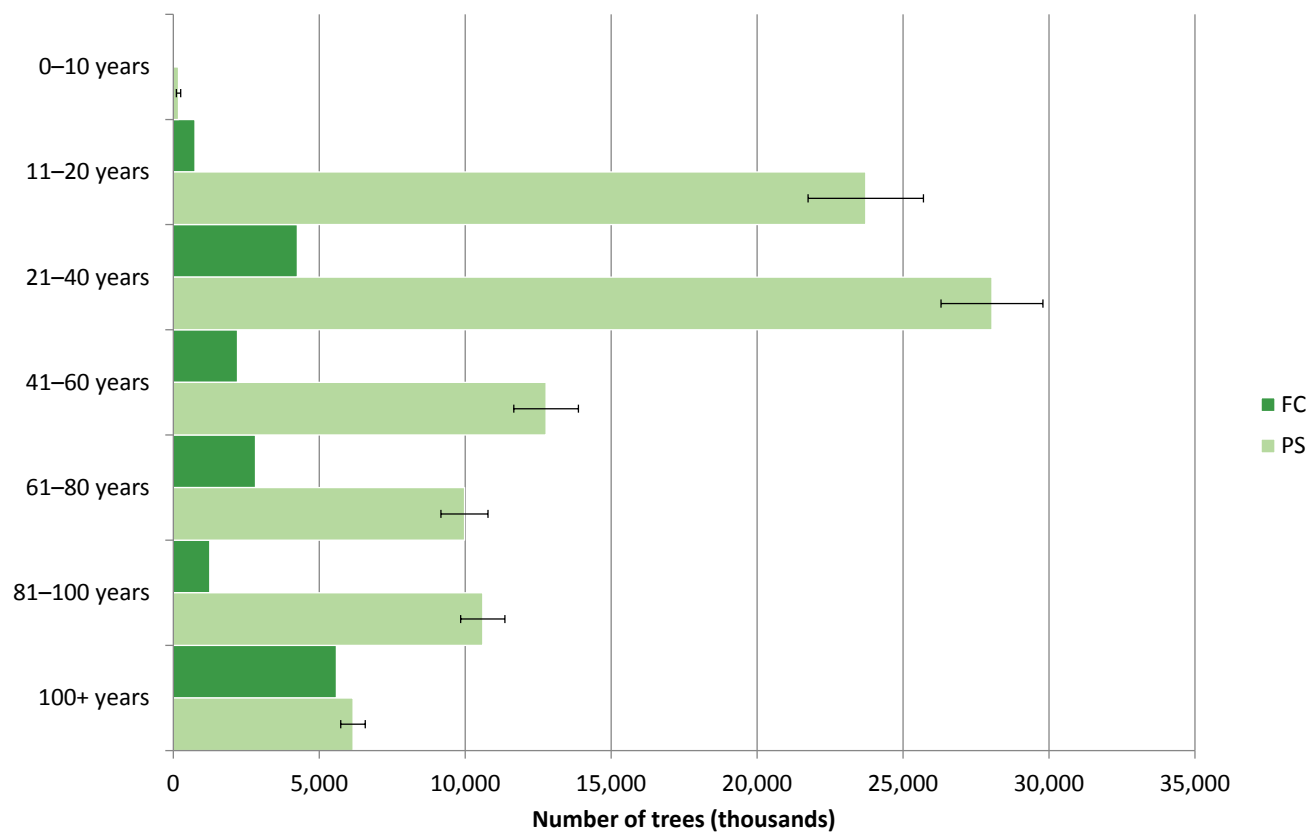


Table 82 Number of oak trees by age class

Age class (years)	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
England				
0-10	47	178	42	225
11-20	744	23,722	8	24,466
21-40	4,245	28,044	6	32,290
41-60	2,196	12,772	9	14,968
61-80	2,817	9,974	8	12,791
81-100	1,245	10,600	7	11,844
100+	5,587	6,156	7	11,743
Total	16,920	91,446	3	108,366

Part 4 – Tree health

Figure 94 Number of oak trees by mean stand dbh class

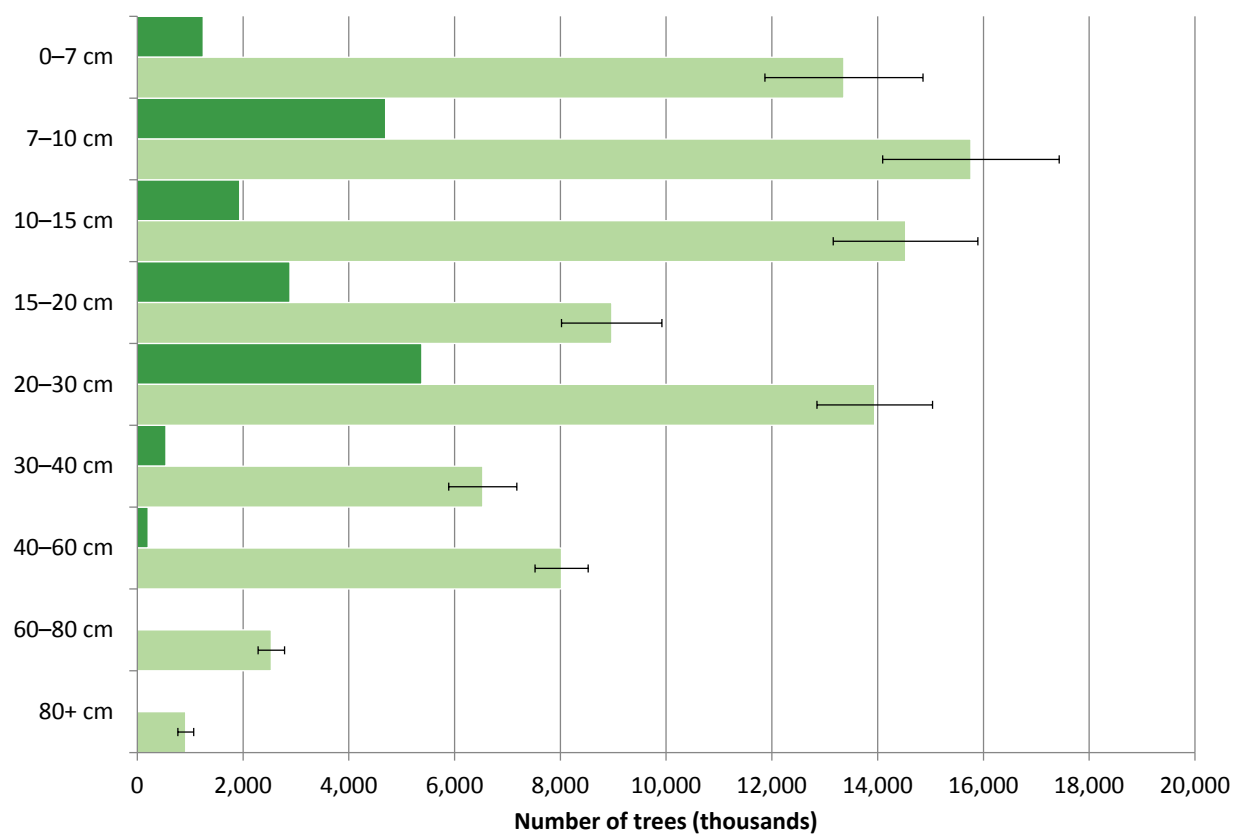
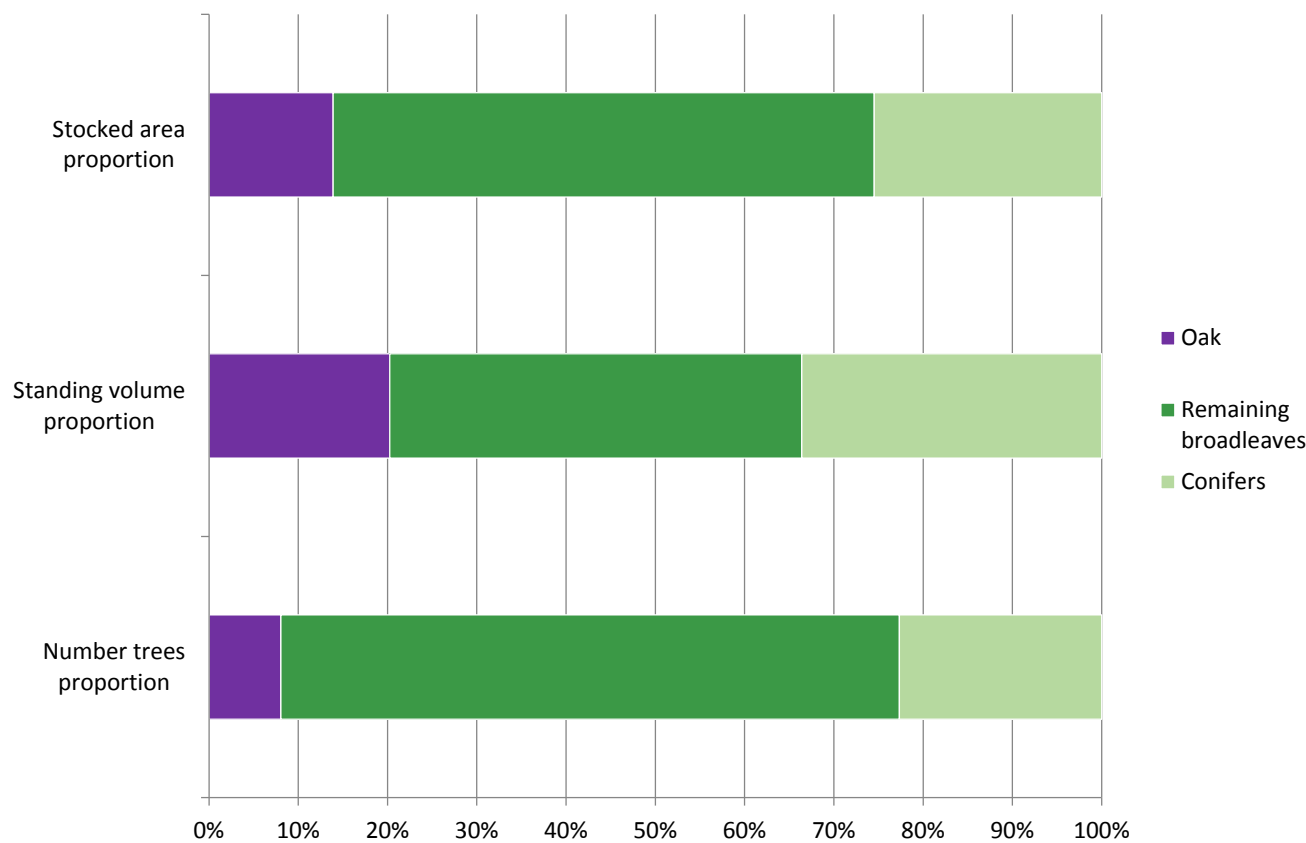


Table 83 Number of oak trees by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
England				
0-7	1,249	13,363	11	14,612
7-10	4,698	15,764	11	20,462
10-15	1,937	14,528	9	16,465
15-20	2,889	8,971	11	11,860
20-30	5,380	13,944	8	19,324
30-40	541	6,532	10	7,074
40-60	207	8,024	6	8,231
60-80	19	2,535	10	2,554
80+	1	916	16	917
Total	16,920	91,446	3	108,366

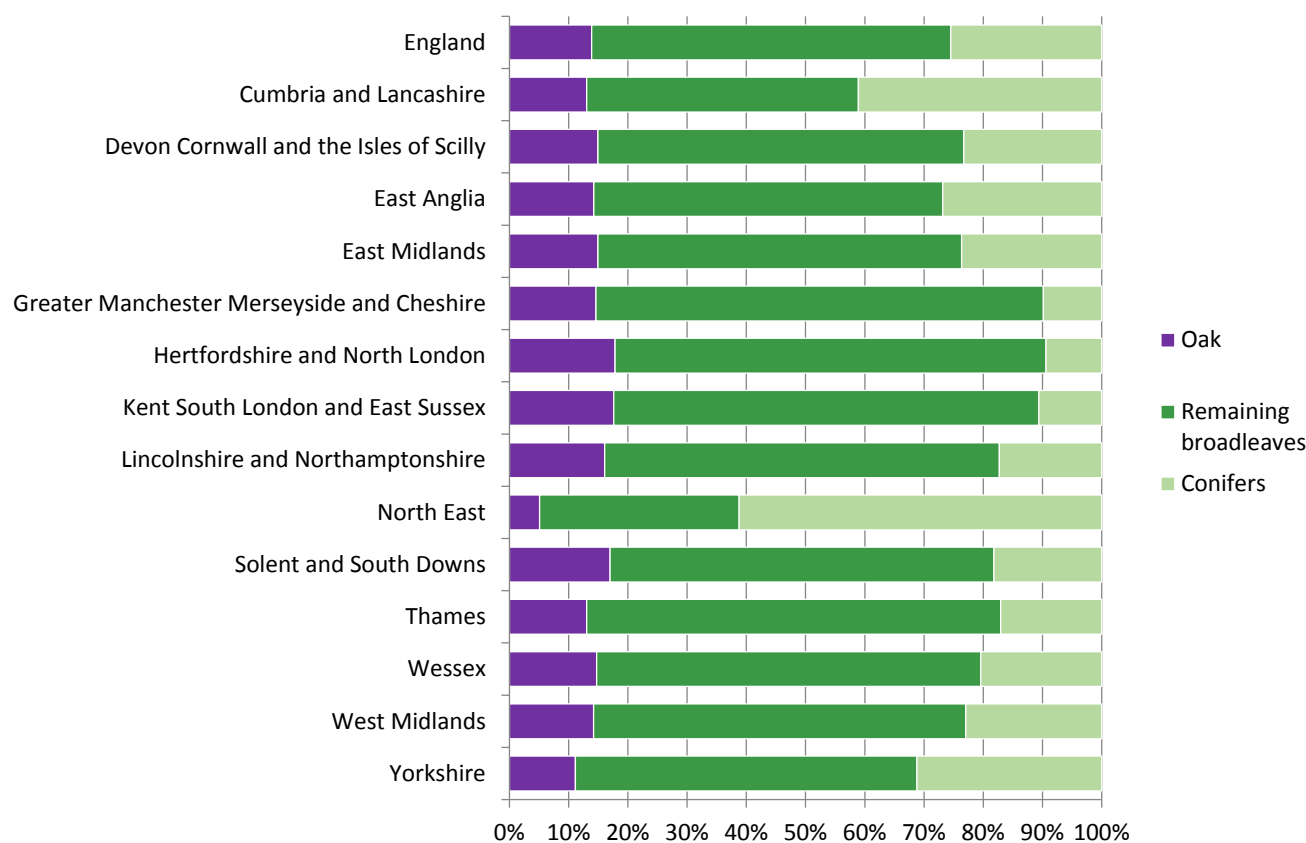
Part 4 – Tree health

Figure 95 Oak as a proportion of woodland



Part 4 – Tree health

Figure 96 Oak as a proportion of woodland within aligned areas (based on stocked area)



Part 4 – Tree health

Table 84 Oak as a proportion of woodland within aligned areas (based on stocked area)

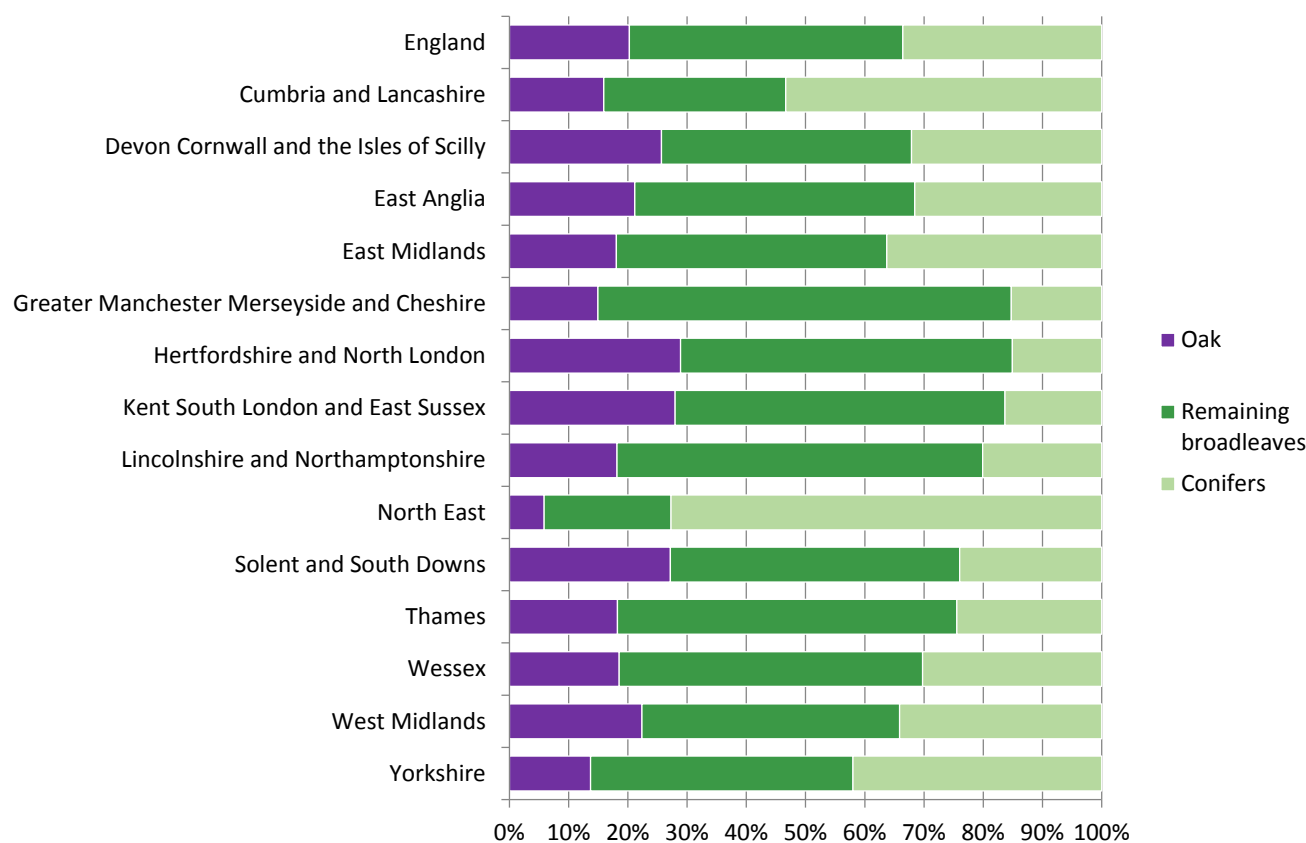
Country/Aligned area	Stocked area of oak			
	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
England	15.7	150.7	3	166.4
Cumbria and Lancashire	0.4	9.5	9	9.9
Devon and Cornwall	0.3	15.6	7	15.9
East Anglia	0.9	16.8	8	17.7
East Midlands	0.2	7.5	13	7.6
Gtr Mancs Mersey and Ches	< 0.1	3.9	23	3.9
Herts and North London	< 0.1	5.9	14	5.9
Kent S London and E Sussex	0.5	16.6	8	17.0
Lincs and Northants	2.9	4.7	12	7.5
North East	< 0.1	5.0	17	5.1
Solent and South Downs	5.4	14.0	6	19.4
Thames	0.4	11.1	8	11.6
Wessex	3.4	11.5	8	14.9
West Midlands	0.8	17.8	9	18.6
Yorkshire	0.4	10.8	9	11.2

Table 84 (cont'd) Oak as a proportion of woodland within aligned areas (based on stocked area)

Country/Aligned area	Stocked area of all broadleaves and all species			
	Total of all broadleaves	Total of all species	Percentage of Oak in all broadleaves	Percentage of Oak in all species
	area (000 ha)	area (000 ha)	(percent)	(percent)
England	892.5	1,197.5	19	14
Cumbria and Lancashire	44.8	76.2	22	13
Devon and Cornwall	81.7	106.7	19	15
East Anglia	90.9	124.2	19	14
East Midlands	39.1	51.2	20	15
Gtr Mancs Mersey and Ches	24.2	26.9	16	15
Herts and North London	30.1	33.2	20	18
Kent S London and E Sussex	86.3	96.6	20	18
Lincs and Northants	38.8	46.9	19	16
North East	38.9	100.3	13	5
Solent and South Downs	93.4	114.3	21	17
Thames	73.6	88.6	16	13
Wessex	80.4	100.8	19	15
West Midlands	101.0	130.8	18	14
Yorkshire	69.4	100.9	16	11

Part 4 – Tree health

Figure 97 Oak as a proportion of woodland within aligned areas (based on standing volume)



Part 4 – Tree health

Table 85 Oak as a proportion of woodland within aligned areas (based on standing volume)

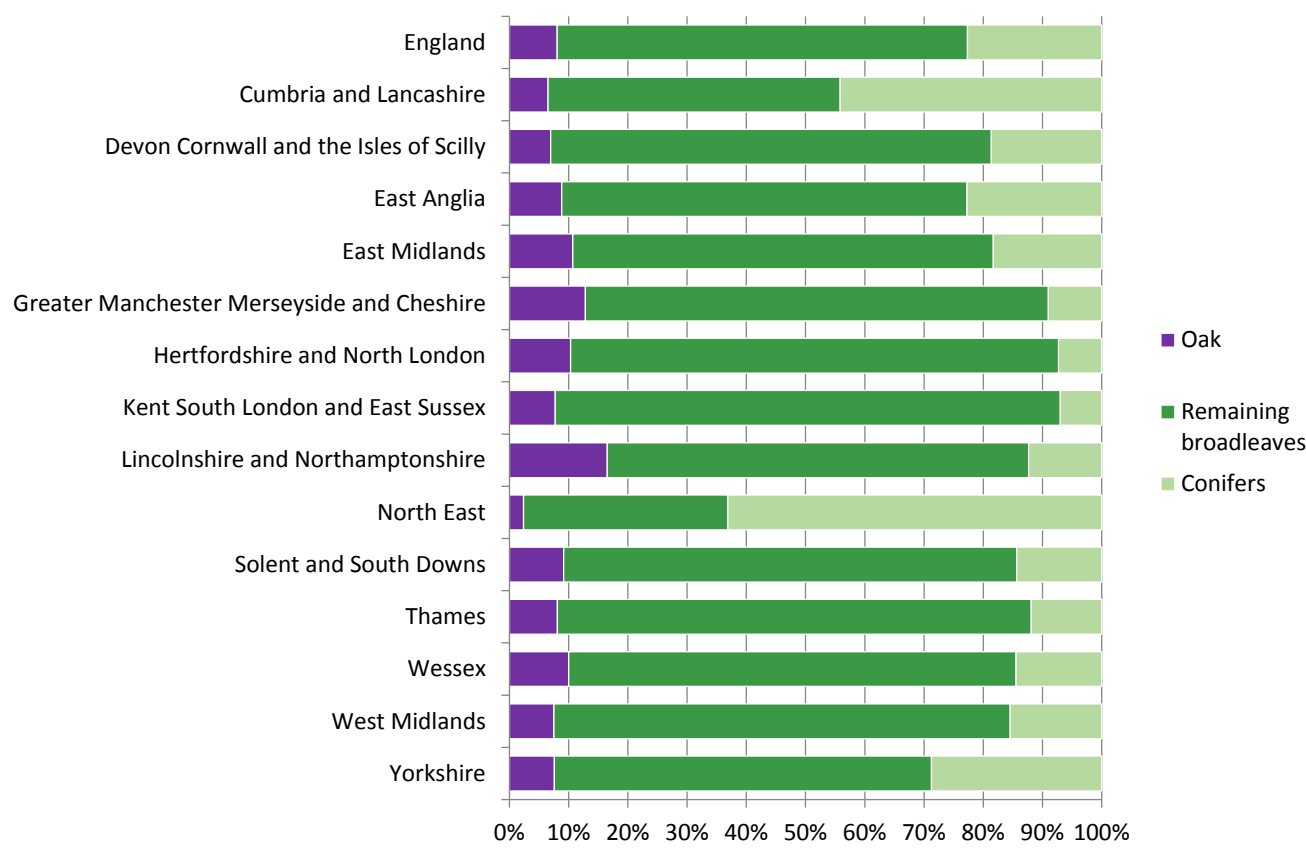
Country/Aligned area	Standing volume of Oak			
	FC	Private sector		Total
	volume (000 m ³ obs)	volume (000 m ³ obs)	SE%	volume (000 m ³ obs)
England	3,345	50,885	3	54,230
Cumbria and Lancashire	111	2,527	13	2,638
Devon and Cornwall	46	6,553	11	6,599
East Anglia	144	4,861	12	5,005
East Midlands	19	1,722	20	1,741
Gtr Mancs Mersey and Ches	11	703	25	714
Herts and North London	8	1,859	20	1,867
Kent S London and E Sussex	71	5,689	10	5,759
Lincs and Northants	464	1,220	15	1,685
North East	9	1,182	23	1,191
Solent and South Downs	1,664	6,147	9	7,810
Thames	84	3,950	10	4,033
Wessex	120	4,621	12	4,741
West Midlands	531	7,180	11	7,711
Yorkshire	64	2,672	12	2,736

Table 85 (cont'd) Oak as a proportion of woodland within aligned areas (based on standing volume)

Country/Aligned area	Standing volume of all broadleaves and all species			
	Total of all broadleaves	Total of all species	Percentage of Oak in all broadleaves	Percentage of Oak in all species
	volume (000 m ³ obs)	volume (000 m ³ obs)	(percent)	(percent)
England	177,942	267,859	30	20
Cumbria and Lancashire	7,726	16,572	34	16
Devon and Cornwall	17,451	25,734	38	26
East Anglia	16,181	23,651	31	21
East Midlands	6,149	9,648	28	18
Gtr Mancs Mersey and Ches	4,046	4,775	18	15
Herts and North London	5,489	6,465	34	29
Kent S London and E Sussex	17,222	20,588	33	28
Lincs and Northants	7,405	9,282	23	18
North East	5,557	20,395	21	6
Solent and South Downs	21,855	28,762	36	27
Thames	16,691	22,055	24	18
Wessex	17,864	25,542	27	19
West Midlands	22,719	34,429	34	22
Yorkshire	11,588	19,962	24	14

Part 4 – Tree health

Figure 98 Oak as a proportion of woodland within aligned areas (based on number of trees)



Part 4 – Tree health

Table 86 Oak as a proportion of woodland within aligned areas (based on number of trees)

Country/Aligned Area	Numbers of oak trees			
	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
England	16,920	91,446	3	108,366
Cumbria and Lancashire	690	5,088	12	5,778
Devon and Cornwall	241	8,403	9	8,645
East Anglia	831	10,575	12	11,406
East Midlands	150	5,276	16	5,426
Gtr Mancs Mersey and Ches	50	3,005	22	3,055
Herts and North London	60	3,051	17	3,111
Kent S London and E Sussex	648	9,747	10	10,395
Lincs and Northants	4,050	4,660	17	8,710
North East	57	3,187	18	3,244
Solent and South Downs	4,901	6,731	9	11,632
Thames	358	7,248	13	7,606
Wessex	3,647	6,868	14	10,515
West Midlands	799	9,697	10	10,496
Yorkshire	438	7,909	12	8,347

Table 86 (cont'd) Oak as a proportion of woodland within aligned areas (based on number of trees)

Country/Aligned area	Number of trees of all broadleaves and all species			
	Total of all broadleaves	Total of all species	Percentage of oak in all broadleaves	Percentage of oak in all species
	number of trees (thousands)	number of trees (thousands)	(percent)	(percent)
England	1,041,479	1,347,451	10	8
Cumbria and Lancashire	49,491	88,712	12	7
Devon and Cornwall	101,036	124,157	9	7
East Anglia	99,654	129,037	11	9
East Midlands	41,422	50,700	13	11
Gtr Mancs Mersey and Ches	21,688	23,832	14	13
Herts and North London	27,972	30,175	11	10
Kent S London and E Sussex	125,248	134,692	8	8
Lincs and Northants	46,182	52,732	19	17
North East	50,374	136,669	6	2
Solent and South Downs	108,875	127,564	11	9
Thames	82,950	94,267	9	8
Wessex	90,018	105,232	12	10
West Midlands	118,195	139,638	9	8
Yorkshire	78,373	110,045	11	8

Sweet chestnut

Figure 99 Stocked area of sweet chestnut by age class

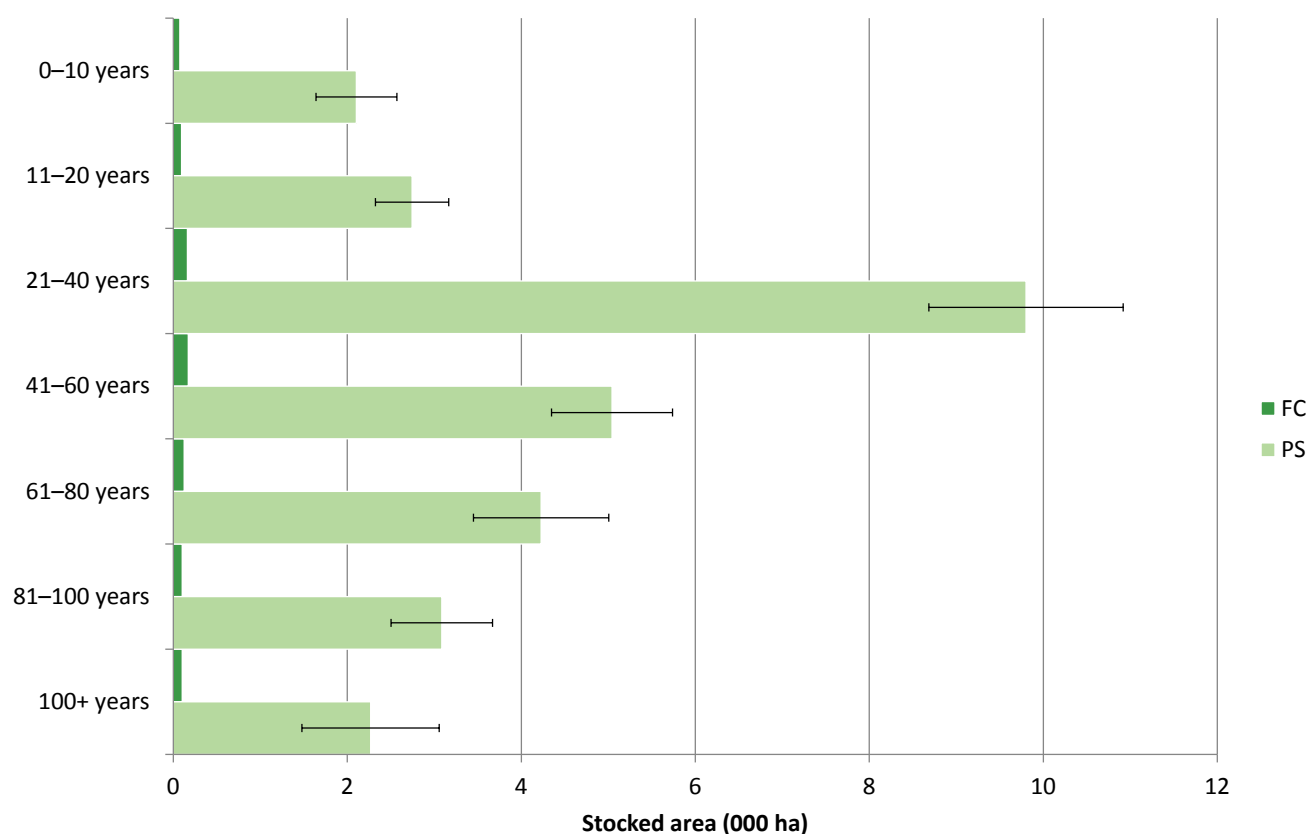


Table 87 Stocked area of sweet chestnut by age class

Age class (years)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
England				
0–10	< 0.1	2.1	22	2.2
11–20	< 0.1	2.7	15	2.8
21–40	0.2	9.8	11	10.0
41–60	0.2	5.0	14	5.2
61–80	0.1	4.2	18	4.4
81–100	0.1	3.1	19	3.2
100+	0.1	2.3	35	2.4
Total	0.8	29.3	7	30.1

Part 4 – Tree health

Figure 100 Stocked area of sweet chestnut by mean stand dbh class

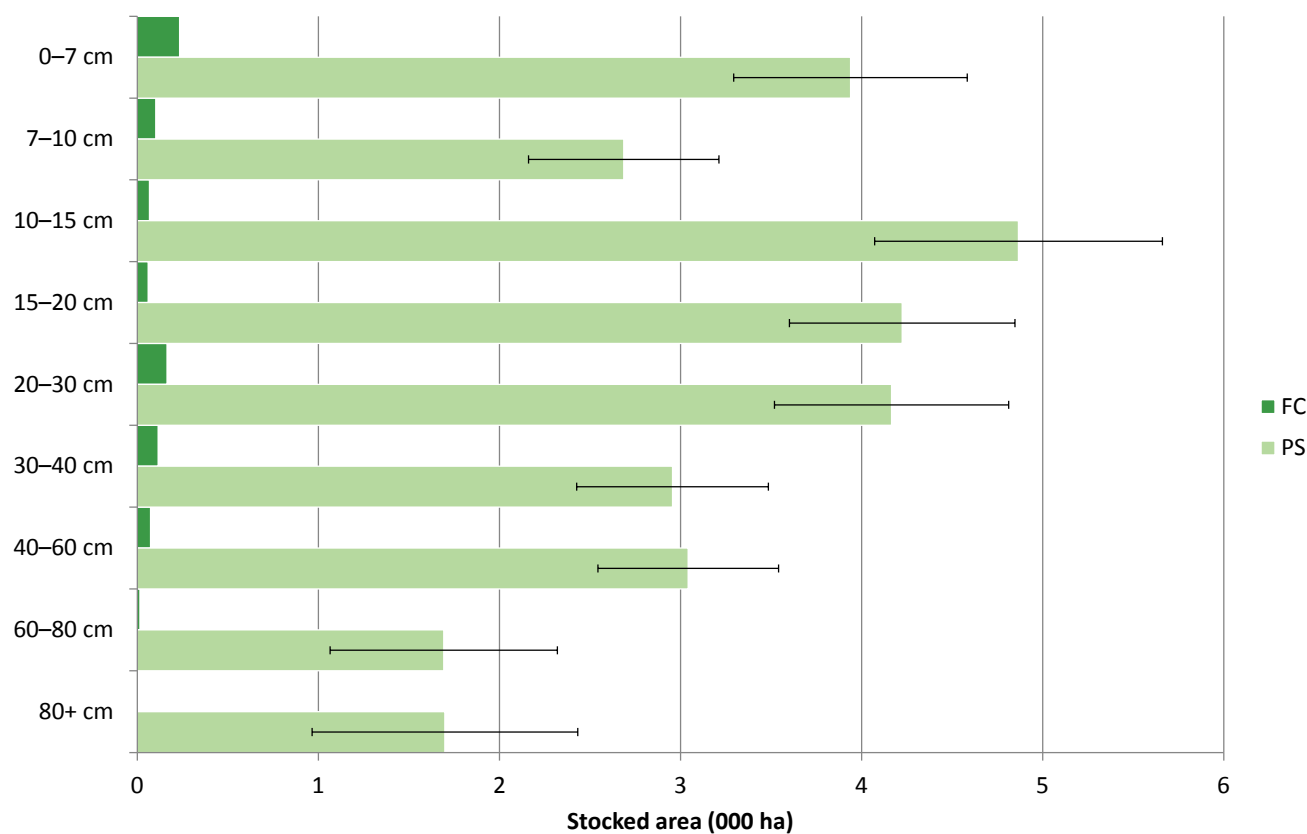


Table 88 Stocked area of sweet chestnut by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
England				
0-7	0.2	3.9	16	4.2
7-10	0.1	2.7	20	2.8
10-15	< 0.1	4.9	16	4.9
15-20	< 0.1	4.2	15	4.3
20-30	0.2	4.2	16	4.3
30-40	0.1	3.0	18	3.1
40-60	< 0.1	3.0	16	3.1
60-80	< 0.1	1.7	37	1.7
80+	< 0.1	1.7	43	1.7
Total	0.8	29.3	7	30.1

Part 4 – Tree health

Figure 101 Standing volume of sweet chestnut by age class

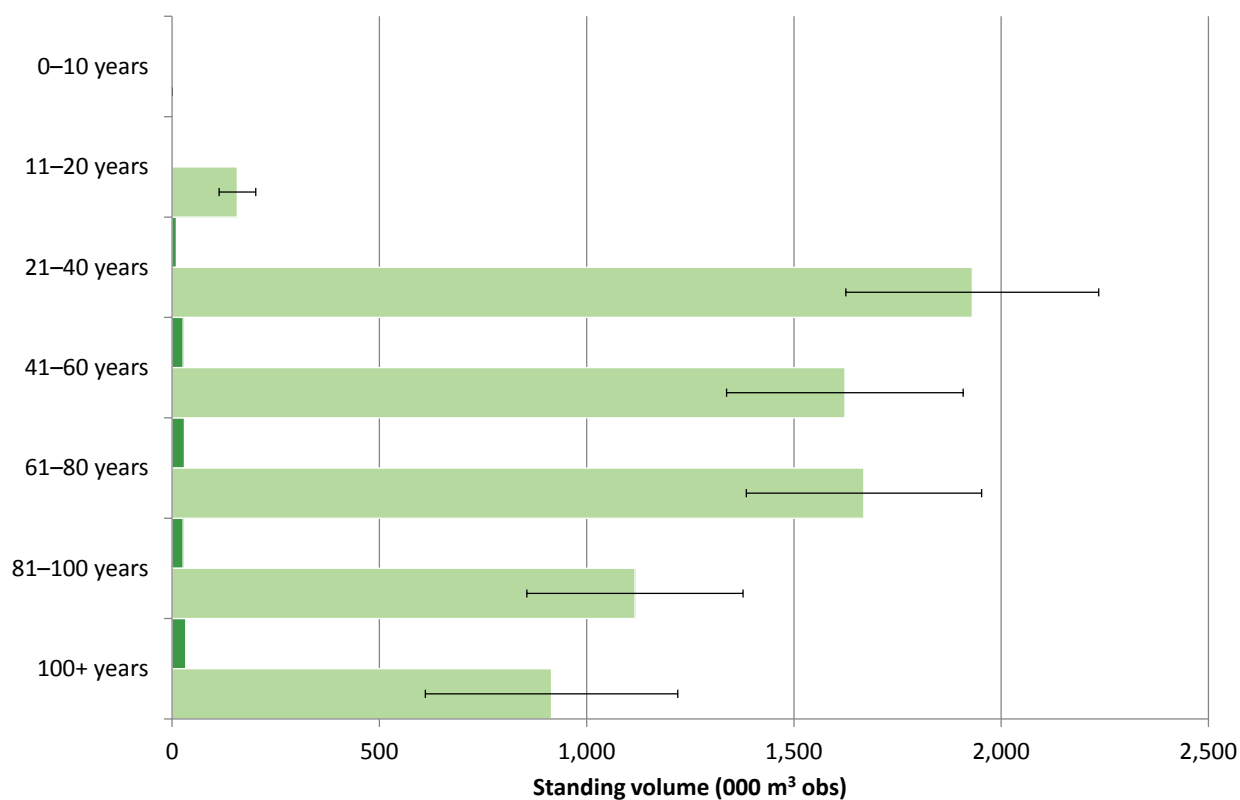


Table 89 Standing volume of sweet chestnut by age class

Age class (years)	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
England				
0-10	0	< 1	55	< 1
11-20	1	157	28	158
21-40	10	1,930	16	1,940
41-60	27	1,623	18	1,649
61-80	30	1,669	17	1,698
81-100	27	1,117	23	1,143
100+	33	915	33	948
Total	127	7,944	9	8,071

Part 4 – Tree health

Figure 102 Standing volume of sweet chestnut by mean stand dbh class

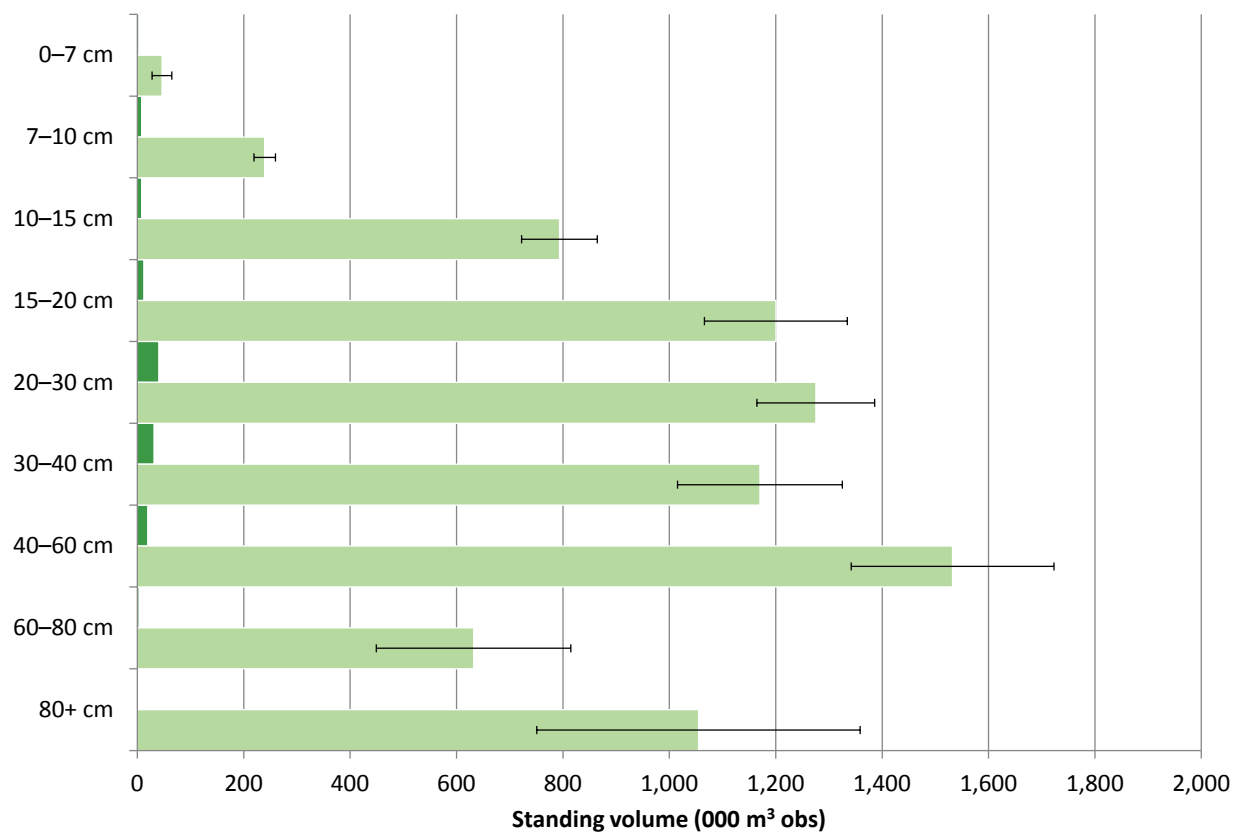


Table 90 Standing volume of sweet chestnut by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
England				
0-7	3	46	40	49
7-10	8	239	8	247
10-15	8	794	9	802
15-20	12	1,200	11	1,212
20-30	40	1,275	9	1,316
30-40	31	1,170	13	1,202
40-60	20	1,532	12	1,552
60-80	3	632	29	635
80+	< 1	1,055	29	1,055
Total	127	7,944	9	8,071

Part 4 – Tree health

Figure 103 Number of sweet chestnut trees by age class

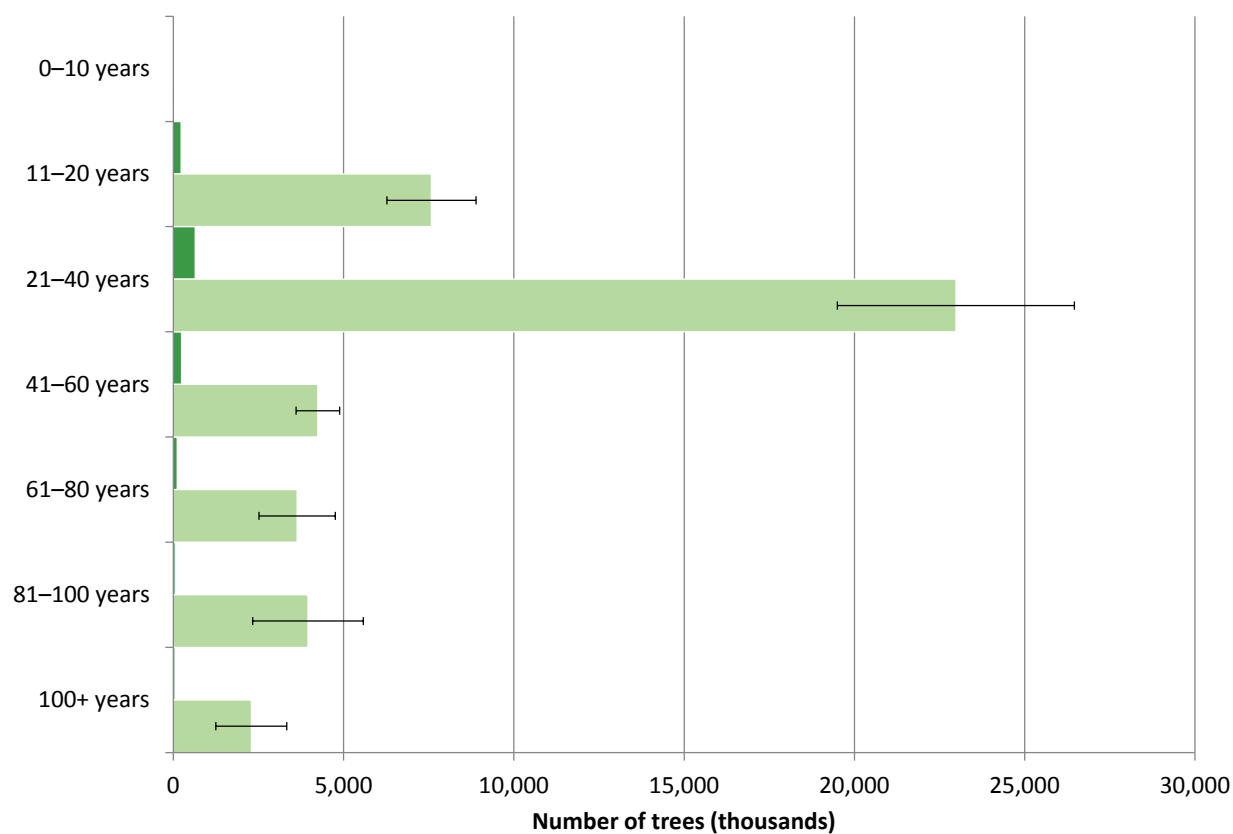


Table 91 Number of sweet chestnut trees by age class

Age class (years)	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
England				
0–10	12	0	-	12
11–20	231	7,580	17	7,811
21–40	642	22,981	15	23,623
41–60	239	4,244	15	4,483
61–80	112	3,635	31	3,747
81–100	57	3,954	41	4,011
100+	50	2,289	45	2,340
Total	1,347	44,683	10	46,031

Part 4 – Tree health

Figure 104 Number of sweet chestnut trees by mean stand dbh class

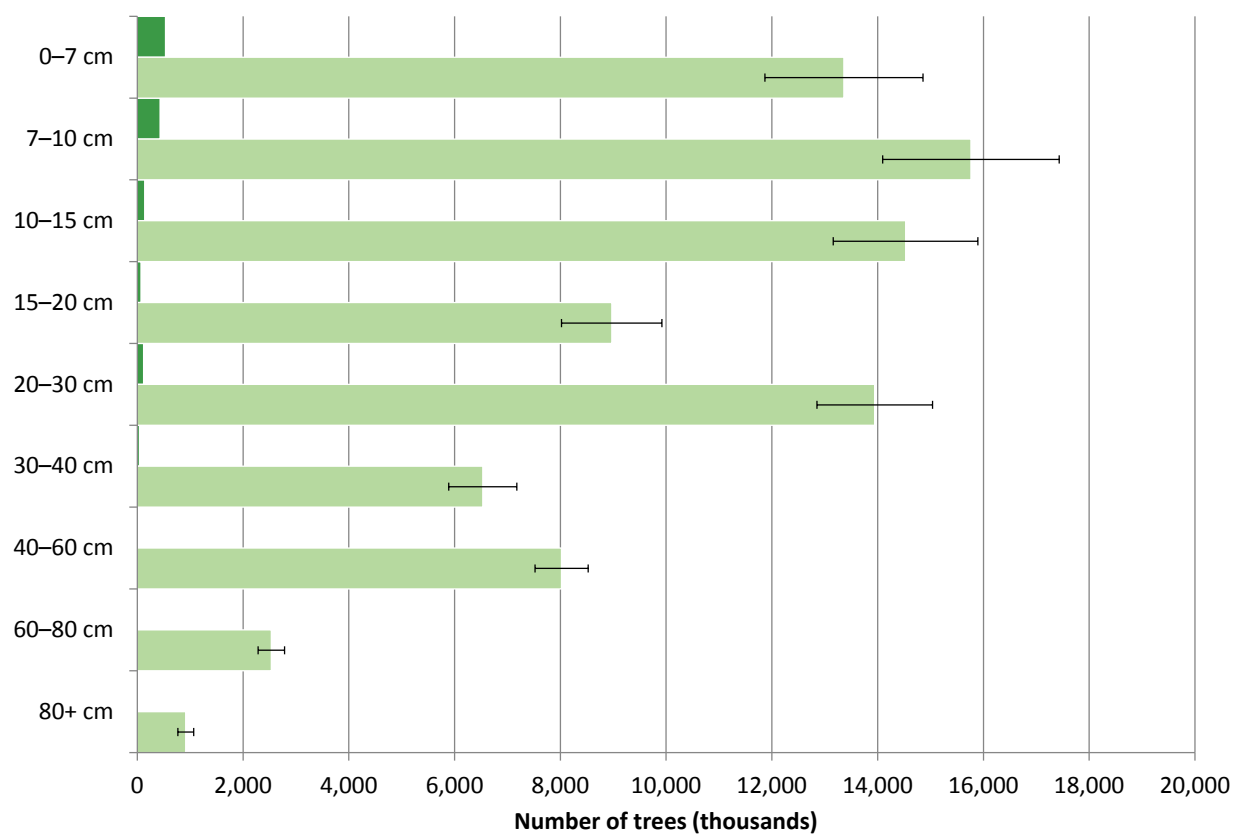
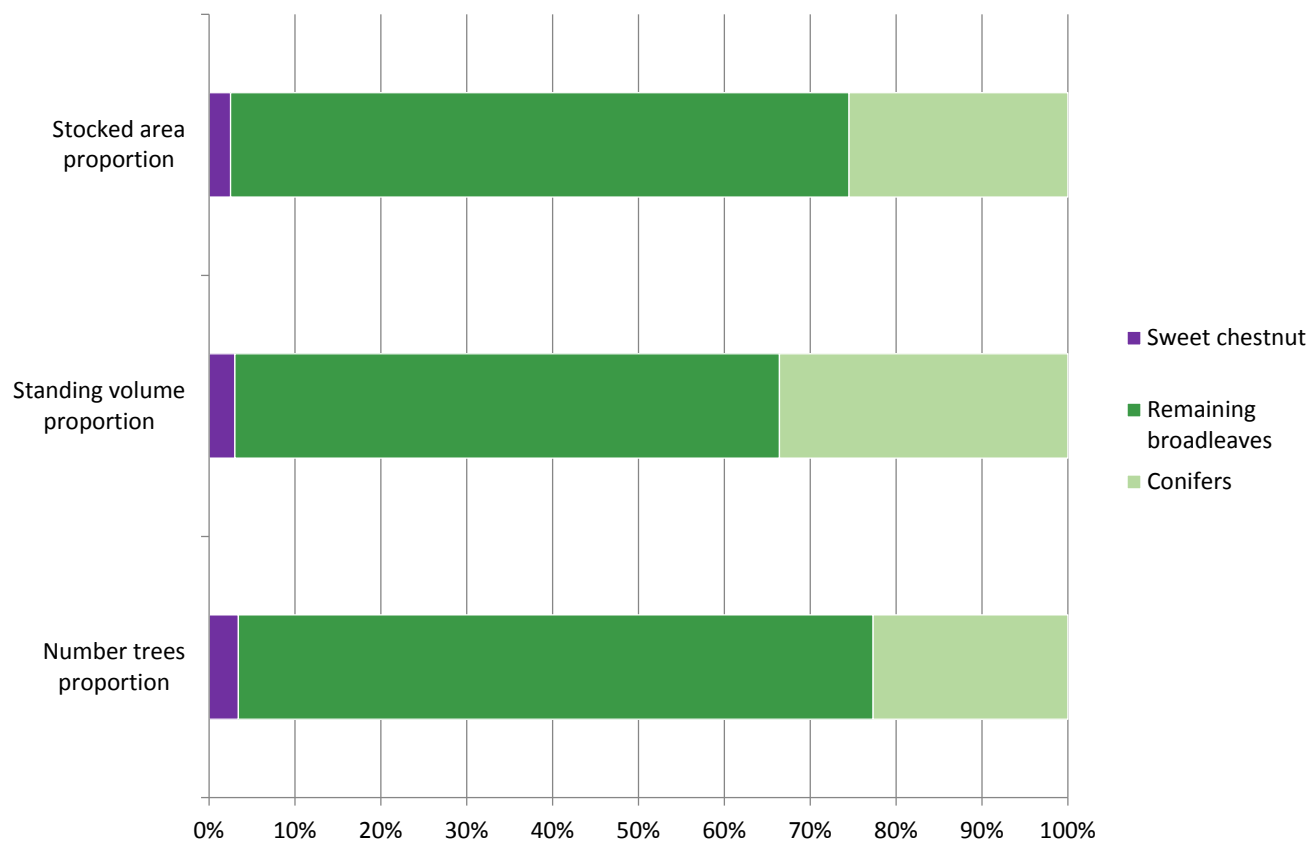


Table 92 Number of sweet chestnut trees by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
England				
0-7	532	13,363	11	13,895
7-10	431	15,764	11	16,195
10-15	140	14,528	9	14,668
15-20	72	8,971	11	9,043
20-30	118	13,944	8	14,062
30-40	40	6,532	10	6,572
40-60	14	8,024	6	8,037
60-80	1	2,535	10	2,537
80+	< 1	916	16	916
Total	1,347	44,683	10	46,031

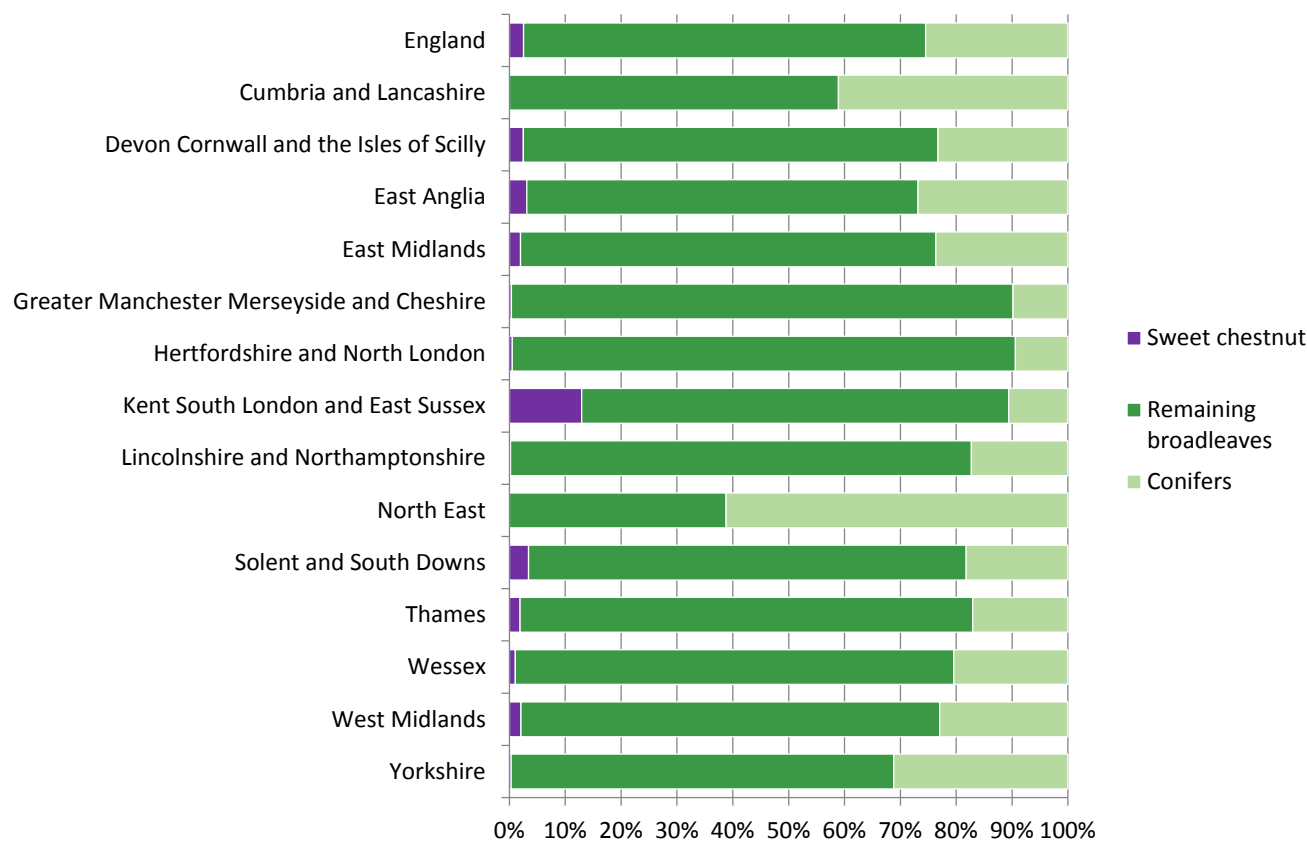
Part 4 – Tree health

Figure 105 Sweet chestnut as a proportion of woodland



Part 4 – Tree health

Figure 106 Sweet chestnut as a proportion of woodland within aligned areas (based on stocked area)



Part 4 – Tree health

Table 93 Sweet chestnut as a proportion of woodland within aligned areas (based on stocked area)

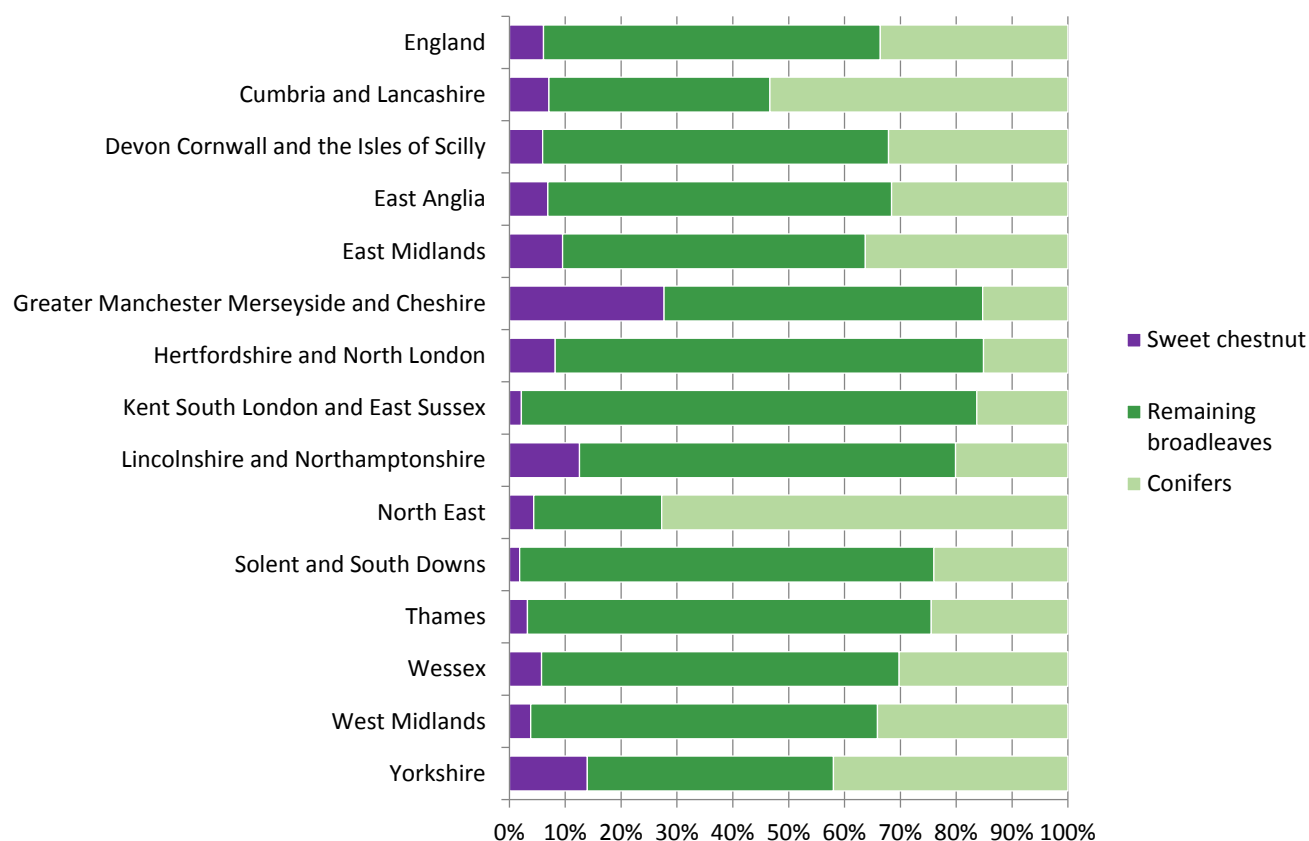
Country/Aligned area	Stocked area of sweet chestnut			
	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
England	0.8	29.3	7	30.1
Cumbria and Lancashire	0.0	< 0.1	89	< 0.1
Devon and Cornwall	< 0.1	2.6	21	2.7
East Anglia	< 0.1	3.8	21	3.9
East Midlands	< 0.1	1.0	37	1.0
Gtr Mancs Mersey and Ches	< 0.1	< 0.1	75	< 0.1
Herts and North London	< 0.1	0.2	75	0.2
Kent S London and E Sussex	< 0.1	12.4	12	12.5
Lincs and Northants	< 0.1	< 0.1	51	< 0.1
North East	0.0	0.0	-	0.0
Solent and South Downs	0.1	3.8	17	3.9
Thames	< 0.1	1.7	20	1.7
Wessex	< 0.1	1.0	32	1.1
West Midlands	0.4	2.4	29	2.7
Yorkshire	< 0.1	0.3	39	0.3

Table 93 (cont'd) Sweet chestnut as a proportion of woodland within aligned areas (based on stocked area)

Country/Aligned area	Stocked area of all broadleaves and all species			
	Total of all broadleaves	Total of all species	Percentage of sweet chestnut in all broadleaves	Percentage of sweet chestnut in all species
	area (000 ha)	area (000 ha)	(percent)	(percent)
England	892.5	1,197.5	3	3
Cumbria and Lancashire	44.8	76.2	0	0
Devon and Cornwall	81.7	106.7	3	2
East Anglia	90.9	124.2	4	3
East Midlands	39.1	51.2	3	2
Gtr Mancs Mersey and Ches	24.2	26.9	0	0
Herts and North London	30.1	33.2	1	1
Kent S London and E Sussex	86.3	96.6	14	13
Lincs and Northants	38.8	46.9	0	0
North East	38.9	100.3	0	0
Solent and South Downs	93.4	114.3	4	3
Thames	73.6	88.6	2	2
Wessex	80.4	100.8	1	1
West Midlands	101.0	130.8	3	2
Yorkshire	69.4	100.9	0	0

Part 4 – Tree health

Figure 107 Sweet chestnut as a proportion of woodland within aligned areas (based on standing volume)



Part 4 – Tree health

Table 94 Sweet chestnut as a proportion of woodland within aligned areas (based on standing volume)

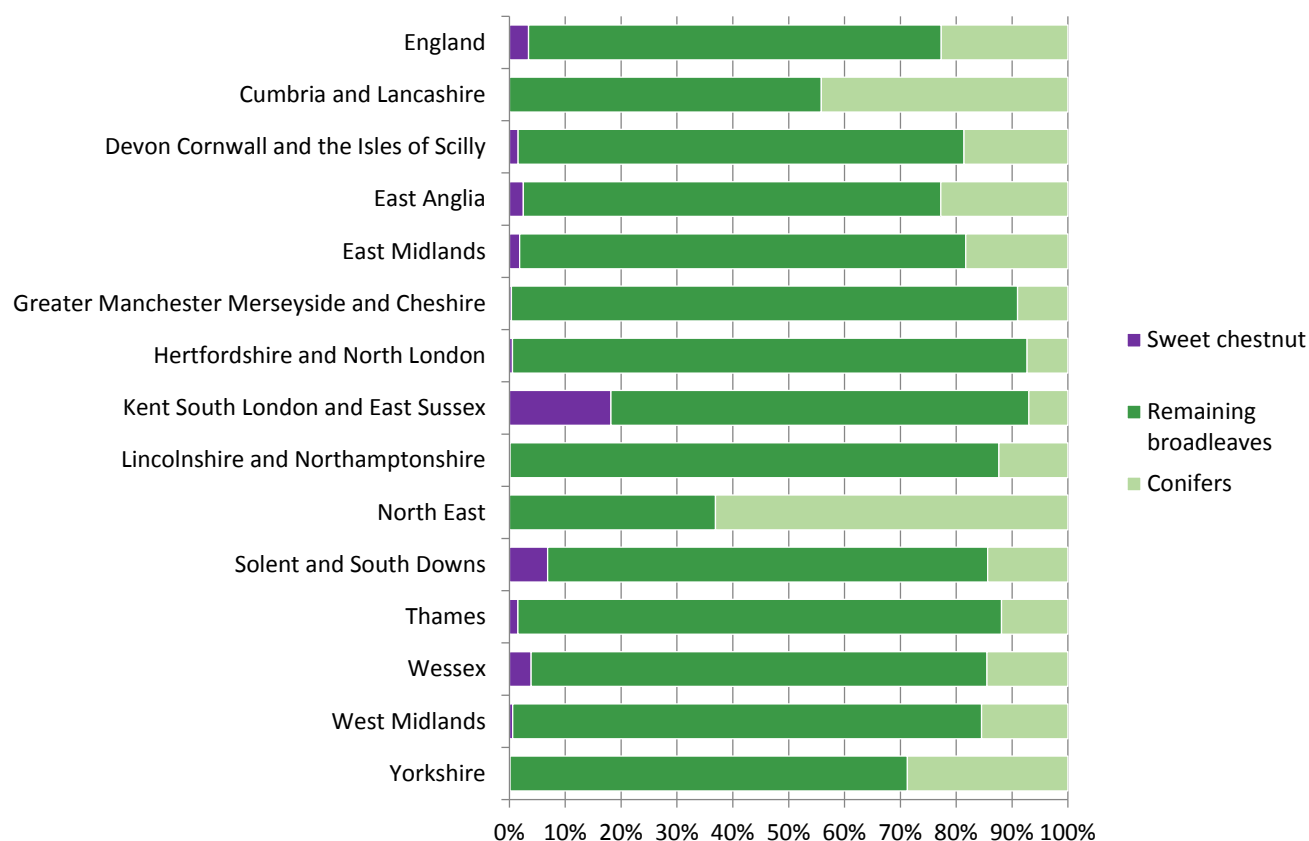
Country/Aligned area	Standing volume of sweet chestnut			
	FC	Private sector		Total
	volume (000 m ³ obs)	volume (000 m ³ obs)	SE%	volume (000 m ³ obs)
England	127	16,253	9	16,380
Cumbria and Lancashire	0	1,169	89	1,169
Devon and Cornwall	4	1,519	26	1,523
East Anglia	13	1,613	29	1,626
East Midlands	10	908	42	918
Gtr Mancs Mersey and Ches	5	1,317	92	1,322
Herts and North London	< 1	529	83	529
Kent S London and E Sussex	5	435	16	440
Lincs and Northants	1	1,160	71	1,161
North East	0	886	-	886
Solent and South Downs	33	491	16	525
Thames	2	715	22	717
Wessex	43	1,429	28	1,472
West Midlands	9	1,301	34	1,310
Yorkshire	2	2,780	56	2,782

Table 94 (cont'd) Sweet chestnut as a proportion of woodland within aligned areas (based on standing volume)

Country/Aligned area	Standing volume of all broadleaves and all species			
	Total of all broadleaves	Total of all species	Percentage of sweet chestnut in all broadleaves	Percentage of sweet chestnut in all species
	volume (000 m ³ obs)	volume (000 m ³ obs)	(percent)	(percent)
England	177,942	267,859	9	6
Cumbria and Lancashire	7,726	16,572	15	7
Devon and Cornwall	17,451	25,734	9	6
East Anglia	16,181	23,651	10	7
East Midlands	6,149	9,648	15	10
Gtr Mancs Mersey and Ches	4,046	4,775	33	28
Herts and North London	5,489	6,465	10	8
Kent S London and E Sussex	17,222	20,588	3	2
Lincs and Northants	7,405	9,282	16	13
North East	5,557	20,395	16	4
Solent and South Downs	21,855	28,762	2	2
Thames	16,691	22,055	4	3
Wessex	17,864	25,542	8	6
West Midlands	22,719	34,429	6	4
Yorkshire	11,588	19,962	24	14

Part 4 – Tree health

Figure 108 Sweet chestnut as a proportion of woodland within aligned areas (based on number of trees)



Part 4 – Tree health

Table 95 Sweet chestnut as a proportion of woodland within aligned areas (based on number of trees)

Country/Aligned Area	Numbers of sweet chestnut trees			
	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
England	1,347	44,683	10	46,031
Cumbria and Lancashire	0	< 1	89	< 1
Devon and Cornwall	25	1,926	20	1,951
East Anglia	108	3,090	21	3,198
East Midlands	30	906	39	936
Gtr Mancs Mersey and Ches	10	76	109	85
Herts and North London	< 1	170	80	170
Kent S London and E Sussex	198	24,276	15	24,473
Lincs and Northants	7	61	76	68
North East	0	0	-	0
Solent and South Downs	164	8,533	26	8,697
Thames	37	1,394	24	1,431
Wessex	683	3,399	30	4,082
West Midlands	77	730	33	808
Yorkshire	9	122	53	131

Part 4 – Tree health

Table 95 (cont'd) Sweet chestnut as a proportion of woodland within aligned areas (based on number of trees)

Country/Aligned area	Number of trees of all broadleaves and all species			
	Total of all broadleaves	Total of all species	Percentage of sweet chestnut in all broadleaves	Percentage of sweet chestnut in all species
	number of trees (thousands)	number of trees (thousands)	(percent)	(percent)
England	1,041,479	1,347,451	4	3
Cumbria and Lancashire	49,491	88,712	0	0
Devon and Cornwall	101,036	124,157	2	2
East Anglia	99,654	129,037	3	2
East Midlands	41,422	50,700	2	2
Gtr Mancs Mersey and Ches	21,688	23,832	0	0
Herts and North London	27,972	30,175	1	1
Kent S London and E Sussex	125,248	134,692	20	18
Lincs and Northants	46,182	52,732	0	0
North East	50,374	136,669	0	0
Solent and South Downs	108,875	127,564	8	7
Thames	82,950	94,267	2	2
Wessex	90,018	105,232	5	4
West Midlands	118,195	139,638	1	1
Yorkshire	78,373	110,045	0	0

Part 4 – Tree health

Larch

Figure 109 Stocked area of larch by age class

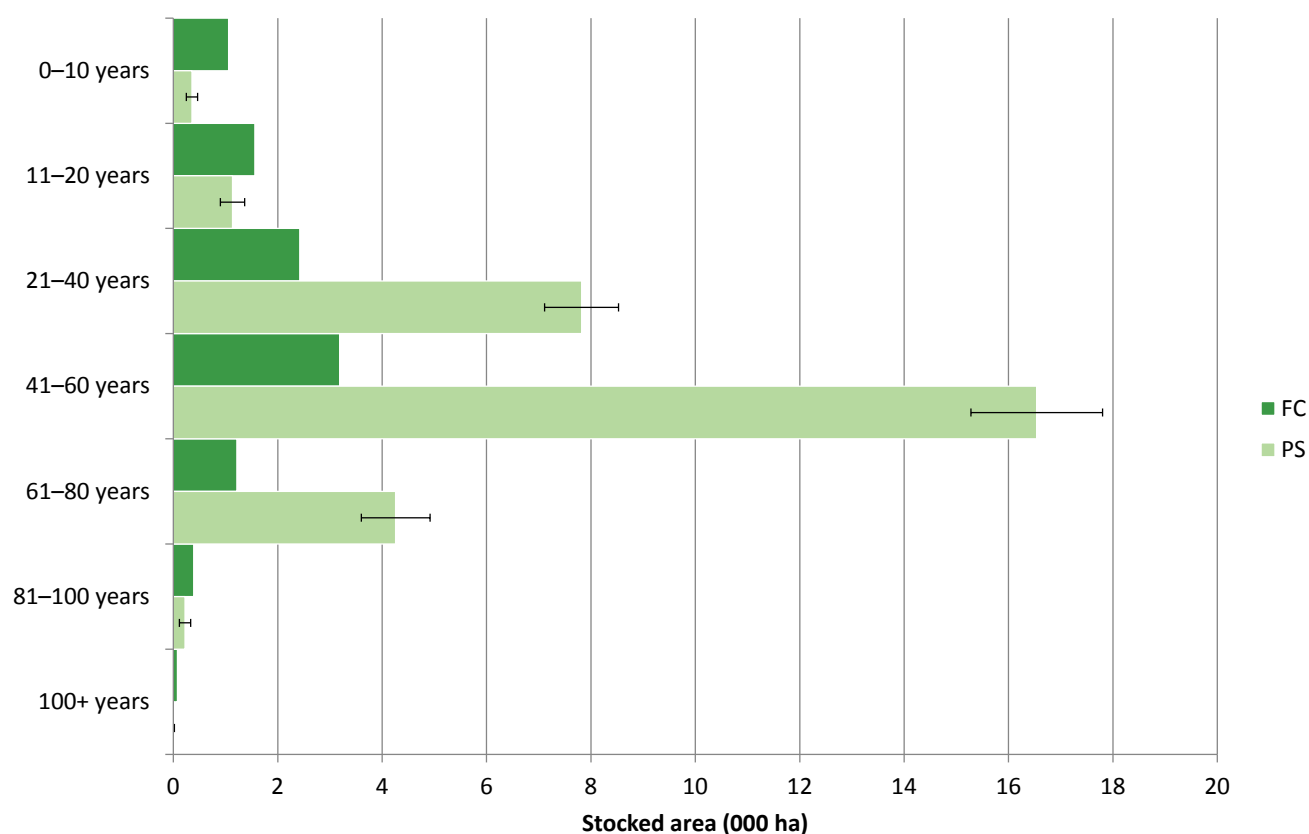


Table 96 Stocked area of larch by age class

Age class (years)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
England				
0–10	1.1	0.4	30	1.4
11–20	1.6	1.1	21	2.7
21–40	2.4	7.8	9	10.2
41–60	3.2	16.5	8	19.7
61–80	1.2	4.3	15	5.5
81–100	0.4	0.2	48	0.6
100+	< 0.1	< 0.1	99	< 0.1
Total	9.9	30.3	5	40.2

Part 4 – Tree health

Figure 110 Stocked area of larch by mean stand dbh class

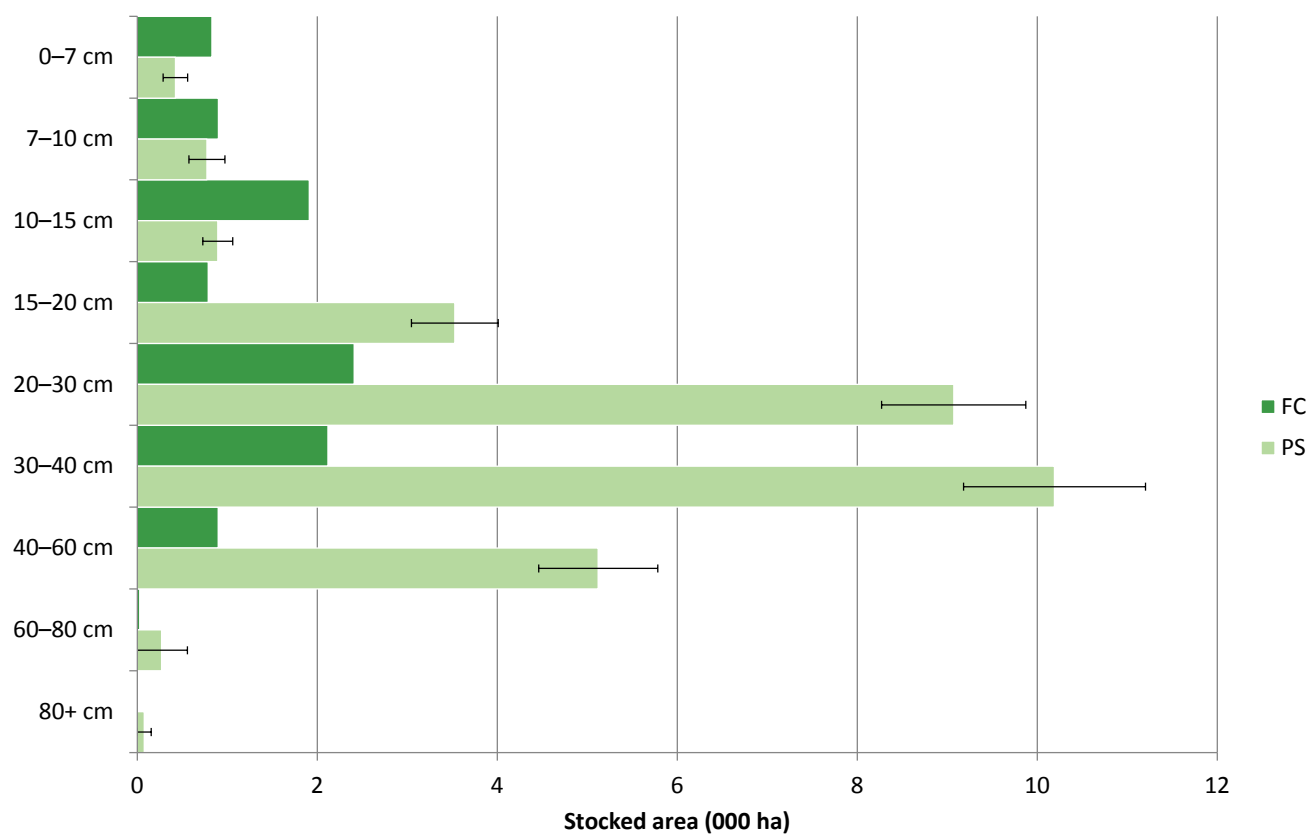


Table 97 Stocked area of larch by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
England				
0-7	0.8	0.4	32	1.3
7-10	0.9	0.8	26	1.7
10-15	1.9	0.9	19	2.8
15-20	0.8	3.5	14	4.3
20-30	2.4	9.1	9	11.5
30-40	2.1	10.2	10	12.3
40-60	0.9	5.1	13	6.0
60-80	< 0.1	0.3	108	0.3
80+	< 0.1	< 0.1	101	< 0.1
Total	9.9	30.3	5	40.2

Part 4 – Tree health

Figure 111 Standing volume of larch by age class

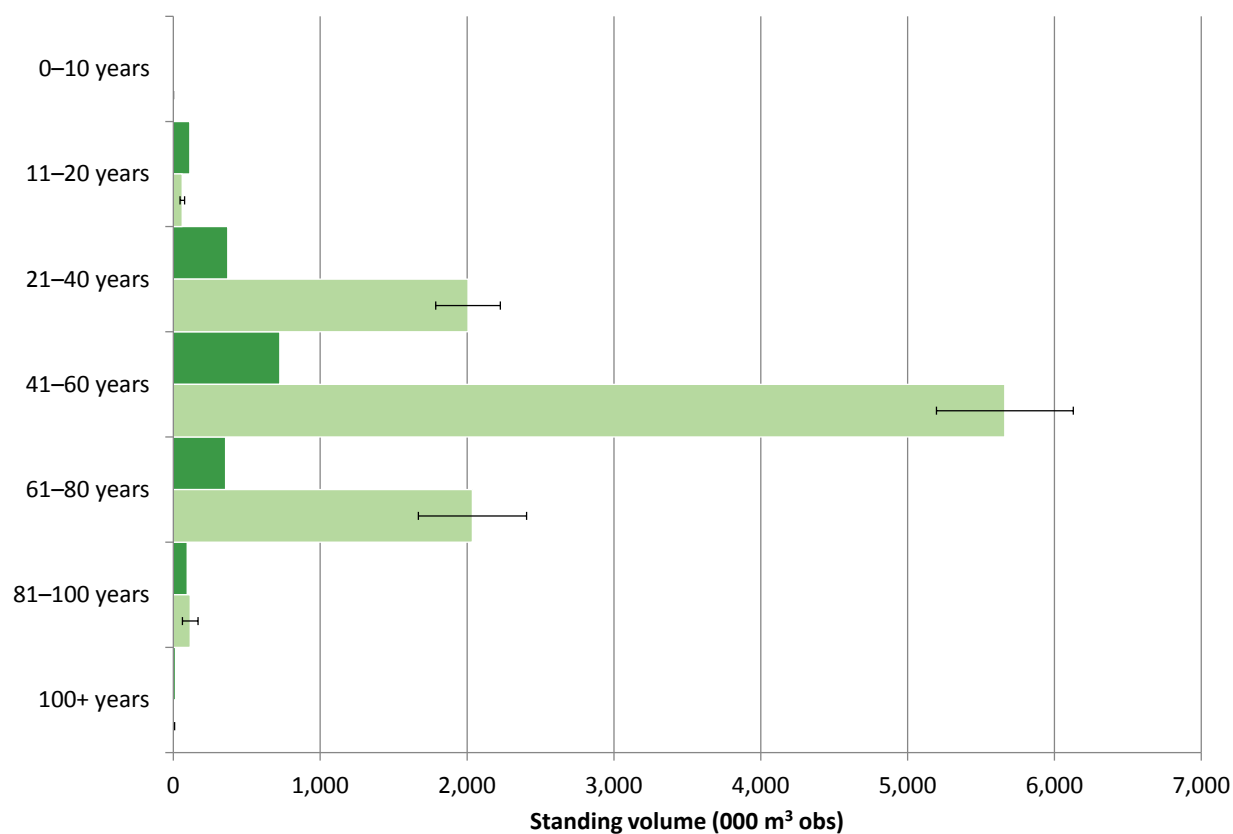


Table 98 Standing volume of larch by age class

Age class (years)	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
England				
0–10	5	1	55	6
11–20	113	61	26	173
21–40	371	2,006	11	2,377
41–60	725	5,662	8	6,387
61–80	355	2,037	18	2,392
81–100	95	115	46	210
100+	14	4	99	18
Total	1,678	10,778	6	12,456

Part 4 – Tree health

Figure 112 Standing volume of larch by mean stand dbh class

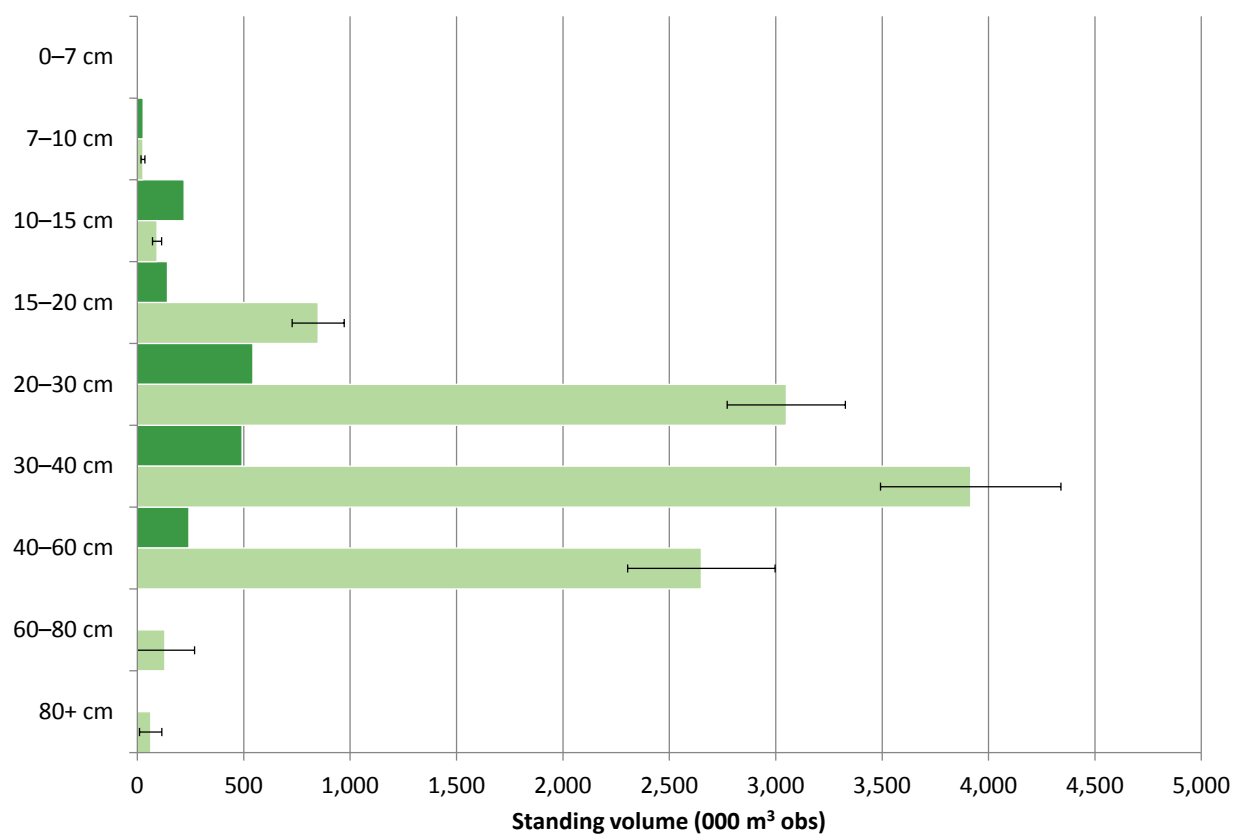


Table 99 Standing volume of larch by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	volume (000 m³ obs)	volume (000 m³ obs)	SE%	volume (000 m³ obs)
England				
0-7	< 1	< 1	54	< 1
7-10	< 1	< 1	34	< 1
10-15	220	93	23	312
15-20	142	850	14	992
20-30	543	3,050	9	3,593
30-40	492	3,916	11	4,408
40-60	242	2,650	13	2,893
60-80	< 1	< 1	107	< 1
80+	< 1	< 1	83	< 1
Total	1,678	10,778	6	12,456

Part 4 – Tree health

Figure 113 Number of larch trees by age class

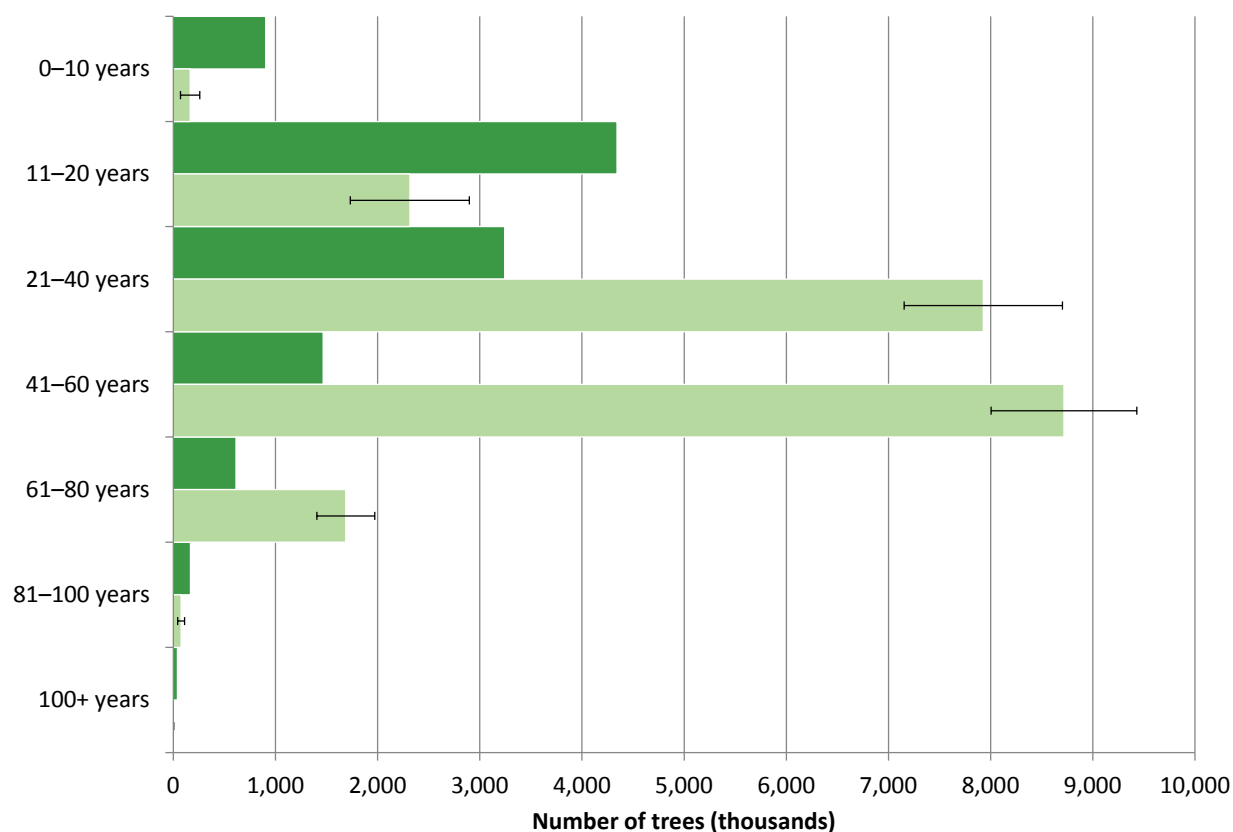


Table 100 Number of larch trees by age class

Age class (years)	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
England				
0-10	904	164	58	1,068
11-20	4,342	2,315	25	6,657
21-40	3,244	7,929	10	11,173
41-60	1,466	8,718	8	10,184
61-80	614	1,688	17	2,302
81-100	167	75	45	243
100+	40	2	99	42
Total	10,840	20,892	6	31,732

Part 4 – Tree health

Figure 114 Number of larch trees by mean stand dbh class

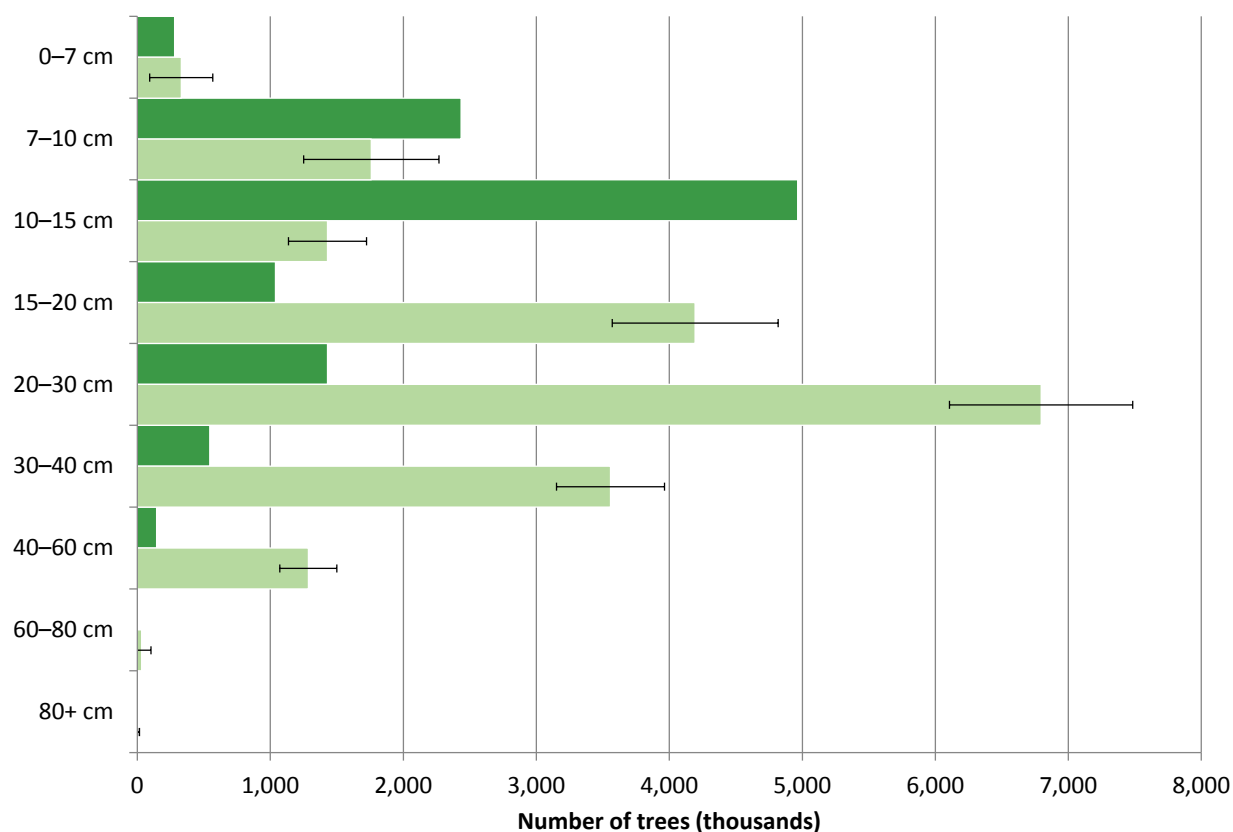
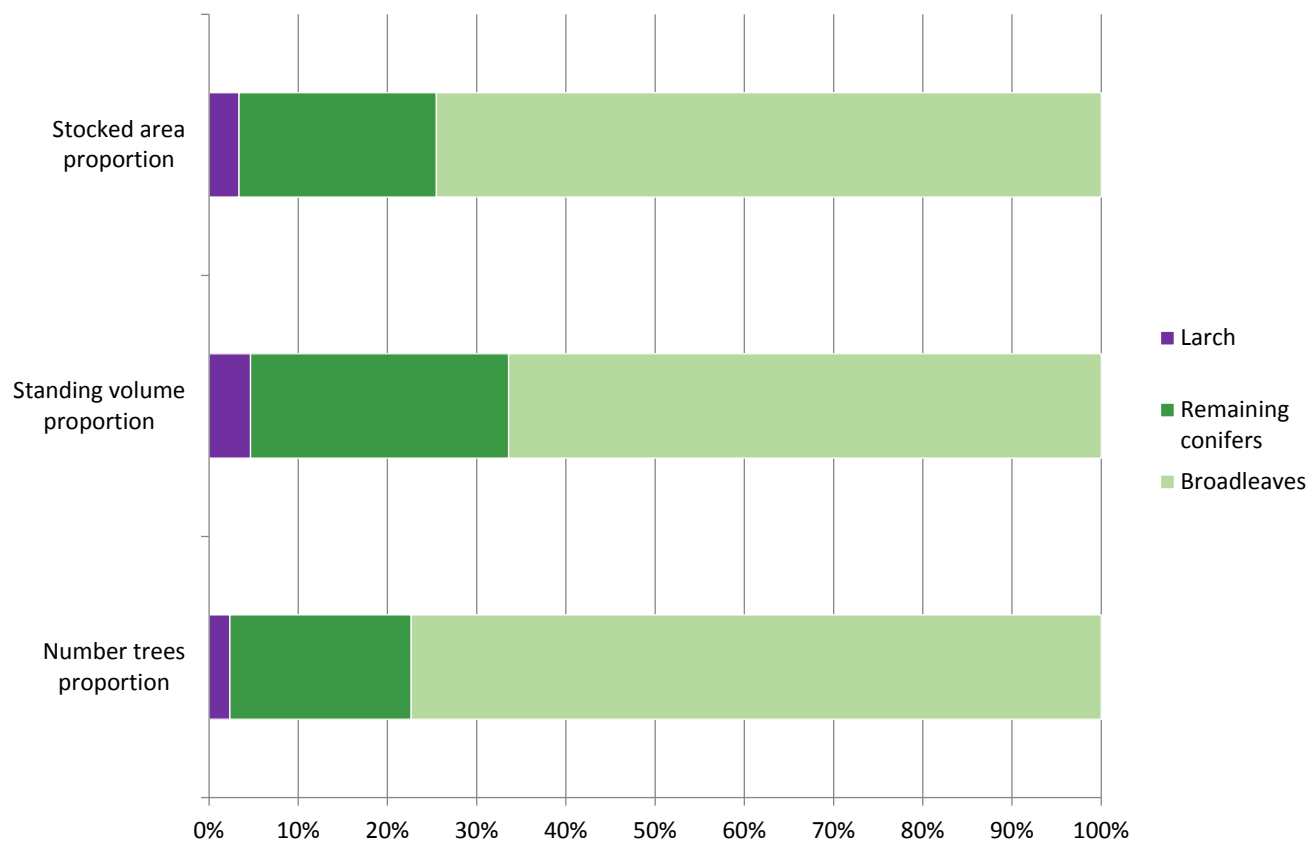


Table 101 Number of larch trees by mean stand dbh class

Mean stand DBH (cm)	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
England				
0-7	280	331	72	610
7-10	2,434	1,759	29	4,193
10-15	4,966	1,430	21	6,396
15-20	1,038	4,194	15	5,232
20-30	1,430	6,795	10	8,225
30-40	544	3,558	11	4,102
40-60	145	1,286	17	1,431
60-80	2	32	221	34
80+	< 1	9	87	9
Total	10,840	20,892	6	31,732

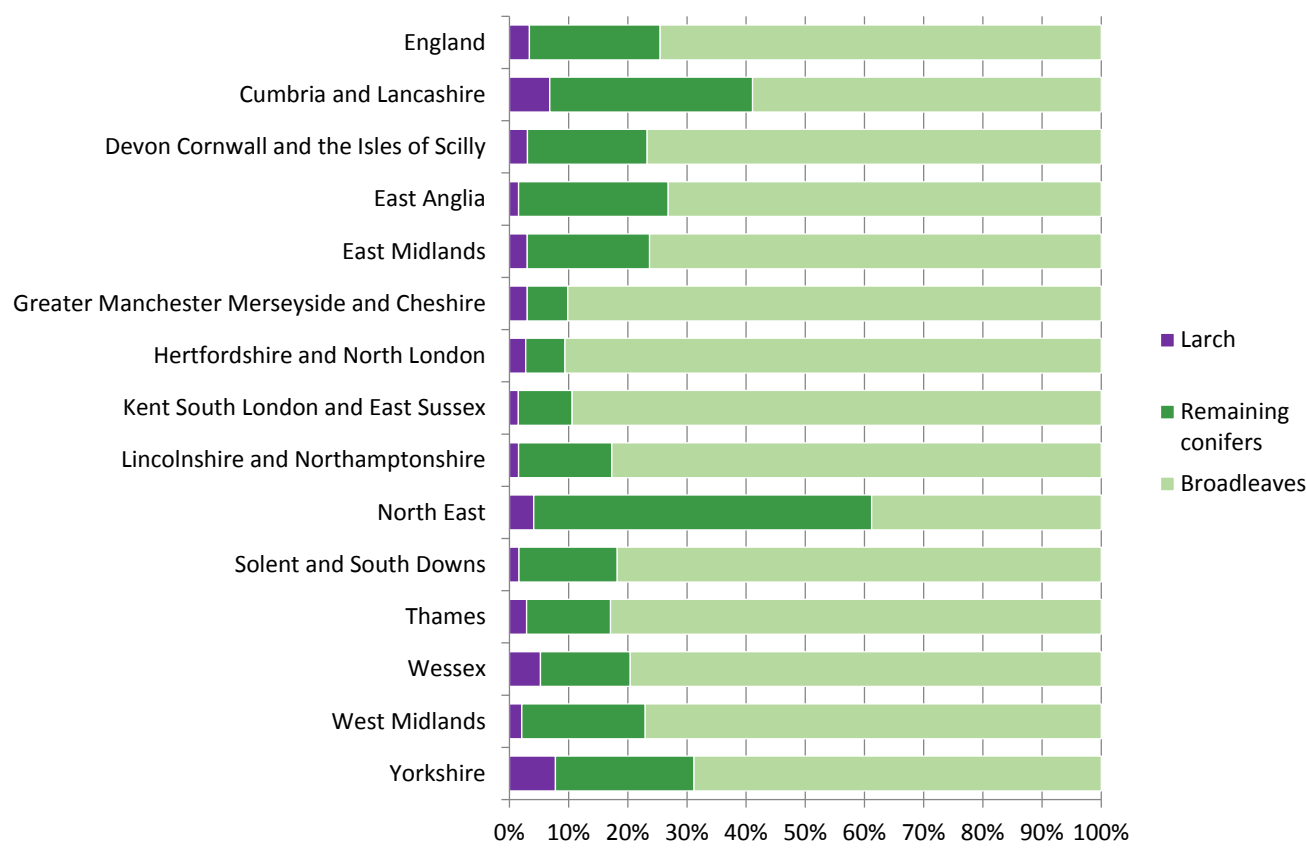
Part 4 – Tree health

Figure 115 Larch as a proportion of woodland



Part 4 – Tree health

Figure 116 Larch as a proportion of woodland within aligned areas (based on stocked area)



Part 4 – Tree health

Table 102 Larch as a proportion of woodland within aligned areas (based on stocked area)

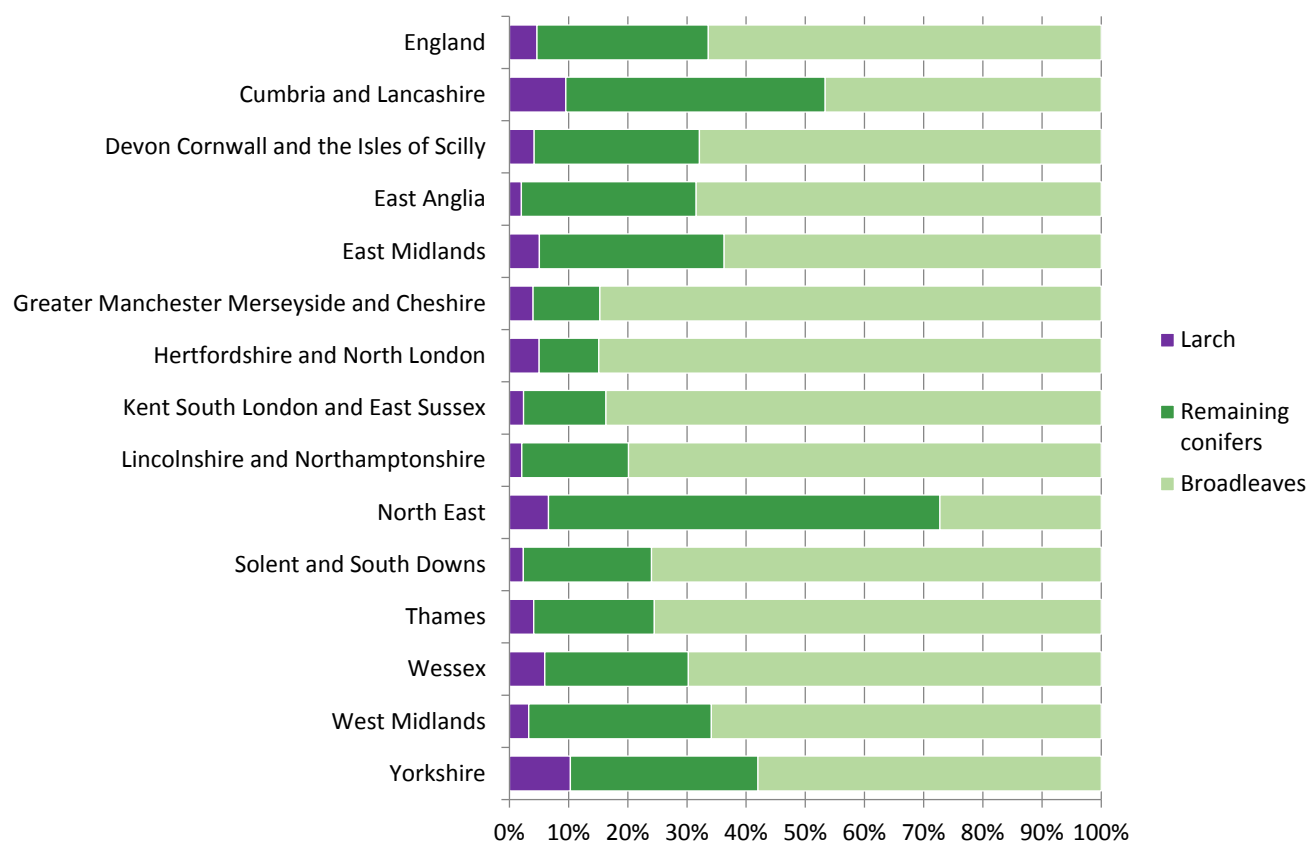
Country/Aligned area	Stocked area of larch			
	FC	Private sector		Total
	area (000 ha)	area (000 ha)	SE%	area (000 ha)
England	9.9	30.3	5	40.2
Cumbria and Lancashire	1.4	3.8	15	5.2
Devon and Cornwall	0.5	2.7	18	3.3
East Anglia	0.3	1.6	22	1.9
East Midlands	0.3	1.3	30	1.5
Gtr Mancs Mersey and Ches	< 0.1	0.7	36	0.8
Herts and North London	< 0.1	0.8	30	0.9
Kent S London and E Sussex	0.1	1.3	25	1.5
Lincs and Northants	< 0.1	0.6	26	0.7
North East	1.2	3.0	19	4.1
Solent and South Downs	0.3	1.5	19	1.9
Thames	< 0.1	2.5	17	2.6
Wessex	2.2	3.1	16	5.3
West Midlands	0.4	2.3	19	2.7
Yorkshire	2.9	4.9	10	7.8

Table 102 (cont'd) Larch as a proportion of woodland within aligned areas (based on stocked area)

Country/Aligned area	Stocked area of all conifers and all species			
	Total of all broadleaves	Total of all species	Percentage of larch in all broadleaves	Percentage of larch in all species
	area (000 ha)	area (000 ha)	(percent)	(percent)
England	892.5	1,197.5	5	3
Cumbria and Lancashire	44.8	76.2	12	7
Devon and Cornwall	81.7	106.7	4	3
East Anglia	90.9	124.2	2	2
East Midlands	39.1	51.2	4	3
Gtr Mancs Mersey and Ches	24.2	26.9	3	3
Herts and North London	30.1	33.2	3	3
Kent S London and E Sussex	86.3	96.6	2	2
Lincs and Northants	38.8	46.9	2	2
North East	38.9	100.3	11	4
Solent and South Downs	93.4	114.3	2	2
Thames	73.6	88.6	4	3
Wessex	80.4	100.8	7	5
West Midlands	101.0	130.8	3	2
Yorkshire	69.4	100.9	11	8

Part 4 – Tree health

Figure 117 Larch as a proportion of woodland within aligned areas (based on standing volume)



Part 4 – Tree health

Table 103 Larch as a proportion of woodland within aligned areas (based on standing volume)

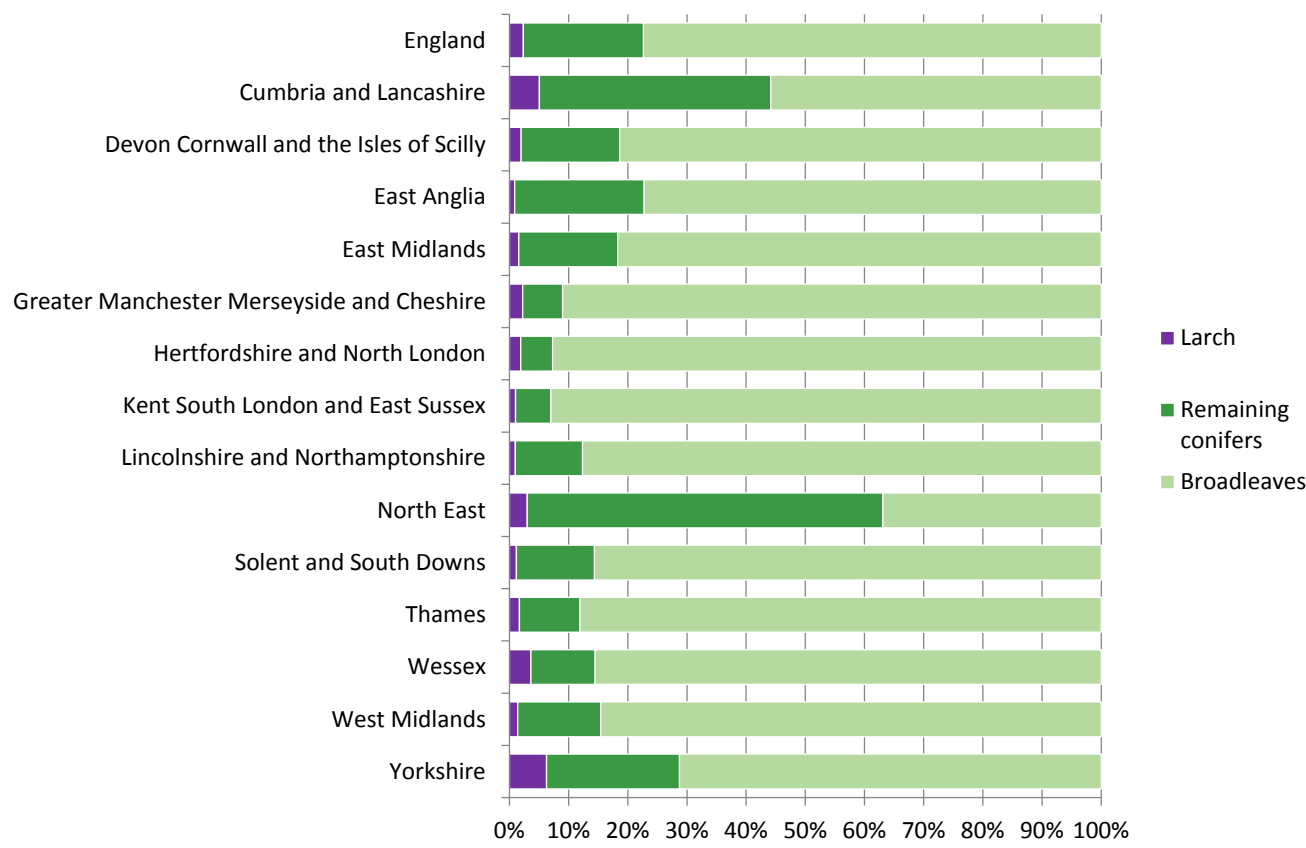
Country/Aligned area	Standing volume of larch			
	FC	Private sector		Total
	volume (000 m ³ obs)	volume (000 m ³ obs)	SE%	volume (000 m ³ obs)
England	1,678	10,778	6	12,456
Cumbria and Lancashire	275	1,306	16	1,581
Devon and Cornwall	68	1,005	18	1,073
East Anglia	35	446	22	481
East Midlands	36	452	37	488
Gtr Mancs Mersey and Ches	11	181	34	192
Herts and North London	14	310	33	324
Kent S London and E Sussex	26	461	26	488
Lincs and Northants	15	179	29	194
North East	174	1,172	27	1,345
Solent and South Downs	69	604	20	673
Thames	15	894	19	909
Wessex	393	1,135	17	1,528
West Midlands	81	1,042	19	1,123
Yorkshire	466	1,592	11	2,058

Table 103 (cont'd) Larch as a proportion of woodland within aligned areas (based on standing volume)

Country/Aligned area	Standing volume of all conifers and all species			
	Total of all broadleaves	Total of all species	Percentage of larch in all broadleaves	Percentage of larch in all species
	volume (000 m ³ obs)	volume (000 m ³ obs)	(percent)	(percent)
England	177,942	267,859	7	5
Cumbria and Lancashire	7,726	16,572	20	10
Devon and Cornwall	17,451	25,734	6	4
East Anglia	16,181	23,651	3	2
East Midlands	6,149	9,648	8	5
Gtr Mancs Mersey and Ches	4,046	4,775	5	4
Herts and North London	5,489	6,465	6	5
Kent S London and E Sussex	17,222	20,588	3	2
Lincs and Northants	7,405	9,282	3	2
North East	5,557	20,395	24	7
Solent and South Downs	21,855	28,762	3	2
Thames	16,691	22,055	5	4
Wessex	17,864	25,542	9	6
West Midlands	22,719	34,429	5	3
Yorkshire	11,588	19,962	18	10

Part 4 – Tree health

Figure 118 Larch as a proportion of woodland within aligned areas (based on number of trees)



Part 4 – Tree health

Table 104 Larch as a proportion of woodland within aligned areas (based on number of trees)

Country/Aligned Area	Numbers of larch trees			
	FC	Private sector		Total
	number of trees (thousands)	number of trees (thousands)	SE%	number of trees (thousands)
England	10,840	20,892	10	31,732
Cumbria and Lancashire	1,785	2,696	89	4,481
Devon and Cornwall	726	1,751	20	2,478
East Anglia	143	980	21	1,123
East Midlands	202	591	39	794
Gtr Mancs Mersey and Ches	73	457	109	530
Herts and North London	82	495	80	577
Kent S London and E Sussex	152	1,232	15	1,384
Lincs and Northants	117	412	76	529
North East	1,762	2,327	-	4,089
Solent and South Downs	297	1,197	26	1,494
Thames	58	1,540	24	1,598
Wessex	2,081	1,720	30	3,801
West Midlands	452	1,498	33	1,950
Yorkshire	2,909	3,994	53	6,903

Table 104 (cont'd) Larch as a proportion of woodland within aligned areas (based on number of trees)

Country/Aligned area	Number of trees of all conifers and all species			
	Total of all conifers	Total of all species	Percentage of larch in all conifers	Percentage of larch in all species
	number of trees (thousands)	number of trees (thousands)	(percent)	(percent)
England	1,041,479	1,347,451	3	2
Cumbria and Lancashire	49,491	88,712	9	5
Devon and Cornwall	101,036	124,157	2	2
East Anglia	99,654	129,037	1	1
East Midlands	41,422	50,700	2	2
Gtr Mancs Mersey and Ches	21,688	23,832	2	2
Herts and North London	27,972	30,175	2	2
Kent S London and E Sussex	125,248	134,692	1	1
Lincs and Northants	46,182	52,732	1	1
North East	50,374	136,669	8	3
Solent and South Downs	108,875	127,564	1	1
Thames	82,950	94,267	2	2
Wessex	90,018	105,232	4	4
West Midlands	118,195	139,638	2	1
Yorkshire	78,373	110,045	9	6

Appendix A – Aligned area nomenclature

Table 105 Aligned area long and short names

Long name	Short name	Abbreviation
Cumbria and Lancashire	Cumbria and Lancashire	CLA
Devon Cornwall and the Isles of Scilly	Devon and Cornwall	DCS
East Anglia	East Anglia	EAN
East Midlands	East Midlands	EMD
Greater Manchester Merseyside and Cheshire	Gtr Mancs Mersey and Ches	GMC
Hertfordshire and North London	Herts and North London	HNL
Kent South London and East Sussex	Kent S London and E Sussex	KSL
Lincolnshire and Northamptonshire	Lincs and Northants	LNA
North East	North East	NEA
Solent and South Downs	Solent and South Downs	SSD
Thames	Thames	THS
Wessex	Wessex	WSX
West Midlands	West Midlands	WMD
Yorkshire	Yorkshire	YOR

Appendix B – Interpreted Forest Types and Interpreted Open Areas

Table 106 Description of interpreted forest types

Abbreviation code	Description text	Comments
B	Broadleaved	The canopy of broadleaved woodland is generally more uneven than that of coniferous woodland, being made up of rounded crowns but with variations according to species, age, height and season. Boundaries with adjacent internal polygons are generally less clearly defined than with conifers and naturally occurring stands. Some conifer trees may also be present but greater than 80% of the area will consist of broadleaved trees.
C	Conifer	Coniferous woodland often occurs as large plantations with trees in regular rows and the stand edges may be regular and sharply defined. Some broadleaved trees may also be present but greater than 80% of the area will consist of conifer trees.
F	Felled	Areas of woodland where the trees have been harvested or felled. Stumps or felled trees may be visible and there may be long heaps of felling debris ('windrows'). Some standing trees within this limit may also be present but should be disregarded. This category should not be confused with coppice. The areas concerned may also have been restocked but the new trees are not yet visible.
G	Ground prepared for planting	Very difficult to differentiate from agricultural, but may show plough furrows, spaced earth mounds or weed killed patches or strips as part of a new woodland regime. Likely to be part of an approved grant scheme held on Grants & Licenses databases.
Mc	Mixed mainly conifer	Mixed woodland exhibits intermediate characteristics between conifer and broadleaved woodland. There can be several types of mixed woodland. A plantation of alternate rows of conifers and broadleaves may produce a 'striped' appearance. Conifers and broadleaves may be planted in blocks, or there may be general interspersed woodland. The proportion of the conifers will be more than 50% of the area and less than 80%.
Mb	Mixed mainly broadleaved	Mixed woodland exhibits intermediate characteristics between conifer and broadleaved woodland. There can be several types of mixed woodland. A plantation of alternate rows of conifers and broadleaves may produce a 'striped' appearance. Conifers and broadleaves may be planted in blocks, or there may be general interspersed woodland. The proportion of the broadleaves will be more than 50% of the area and less than 80%.
N	Young trees	Areas where planting is clearly visible but the trees cannot yet be differentiated between conifer and broadleaved due to their immaturity. Such areas can be either on land new to woodland or where a felled crop has been replaced.

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Abbreviation code	Description text	Comments
O	Coppice	The most important characteristic of coppice areas on aerial photographs is their very even, smooth appearance. The coppice area may be made up of a patchwork of different ages (heights) but all exhibit this very even texture. Areas recently cut may appear to have a very clear floor with little felling debris. Coppice is always of broadleaved trees.
P	Coppice with standards	Some areas of coppice may also include larger broadleaved trees set into the coppice matrix. Such broadleaved trees, often oak, are known as standards and show very clearly over the even coppice as large, rounded crowns. The distribution of the standards may also be fairly scattered with approximately 25 stems per hectare.
S	Shrub	This category is intended to include areas that may possibly be woodland, where the growth is close to the ground and shows a rough character but no clear differentiation between conifer and broadleaved can yet be made. Areas being colonised by woody species may fall into this category. The cover will be at least 20%.
Aw	Assumed woodland	Areas of woodland identified as having been planted through woodland planting grant aid, which are not currently visible in aerial photography, but are assumed to exist.
Ld	Low density	The 'low density' polygons are areas that were mapped by NIWT but not mapped by NFI where investigation of the archive images shows a higher density than at present. These have been included for future monitoring.
CS	Cloud/shadow	If cloud or shadow areas obscure woodland detail and it is difficult to allocate one of the above IFTs, then a feature is digitised around the uncertain area.
X	Uncertain	Where the interpreter is uncertain of the IFT/IOA to be used, X will be designated. The rate of use of this category should decline over time, as operators become more proficient and better at recognising IFTs/IOAs. As part of the quality control and update procedures Xs will be checked against the latest imagery.
Fa	Failed	Areas that show evidence of ground prep over several years and still exhibit no evidence of trees, based on the latest available imagery.
Wt	Windblow	Area of woodland where the trees have been uprooted or broken by the wind and which remain uncleared and not regenerated based on the latest available imagery.

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Table 107 Description of interpreted open areas

Abbreviation code	Description text	Comments
A	Agricultural	May contain a cereal crop or pasture.
Ba	Bare area	Bare ground or rock.
Gs	Grass	A predominantly grassy area - may or may not be agricultural.
L	Power line	Linear feature, possibly shadow evidence of poles, pylons or
Q	Quarry	Evidence of change from vegetation to geology; sand, slate, rock etc. Active quarries could have buildings, and heavy plant tracks leading into the quarry.
Ri	River	Linear feature; depending on location can be fairly straight or meander through woodland.
Ro	Road	Linear feature; often fairly straight with gentle bends or turning circles.
U	Urban	Buildings within woodland areas; may include gardens surrounding the buildings.
V	Other vegetation	Not covered by the above (e.g. gorse, rhododendron, bracken, heather etc).
W	Open water	Normally labelled within OS MasterMap ®, areas of even colour.
Wf	Wind farm	Possible shadow evidence of turbines, normally in groups.

Appendix C – forecast assumptions

Table 108 Restock prescription in England

Species	Current stocked area	Conifer species as a % of conifer area	Proposed conifer species as a % of conifer area	Assumed % change to conifer woodland
Sitka spruce	81	25.2	30.0	
Scots pine	67	20.9	25.0	
Corsican pine	43	13.4	0.5	
Norway spruce	29	9.0	10.0	
Larches	44	13.7	2.0	
Douglas fir	25	7.8	14.0	
Lodgepole pine	8	2.5	0.5	
Other conifer species	24	7.5	18.0	
Total	321	100.0	100.0	-10
Areas	Area	% of total woodland area		
Total conifer stocked area	321	24.8		
Total broadleaved stocked area	886	68.5		
Total conifer and broadleaved stocked area	1,207	93.3		
Total unstocked area	88	6.8		
Woodland area at 2011	1,294			
Projected change after one rotation				
Resultant total conifer stocked area	289	22.3		
Resultant total broadleaved stocked area	902	69.7		
Resultant total conifer and broadleaved stocked area	1,190	92.0	Figures assume 50% of the conifer reduction goes to blvd trees and 50% to open	
Resultant total unstocked area	104	8.0		

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Table 109 Overdue timber allocation

Species	Prescription by years beyond maximum MAI (as of base year)		
	0-10 yrs beyond	10-30 yrs beyond	30 + yrs beyond
Sitka spruce	Fell 50% 1- 25 yrs Fell 50% 26-50	Fell 50% 1- 25 yrs Fell 40% 26-50 yrs	Fell 75% 1-25 yrs
		10% zero intervention	25% zero intervention
Norway spruce	Fell 50% 1- 25 yrs Fell 50% 26-50	Fell 50% 1- 25 yrs Fell 40% 26-50 yrs	Fell 75% 1-25 yrs
		10% zero intervention	25% zero intervention
Douglas fir	Fell 50 % 1- 25 yrs, Fell 25% 26- 50 yrs 25% zero intervention	Fell 75 % 1- 25 yrs, 25% zero intervention	Fell 75% over 10 yrs 25% zero intervention
Scots pine	Fell 0% 1-25 yrs Fell 75% 26-50 yrs 25% zero intervention	Fell 50 % 1- 25 yrs, Fell 25 % 26-50 yrs 25% zero intervention	Fell 50% 1- 25 yrs 50% zero intervention
Larches	Fell 50% 1- 10 yrs, Fell 40% 11-25 yrs, 10% zero intervention	Fell 50 % 1- 25 yrs Fell 40 % 26-50 yrs 10% zero intervention	Fell 75% 1- 10 yrs 25% zero intervention
Corsican pine	Fell 50% 1- 10 yrs, Fell 40% 11-25 yrs, 10% zero intervention	Fell 50 % 1- 25 yrs Fell 25% 26- 50 yrs 25% zero intervention	Fell 75% 1- 10 yrs 25% zero intervention
Lodgepole pine	Fell 50% 1- 10 yrs,	Fell 50 % 1-25 yrs	Fell 75% 1- 10 yrs

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	Prescription by years beyond maximum MAI (as of base year)		
Species	0-10 yrs beyond	10-30 yrs beyond	30 + yrs beyond
	Fell 40% 11- 25 yrs,	Fell 25 % 26- 50 yrs	25% zero intervention
	10% zero intervention	25% zero intervention	
Other species	Fell 50 % 1-25 yrs,	Fell 75 % 1- 25 yrs,	Fell 75% 1- 10 yrs
	Fell 25% 26- 50 yrs	25% zero intervention	25% zero intervention
	25% zero intervention		

Glossary

Actual production	Timber reported as having been felled and removed from the forest. The Forestry Commission keeps records of actual production for its estate, while estimates for the Private sector come from surveys of harvesting companies and timber processors. These figures are available from Forestry Commission Statistics.
Aerial photograph	Photograph of the ground taken from an elevated/direct-down position, with a camera that is not supported by a ground-based structure.
Age class	A grouping of trees into specific age ranges for classification purposes.
Area (forest/woodland)	Forest and woodland area can be defined in net or gross terms. Net area is the land actually covered by trees (in the National Forest Inventory that is to the drip line of the canopy). Gross area includes both the area covered by trees and the open spaces (<0.5 hectare) within (e.g. rides, glades, ponds).
Availability	A term to describe what timber could potentially be available for harvesting within a forest area.
Biological potential	A term applied to forecast scenarios with the objective of maximising timber production. It typically involves felling stands in the year of maximum MAI and management table thinning. It may not take account of factors that constrain thinning and felling (e.g. wind risk or pest attack). The forecast results set out in this report involve constraints on thinning and times of felling to take account of wind risk.
Broadleaves	Trees and shrubs that belong to the angiosperm division of the plant kingdom (as distinct from the gymnosperm division that includes conifers). Most in the UK have laminar leaves and are deciduous. Sometimes referred to as 'hardwoods'.
Canopy cover	Area covered by a mass of foliage and branches formed collectively by the crowns of trees.
Clearfell area	Area here all the trees have been felled at once. In non-clearfell areas, only some of the trees are felled at any one time.
Clearfelling	Cutting down of an area of woodland (if it is within a larger area of woodland it is typically a felling greater than 0.25 hectare). Sometimes a scatter or small clumps of trees may be left standing within the felled area.
Conifers	Trees and shrubs that belong to the gymnosperm division of the plant kingdom (as distinct from the angiosperm division that includes broadleaves). Conifers mostly have needles or scale-like leaves and are usually evergreen. Sometimes referred to as 'softwoods'.
Cumulative volume production	The total volume of timber that is forecast to be produced over the entire forecast period, including any overdue timber.
DAMS (Detailed Aspect Methodology Score)	A measure of exposure at a particular location. Can be used as a proxy indicator of the risk of catastrophic wind damage to a stand of trees. May be used to influence decisions on thinning and timing of clearfelling where wind is a risk factor.
DBH (diameter at breast height)	The diameter on the stem of a tree at 'breast height', defined as 1.3 m from ground level.
Dothistroma needle blight	A disease of conifers (especially pine) which causes defoliation, losses in yield and, in severe cases, tree death. Also known as red band needle blight.

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Felling plan	A spatial and temporal plan of harvesting activities within a forest or woodland.
Forest (or woodland)	Land predominately covered in trees (defined as land under stands of trees with a canopy cover of at least 20%, or the ability to achieve this, and with a minimum area of 0.5 hectare and minimum width of 20 m), whether in large tracts (generally called forests) or smaller areas known by a variety of terms (including woods, copses, spinneys or shelterbelts).
Forest management plan	A holistic spatial and temporal plan stating the objectives of management together with details of forestry proposals over a period of five years and outlining intentions over a minimum total of 10 years. Such plans allow managers to communicate proposals and demonstrate sustainable forest management. They can be used to authorise thinning, felling and other management operations.
Forest Service	An agency within the Department of Agriculture and Rural Development (DARD) in Northern Ireland responsible for the regulation of forestry and the management of state forests in Northern Ireland.
Forestry Commission	The government department responsible for regulating forestry, implementing forestry policy and managing state forests in England and Scotland. Forestry policy is devolved, with the exception of common issues addressed on a GB or UK basis, such as international forestry, plant health and forestry standards.
Forestry Commission (FC) estate	Forests, woodlands, open land and other property managed by the Forestry Commission.
Great Britain (GB)	England, Scotland and Wales.
Hardwood	The wood of broadleaved trees or the broadleaves themselves.
High forest	Woodland which is not managed as coppice or pollards and which may or may not be managed for timber.
Increment	The increase in volume of a tree or a stand over a year or annualised over a specified period measured either in m ³ per year or in m ³ per hectare per year. See also Mean Annual Increment (MAI).
Interpreted forest type (IFT)	Interpreted forest type is a classification of woodland into woodland types as identified from aerial photography and satellite imagery.
Interpreted open area (IOA)	Interpreted open area is a classification of open spaces within woodlands as identified from aerial photography and satellite imagery.
Like-for-like (restocking)	The restocking of areas of felled trees with trees of the same species and yield class.
Maximising productivity	The management of woodland to maximise volume production by thinning at the MTI.
Mean annual increment (MAI)	The average annual rate of volume production from year of planting to a given year, expressed in m ³ obs per hectare per year. In even-aged stands it is calculated by dividing cumulative volume production by age.
MTT (management table thinning)	A sequence of thinnings prescribed by Forestry Commission yield tables over the life of a forest stand. Management table thinning refers to the pattern of thinning recommended in these yield tables. In standard yield tables the thinnings are set to an intensity which aims to maximise diameter increment whilst also maintaining maximum cumulative volume production
MTI (marginal thinning intensity)	The maximum sustainable intensity of thinning defined as 70% of yield class per hectare per year (m ³ obs/ha/year).

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Maximum MAI (maximum mean annual increment) (MMAI)	The age at which a stand reaches the maximum average rate of volume increment which it can achieve. Felling the stand at this age will ensure that the stand reaches its highest average production per annum for its lifespan, thus optimising the stand in terms of volume production over the long term.
Mean annual increment (MAI)	The average rate of volume production up to a given year, expressed in m ³ per hectare per year. In even-aged stands it is calculated by dividing cumulative volume production by age.
Mensuration	The study of the measurement of lengths, areas, volumes and related quantities. Forest mensuration is concerned with the measurement of trees, woodlands and forests, including standing and felled timber.
National Forest Inventory (NFI)	An inventory run by the Forestry Commission, set up in 2009, to provide a record of key information about GB forests and woodlands.
National Inventory of Woodland and Trees (NIWT)	An inventory run by the Forestry Commission, set up in 1995 and completed in 2002, to provide a record of key information about GB forests and woodlands.
Natural Resources Wales (NRW)	Natural Resources Wales is the largest Welsh Government Sponsored Body - employing 1,900 staff across Wales with a budget of £180 million. NRW was formed in April 2013, largely taking over the functions of the Countryside Council for Wales, Forestry Commission Wales and the Environment Agency in Wales, as well as certain Welsh Government functions.
Overbark	Used as a qualification when the diameter or volume of wood includes the bark.
Overbark standing (OBS)	Timber is defined in this report as the volume of stemwood to 7 cm top diameter in m ³ overbark standing (obs), including stump (above ground) and usable branchwood (of minimum 3 m in length and 7 cm top diameter).
Overdue	Timber contained in stands that are beyond the felling age prescribed by the harvesting scenario at the start of the forecast.
Phytophthora	Fungus-like pathogens that can cause extensive damage and mortality to trees and other plants.
Planned production	The volumes and assortments published in the removals forecast, reflecting the cumulative impact of managing the FC estate (as of 31 March 2012) in accordance with approved forest design and thinning plans.
Potential production	A forecast which will not necessarily transpire. As the private sector estate forecast makes assumptions about future levels of harvest, and the assumptions may not transpire, this forecast is one of potential production.
Private sector estate	Forests and woodlands in the UK not managed by the Forestry Commission, Natural Resources Wales or Forest Service. In the context of the National Forest Inventory, 'Private sector' is used for convenience although it includes land owned or managed by bodies such as local authorities and charities.
Production forecast	A forecast of softwood volume production based on a firm plan of harvesting.
Restocking plan	A spatial and temporal plan describing how felled areas are to be replanted or regenerated.
Satellite imagery	Imagery of the earth taken from space from a satellite.
Softwood	The wood of coniferous trees or the conifers themselves.

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Stand	A distinct area of woodland, generally composed of a uniform group of trees in terms of species composition and spatial distribution, and age and size class distribution.
Standard error (SE)	The measure of the margin of error associated with an estimate as a result of sampling from a population with statistical variability. Larger standard errors indicate less precision in the estimate. Standard errors in this report are quoted in relative terms (i.e. as percentages of the value of the estimate).
Standing volume	The live stemwood and usable branchwood of trees (up to 7 cm top diameter). It excludes roots, below ground stump material, small branches, foliage and deadwood. For Private sector woodland only, it also excludes trees in woodlands of less than 0.5 hectare. Usually expressed as m ³ overbark standing (m ³ obs).
Stemwood	The woody material forming the above ground main growing shoot(s) of a tree or stand of trees. The stem includes all woody volume above ground with a diameter greater than 7 cm overbark. Stemwood includes wood in major branches where there is at least 3 m of straight length to 7 cm top diameter.
Stocked area	The area stocked with living trees. The stocked areas in this report are quoted in gross terms for the FC/NRW estate and in net terms for the private sector estate (see the definition of area above).
Sub-compartment database (SCDB)	A database owned and maintained by the Forestry Commission that holds an inventory of all stands of trees managed by the Forestry Commission (including that formerly managed by Forestry Commission Wales which is now managed by Natural Resources Wales).
Sustainable forest management	The stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity and vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions at local, national and global levels, and that does not cause damage to other ecosystems.
Terminal height	The top height of a stand at which wind damage is expected to reach a level necessitating clearfelling.
Thinning	The periodic harvesting of trees in a woodland, involving the removal of some trees for commercial use and the retention of others for future production or long-term retention.
Thinning plan	A spatial and temporal plan of harvesting activities within a forest or woodland.
Top diameter	The diameter of the smaller (top) end of a length of stemwood, branchwood or log, often used to define different categories of wood products (e.g. sawlogs, roundwood, pulp) and merchantable timber.
Top height	The mean total height of the 100 largest dbh trees per hectare.
UK (United Kingdom)	Great Britain and Northern Ireland.
Windthrow	Uprooting of trees by the wind. Windthrow can be endemic – i.e. that caused by frequently recurring peak winds – or catastrophic – an infrequent occurrence associated with exceptionally strong winds where large areas/numbers of trees are blown down.
Woodland	see Forest.
Yield class (YC)	An index used in the UK of the potential productivity of even-aged stands of trees based on maximum MAI. It reflects the potential productivity of the site for the tree species growing on it.

Aligned area reports in this series

This report is one in a series of reports describing the current stocks in woodland, the economic viability data, timber availability forecasts and estimates of the current stocks within woodland of four species currently at risk from pests and diseases.

Reports are available for:

- **England**
- Cumbria and Lancashire
- Devon Cornwall and the Isles of Scilly
- East Anglia
- East Midlands
- Greater Manchester Merseyside and Cheshire
- Hertfordshire and North London
- Kent South London and East Sussex
- Lincolnshire and Northamptonshire
- North East
- Solent and South Downs
- Thames
- Wessex
- West Midlands
- Yorkshire

The methodology, data sources and assumptions are described in the England report. It is important that the estimates presented in this report are interpreted in the light of the information provided in the England report.

NFI national reports and papers

This series of reports is part of the wider suite of publications from the National Forest Inventory (NFI). NFI reports that contain information relating to this series of reports are:

- NFI woodland area statistics, Great Britain, England, Scotland, Wales (2011)
- Standing timber volume for coniferous trees in Britain (2012)
- 25-year forecast of softwood availability (2012)
- 25-year forecast of standing coniferous volume and increment (2012)
- Preliminary estimates of broadleaved species in British woodlands, with special focus on ash (2012)
- Biomass in live woodland trees in Britain (2014)
- Carbon in live woodland trees in Britain (2014)
- 50-year forecast of softwood availability (2014)
- 50-year forecast of hardwood availability (2014)
- 25-year forecast of softwood availability (2016)

Each theme has a series of associated reports, papers and data, tailored for different audiences and uses.

Official Statistics

This is an Official Statistics publication. More information about Official Statistics and the UK Statistics Authority is available at www.statisticsauthority.gov.uk

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