

# Forestry Statistics 2023

## Sources: Woodland Area and Planting

Release date:  
28 September 2023

Coverage:  
United Kingdom

Geographical breakdown:  
Country

Issued by: Forest Research, Northern Research Station,  
Roslin, Midlothian, EH25 9SY

Enquiries: [statistics@forestresearch.gov.uk](mailto:statistics@forestresearch.gov.uk)

Statistician: Simon Maxwell, 0300 067 5997

Website: [www.forestresearch.gov.uk/statistics/](http://www.forestresearch.gov.uk/statistics/)



The Research Agency of the  
Forestry Commission

Forest Research is the Research Agency of the Forestry Commission and is the leading UK organisation engaged in forestry and tree related research.

The Agency aims to support and enhance forestry and its role in sustainable development by providing innovative, high quality scientific research, data, technical support and consultancy services.

# 11.1 Sources: Woodland area and planting

## Introduction

The definition of woodland in United Kingdom forestry statistics is land under stands of trees with a canopy cover of at least 20% (or having the potential to achieve this), including integral open space, and including felled areas that are awaiting restocking. There is no minimum height for trees to form a woodland at maturity, so the definition includes woodland scrub but not areas with only shrub species such as gorse or *Rhododendron*.

In this report, statistics based on the National Forest Inventory (NFI) refer to woodlands and forests of at least 0.5 hectares, as mapped through the NFI. Previously, figures based on the National Inventory of Woodland and Trees (1995 to 1999) included sample-based estimates for woodlands and forests between 0.1 hectares and 2.0 hectares in addition to mapped areas of 2.0 hectares or over. Both definitions are slightly different than those used internationally which are based on 10% canopy cover, a minimum height at maturity of 5 m and a minimum area of 0.5 hectares.

Integral open space is included in woodland area figures derived from the National Forest Inventory if the areas of open space are less than 0.5 hectares; larger areas are mapped out and excluded from the woodland area figures. This differs slightly from the approach used for the National Inventory of Woodland and Trees, where areas of open space of up to 1.0 hectare were included as woodland.

Woodland includes native and non-native trees, semi-natural and plantation areas. Woodland habitat types are not currently differentiated in these statistics.

Most public sector woodland is managed by Forestry England (FE), Forestry and Land Scotland (FLS), Natural Resources Wales (NRW), or the Forest Service (FS) in Northern Ireland. Woodland owned by local authorities, the Ministry of Defence,

non-government organisations including the Woodland Trust and other public sector bodies are included in “private sector woodland”.

The Natural Resources Wales woodland areas relate to the Welsh Government Woodland Estate. There is approximately 900 hectares of woodland on National Nature Reserves and other land managed by Natural Resources Wales that is not included in the Natural Resources Wales figures.

Trees outside woodlands (TOW) covers:

- small woods of less than 0.5 hectares and greater than 0.1 hectares in extent,
- groups of trees of less than 0.1 hectares in extent and
- lone trees, including hedgerow trees.

Orchards covers:

- Traditional orchards - areas of traditional orchard with fruit (or nut) tree canopy cover which forms greater than 50% of the canopy and an area of greater than 0.5 hectares in extent and is greater than 20% stocked; and
- Small Orchards – areas of traditional orchard with fruit (or nut) tree canopy cover which forms greater than 50% of the canopy and an area of greater than 0.1 hectares and less than 0.5 hectares in extent and is greater than 20% stocked.

The following pages provide more detail on the data sources and methodology used to produce statistics on woodland area and planting. For more information see the [quality report on woodland statistics](#).

## 11.1.1 Sources: Woodland area

### Data Sources and Methodology

#### Woodland Area

Data on woodland area in the UK presented in this release are derived from the following sources:

- Forestry England, Forestry and Land Scotland and Natural Resources Wales administrative records of FE/FLS/NRW land areas;
- [National Forest Inventory](#) (NFI) woodland map (GB);
- Statistics on new planting in Great Britain;
- Northern Ireland Woodland Register; and
- Forest Service administrative records of FS woodland areas (Northern Ireland).

Estimates of woodland area in Great Britain are based on figures produced from forest inventories. Until recently, forest inventories in Great Britain were undertaken every 15 years or so. The current National Forest Inventory (NFI), unlike previous inventories, is planned to run on a continuous 5-year cycle.

As forest inventories are generally not designed to produce annual figures, a process is required for updating the results on an annual basis to take account of changes in woodland area. The methodology currently used to calculate annual woodland area estimates is described below.

The data processing takes place in Excel. The main outputs are aggregates from the source data, or breakdowns expressed as percentages, and do not require complex data analysis techniques.

1. For Great Britain, woodland area estimates are based on the latest NFI woodland map of Great Britain available. In this release, woodland area

estimates since March 2021 onwards are based on the provisional NFI woodland map at March 2021.

2. The map is overlaid with a map of Forestry England, Forestry and Land Scotland and Natural Resources Wales (Welsh Government Woodland Estate only) land, to enable a breakdown by ownership to be estimated. This also enables FE/FLS/NRW “other land” areas to be derived (Table 1.5). For woodland area estimates at March 2021, FE/FLS/NRW legal boundaries at March 2021 are used.
3. The woodland area breakdown by type of woodland (conifer or broadleaf) is estimated from the conifer/broadleaf breakdown of stocked woodland area, with areas of felled and open space allocated to conifer or broadleaf pro-rata. Estimates for stocked areas at March 2021 derived from NFI interim field survey results are updated to take into account new planting since that date, for which the conifer/broadleaf breakdown is also known. As the area of new planting is much smaller than total woodland area, the effect of this update on the overall conifer/broadleaf breakdown is very small.

The steps above are sufficient to determine woodland area estimates at March 2021, broken down by ownership and conifer/broadleaf.

To obtain estimates at March 2023, two more steps need to be performed, which are described below.

4. Net ownership transfers of woodland between private sector and FE/FLS/NRW from March 2021 to March 2022, and from March 2022 to March 2023, as inferred by the differences in FE/FLS/NRW legal boundaries between those two dates, are broken down by conifer/broadleaf. The breakdown is based on NFI Interpreted Forest Type (IFT) at those dates, derived from photographic interpretation of the NFI woodland map. The “Conifer” and “Mixed mainly conifer” (>80% conifer) IFT categories are assigned to conifers, and the “Broadleaves” and “Mixed mainly broadleaved” (>80% broadleaved)

categories are assigned to broadleaves. For the other IFT categories, the conifer/broadleaf breakdown is allocated pro-rata based on the conifer/broadleaf breakdown of woodland area by ownership (private sector or FE/FLS/NRW) before transfer.

5. The woodland area figures are then updated to March 2023 by adding areas of new planting in 2021/22 and 2022/23, broken down by ownership and type.

Information on previous methodologies can be found in the Methodology Note: Annual Woodland Estimates produced in May 2012, on the [Methodology and Outputs page](#).

The methodology and outputs relevant to UK woodland area, planting and restocking were reviewed in 2014. For more information see the [Methodology Review: Woodland Area, Planting and Restocking](#).

The provisional 2021 woodland map differs from the figures for woodland area provided in the NFI report on Tree cover outside woodland in Great Britain, that were based on the NFI 2013 map and the National Tree Map™ (NTM), the latter in combination with samples of visual aerial photograph interpretation and field sampling outside of areas on the NFI map. The estimates in the tree cover report include estimates of woodland area outside the NFI map derived from the other sources. Work is ongoing to calibrate the figures, and the NFI woodland map for 2019 incorporates amendments made to date as a result of the calibration (as well as additional areas of woodland creation since 2013). See the [National Forest Inventory](#) for more information on the methodology used and comparisons of results from the NFI and previous woodland area estimates.

Figures for Northern Ireland (Forest Service and non-Forest Service woodland) are provided by the [Forest Service](#). Woodland areas from 2012 provided in this release have been obtained from the [Northern Ireland Woodland Register](#).

The NI [Woodland Register](#) is based on a combined dataset derived from fourteen individual data sets from statutory bodies including Forest Service, Land and Property Services, and the Northern Ireland Environment Agency, and non-statutory bodies which include Woodland Trust and National Trust. The minimum area of woodland that has been included in the register is 0.1 hectares.

The use of the NI Woodland Register has resulted in a step change in the non-Forest Service woodland areas reported for Northern Ireland. This should be interpreted as an improvement in the data reported, rather than an actual increase in woodland area.

### Certified woodland area

Data on certified woodland areas are obtained from the Forest Stewardship Council (FSC), Grown in Britain (GiB) and the Programme for the Endorsement of Forest Certification (PEFC). Some certified woodland is certified under more than one scheme.

The data collected from FSC, GiB and PEFC are the areas that are certified for each certificate holder. Follow-up enquiries are then made with the larger certificate holders (with areas greater than 100 hectares) to check the certified areas and to provide a country breakdown.

As all FE/FLS/NRW/FS woodlands are certified, the total woodland area (as derived above, from the NFI woodland map and FE/FLS/NRW boundaries and from Forest Service administrative records) is used, rather than the area provided on the certificates.

### Quality

The statistics on woodland area presented here refer to woodland as a land use rather than as a land cover, so felled areas and small areas (less than 0.5 ha) of open space are included within the definition of woodland. Some statistics on



woodland area as a land cover are available from other sources (e.g., [Countryside Survey \[2007\]](#) and associated [Land Cover Map \[2021\]](#)).

Detailed information on the quality of the woodland area statistics presented in this publication is available in the [Quality Report: Woodland Statistics](#). Further quality information on our Official Statistics is also available from this location.

## Revisions

There have been no revisions to the woodland area statistics provided in Provisional Woodland Statistics 2023.

Information on significant revisions to published statistics is provided in the [quality report on woodland statistics](#). Our [revisions policy](#) sets out how revisions and errors are dealt with.

## Further information

Figures for woodland area in the UK are provided to international organisations every 4 to 5 years; to the Food and Agriculture Organisation of the United Nations (FAO) for the [Global Forest Resources Assessment](#), and to [Forest Europe](#) for the State of Europe's Forests report.

Figures for woodland area are also used to compile the UK's Greenhouse Gas Inventory for the Land Use, Land Use Change and Forestry (LULUCF) sector, submitted to the United Nations Framework Convention on Climate Change (UNFCCC). [Official statistics on UK greenhouse gas emissions](#) are produced by the Department for Business, Energy and Industrial Strategy.

## Release schedule

Woodland area and certified woodland area data are released twice a year. Provisional figures are published in Provisional Woodland Statistics (previously Woodland Area, Planting and Publicly Funded Restocking) in mid-June. Final figures are released in Forestry Statistics at the end of September.

Provisional figures for woodland area and certified woodland area at March 2024 will be published on 20 June 2024 in Provisional Woodland Statistics 2024.

Final results for woodland area and certified woodland area at March 2024 will be published on 26 September 2024 in Forestry Statistics 2024 and Forestry Facts & Figures 2024.

## 11.1.2 Sources: Woodland Inventories

### Woodland Inventories

The current National Forest Inventory is the first continuous inventory of British woodlands and is being conducted on a five-year cycle. Prior to the National Forest Inventory, a series of one-off woodland inventories took place in Great Britain every 15 years or so.

Most inventories used slightly different definitions of woodland, so some apparent changes in area over time are due to changing definitions. The principal differences for inventories since 1905 are:

- 1905 Felled areas and scrub were not included.
- 1924 Undertaken by questionnaire; woods smaller than 2 acres (0.8 hectares) were not included.
- 1947 Woodlands with an area of less than 5 acres (2 hectares) were not included.
- 1965 Woodlands with an area of less than 1 acre (0.4 hectares) were not included.
- 1980 Woodlands with an area of less than 0.25 hectares were not included.
- 1995 to 1999 Woodlands with an area of 0.1 to 2.0 hectares were included on a sample basis; some woodland missing from earlier surveys was included.
- 2010 on All woodlands with an area of 0.5 hectares or more have been included; all woodlands below 0.5 hectares have been excluded.
- Estimates of woodland area prior to 1905 have been obtained from a variety of sources, including:
  - Domesday Survey of England - for information in 1086;

- Scottish Woodland History (TC Smout, 1997) - for estimate for end Middle Ages in Scotland;
- Roy maps ca. 1750 - for Scotland 17th Century estimate.

## National Forest Inventory

In the latest inventory, a digital map based on aerial photography, satellite imagery and other data sources has been produced, from which estimates of total woodland areas have been derived. Data are currently being collected for one hectare sample squares, covering a wide variety of topics, including ownership type, species and age.

Initial results for 2010 were published for countries (Great Britain, England, Wales, Scotland) in Spring 2011. A series of reports, based on field survey data combined with information from the NFI map, have since been published on the [National Forest Inventory page](#).

## 11.1.3 Sources: New planting & restocking

### New planting & restocking

#### Introduction

New planting is the creation of new areas of woodland. Restocking is the replanting of areas of woodland that have been felled. New planting can use planting/seeding or natural colonisation. Restocking can also use planting/seeding or natural regeneration.

#### Data sources and methodology

Information about Forestry England, Forestry and Land Scotland, Natural Resources Wales and Forest Service new planting and restocking comes from administrative systems. For new planting and restocking by Forestry and Land Scotland and by Natural Resources Wales, the figures obtained relate to net areas (i.e., excluding integral open space). These are converted to estimates of gross areas (i.e., including integral open space) for consistency with other planting and woodland area data, by using an assumption of 15% open space.

Information about other woodland has come principally from grant schemes, including the England Woodland Creation Offer (EWCO), Glastir in Wales, Forestry Grant Scheme in Scotland and legacy grant schemes.

Areas receiving grant are allocated to years by date of payment. For natural colonisation and regeneration, the areas are generally those for which the second instalment of grant has been paid during the year. The second instalment is approved when woodland reaches a certain stage and density of growth, so this information corresponds approximately to the amount of new and restocked woodland created.

The coverage and level of grant support differ across schemes, so that figures on grant-aided planting are not directly comparable between countries or over time. Grant support for restocking of conifers changed with the introduction of Rural Development Contracts in Scotland in 2008 and again with the introduction of the Forestry Grant Scheme in 2015. This will have led to a reduction in the proportion of private sector restocking that is grant aided and therefore reported for Scotland.

New planting estimates for England also include areas supported by the Woodland Trust and areas funded by Natural England (Higher Level Stewardship/Countryside Stewardship). From 2016/17, the estimated area of new planting includes new woodland creation supported by the Woodland Trust under the MOREwoods and Partnerships England projects. From 2017/18, the estimated area of new planting also includes new woodland creation supported by the Environment Agency.

Areas of land acquired by the National Forest Company for new planting have been included from 2015/16. To avoid potential double counting, areas of new planting by the National Forest Company that are believed to be supported by grant aid or by the Woodland Trust (and have therefore already been included in the figures reported for these other sources) have been excluded.

Local estimates for private sector areas of planting and restocking which are not grant-aided were included for England, Wales and Scotland up to 2009/10, where possible. Estimates of non-grant-aided planting and restocking were relatively small (less than one thousand hectares annually), and it has been assumed that all of this area is broadleaves. A small estimate for broadleaved new planting without grant aid in Scotland in 2016/17 and 2018/19 to 2019/20 was also included. No estimates have been included for restocking with Sitka spruce in Scotland, or for restocking in England, that are no longer supported by grants. It is assumed that there is no private sector non-grant aided new planting and restocking in Northern Ireland.

The use of natural regeneration in non-clearfell systems may be increasing - particularly for broadleaves in England. These systems are not satisfactorily represented by measuring restocking area within any given year, and so broadleaf regeneration may be under-reported in this release and other statistics.

Figures for Northern Ireland (Forest Service and private sector woodland) are provided by the [Forest Service](#).

The [methodology and outputs relevant to UK woodland area, planting and restocking were reviewed](#) in 2014.

## Revisions

Figures for 2022/23 are unchanged from the figures previously released in Provisional Woodland Statistics 2023.

Information on significant revisions to published statistics is provided in the [quality report on woodland statistics](#). [Our revisions policy](#) sets out how revisions and errors are dealt with.

## Further information

Figures for new planting are also used to compile the UK's Greenhouse Gas Inventory for the Land Use, Land Use Change and Forestry (LULUCF) sector, submitted to the United Nations Framework Convention on Climate Change (UNFCCC). [Official statistics on UK greenhouse gas emissions](#) are produced by the Department for Business, Energy and Industrial Strategy.

## Release schedule

New planting and restocking data are released twice a year. Provisional figures are published in Provisional Woodland Statistics in early June. Final figures are released in Forestry Statistics at the end of September.

Provisional figures for new planting and restocking in 2023/24 will be published on 20 June 2024 in Provisional Woodland Statistics 2024.

Final results for new planting and restocking in 2023/24 will be published on 26 September 2024 in Forestry Statistics 2024 and Forestry Facts & Figures 2024.



## 11.1.4 Sources: Felling

### Felling

#### Introduction

Under the Forestry Act 1967 and the Forestry and Land Management Act (Scotland) 2018, it is illegal to fell trees in Great Britain without prior approval, although there are a few exceptions (for trees below a specified size, dangerous trees, and very small scale felling operations). There is a presumption against removal of woodland and loss of forest cover in the UK, so felling licences issued under the Forestry Act (or felling permissions under the Forestry and Land Management Act in Scotland) will normally be conditional (where felling approval is granted subject to restocking). However, the permanent removal of trees may be granted (through an unconditional felling licence) for thinning woodland (a standard woodland management practice) or if there are overriding environmental considerations, for example to enable the restoration of important habitats (and consent may be required under the relevant Environmental Impact Assessment Regulations).

The removal of trees may also be authorised under planning regulations, to enable development (including for windfarms). In this case, a felling licence is not required.

The Forestry Commission, Scottish Forestry, Natural Resources Wales and the Northern Ireland Forest Service may also require trees to be felled to prevent the spread of pests and diseases, by serving a Statutory Plant Health Notice (SPHN) on the affected site.

#### Data sources and methodology

Information about felling licences and Statutory Plant Health Notices comes from Forestry Commission, Scottish Forestry, Natural Resources Wales and Forest Service administrative systems.

Data on felling licences relates to felling licences that have been issued. It does not indicate whether the felling has taken place (and if so, when).

## Quality

All of the statistics on felling in this chapter are outside the scope of National Statistics.

## Revisions

Figures on felling licences and figures for Statutory Plant Health Notices in 2022/23 are released for the first time in this publication.

[Our revisions policy](#) sets out how revisions and errors are dealt with.

## Further information

Some related figures for England on felling licences have been released. Data on the total area covered by felling licences (conditional and unconditional) were released on 15 June 2023 in [Forestry Commission Key Performance Indicators: Report for 2021-22](#).

Further information on felling licences (including details of exemptions) can be found at:

- [Tree felling licence guidance from the Forestry Commission \(England\)](#);
- [Tree felling licence and other regulations from Natural Resources Wales \(Wales\)](#);
- [Felling permissions from Scottish Forestry \(Scotland\)](#).

Further information on [tree pests and diseases in the UK](#) is available on GOV.UK.

## Release schedule

Figures on felling licences and Statutory Plant Health Notices in 2023/24 will be published on 26 September 2024 in Forestry Statistics 2024.

## 11.1.5 Canopy cover in England

### Data Sources and Methodology

#### Data sources

The data used to estimate canopy cover in England come from the following sources:

- Woodland area is estimated from the 2022 National Forest Inventory woodland map;
- The area of small woods, groups of trees and lone trees (including hedgerow trees) are estimated from the 2022 Trees outside woodland map, produced under the Natural Capital Ecosystem Assessment programme;
- The area of orchards is derived from the Natural England Priority Habitats Inventory (England) accessed February 2023, the 2022 National Forest Inventory woodland map and the 2022 Trees Outside Woodland map;

Short Rotation Forestry and Short Rotation Coppice are included within the Woodland and Trees Outside Woodlands figures, where these have been identified.

Areas of Christmas trees, commercial (or modern) orchards and hedgerow features (other than hedgerow trees) are excluded from the canopy cover metric for England.

#### Methodology

The first NFI woodland map was published in May 2011 (reference date 31 March 2010), with annual revisions produced since then. This primarily comprised all the woodland and forest areas identifiable in the then available aerial photography. Most photography used was taken around 2006, but smaller areas were taken at other dates ranging from 1999 to 2009. In addition to this, areas under new planting grant aid schemes were also added (where woodland was not evident in the photography – hence the description ‘assumed woodland’). Grant schemes

issued between 1990 and 2009 were used for this purpose. As a final check the NFI was compared to the previous FC woodland map from the 1990's (NIWT) and any valid and significant discrepancies were added (phase 1).

Subsequent to this first publication in 2011, annual revisions of the map have been undertaken and published (2012 to 2020).

The map is updated annually using a number of data sources, such as new paid grant schemes, new aerial photography and new satellite imagery.

The satellite imagery gives an independent crosscheck of woodland present and is also used to identify areas of recent canopy change, including clear felled forest, wind blow and areas where a change in land use has occurred since the last satellite image was taken.

The 2022 NFI map for England used in the canopy cover metric includes additions for earlier grant aided planting that had not been included in earlier maps. As a result, the woodland area reported here is higher than that reported in other parts of this report (where GB or UK figures are presented). The map also excludes areas of observable permanent woodland loss to March 2022.

The NFI field survey work is designed to measure detailed aspects of forests and woodlands, but it is also used as a final check to the map-based estimates of woodland and clearfell areas, wherein errors in the Earth Observation based map can be measured, calibrated and used for refining the final area estimates.

The establishment of a Canopy Cover metric for England has necessitated the construction of a NFI Orchards map, a map that could align contiguously with the NFI woodlands map and the NFI TOW map. The basis of this aligned Orchards map is the only definitive data set existing for Orchards, the Natural England Traditional Orchards data set from the Priority Habitats Inventory (England). Early results in the derivation of an NFI Orchard map found that many traditional Orchards were seriously denuded, to the point that many no longer qualified as an orchard (less than 20% stocked). This pointed to the establishment of a new derivation process,

including the need to establish fine scale aspects of a definition which could discriminate between sites that were once orchards and sites that are still orchards.

The estimate for orchards used within the canopy cover metric is based on areas:

- found within the Natural England or NFI datasets;
- with minimum 50% of species in the canopy that are food producing species (apples, pears, nuts, etc);
- with a stocking greater than 20%;
- with trees that are or are capable of reaching at least 3 metres in height.

## Quality

The results from National Forest Inventory fieldwork have been used to calibrate the woodland area derived from the NFI woodland map for England. As the results were within the sampling margins of error for the fieldwork, no adjustment was made to the figure derived from the map.

The results from hand mapping of fieldwork squares have been used to calibrate the area of trees outside woodland derived from the map. This has resulted in an increase of around 7% from the estimate based solely on the map.

## Revisions

Estimates of canopy cover in England at March 2022 are released for the first time in this publication.

Our [revisions policy](#) sets out how revisions and errors are dealt with.

## Further information

For further information on the canopy cover target, please refer to The [Environmental Targets \(Woodland and Trees Outside Woodland\) \(England\) Regulations 2023](#) and to the [explanatory memorandum](#), that sets out how the target will be reported.

Previous estimates of trees outside woodlands as at January 2016 were included in the NFI report [Tree cover outside woodland in Britain](#), released in April 2017.

Woodland area converted to another land use, based on analysis of satellite imagery, is published in Forestry Commission annual [Key Performance Indicator reports](#).

## Release schedule

Canopy cover in England data are released every 5 years in Forestry Statistics. The next update, reporting on canopy cover in England at January 2028, is expected to be published 2028/2029.

**Alice Holt Lodge**

Farnham  
Surrey, GU10 4LH, UK  
Tel: **0300 067 5600**

**Northern Research  
Station**

Roslin  
Midlothian, EH25 9SY, UK  
Tel: **0300 067 5900**

**Forest Research in  
Wales**

Environment Centre  
Wales  
Deiniol Road, Bangor  
Gwynedd, LL57 2UW,  
UK  
Tel: **0300 067 5774**

[info@forestresearch.gov.uk](mailto:info@forestresearch.gov.uk)

[www.forestresearch.gov.uk](http://www.forestresearch.gov.uk)

Forest Research will consider all requests to make the content of our documents available in alternative formats.

Please send any such requests to: [research.info@forestresearch.gov.uk](mailto:research.info@forestresearch.gov.uk)

© Crown copyright 2023