



# **NATIONAL INVENTORY OF WOODLAND AND TREES**



**ENGLAND**

**County Report for**

**DEVON**



**Forestry Commission**

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First Published 2002

Printed in the United Kingdom

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## ACKNOWLEDGEMENTS

The Forestry Commission is grateful to many people who helped in the completion of this survey. In particular, the Forestry Commission would like to thank owners and occupiers of the land selected for sampling.

Woodland Surveys Branch of Forest Research was responsible for carrying out the survey and analysing the data. A large number of Forestry Commission and contract staff were involved in the survey from its inception.

Preparation of the digital cartography for Devon was carried out by Graham Bull, Woodland Survey Officer, and Woodland GIS Officers Chris Brown, Robert Beck and Esther Whitton. Data processing and analysis was carried out by Woodland Data Officers Justin Gilbert and Shona Cameron.

The authors of this Report are Steve Smith (Head of Woodland Surveys) and Justin Gilbert (Woodland Data Officer) of Forest Research.



## INTRODUCTION

This report presents the results for Devon from the Forestry Commission National Inventory of Woodland and Trees (NIWT).

The Inventory consists of two separate surveys -

- The Main Woodland Survey (MWS) covering woodlands of 2 hectares and over
- The Survey of Small Woodland and Trees (SSWT) covering Small Woods, Groups of Trees, Linear Features and Individual Trees.

## BACKGROUND

Since 1924 the Forestry Commission has carried out a number of national woodland surveys at intervals of between 15 and 20 years. The previous survey was carried out between 1979 and 1982. With the statistics becoming increasingly out of date the Forestry Commission decided to undertake a new survey: the *National Inventory of Woodland and Trees*.

The survey fieldwork for Great Britain was completed in July 2000. Work began in Scotland in 1994, followed by Southern England, Wales and Northern England.

## SURVEY METHODS

### Main Woodland Survey

In England, Woodland Surveys derived a digital map of all woodland showing Interpreted Forest Types from 1:25 000 scale aerial photography. This provided the basis for the sampling.

The digital map gives the extent of all woodland over 2 hectares and this was updated as survey work progressed. The maps on pages 4-6 show: overall woodland cover; woodland by ownership; and woodland by Interpreted Forest Type, respectively. The total area of woodland was obtained from the digital map with ground sampling undertaken to evaluate a wide range of woodland information such as species, age and stocking.

From the digital map the area of each woodland was recorded and this information was used to determine the intensity at which any selected woodland would be sampled. The overall sampling scheme was as follows:

- 2.0ha - <100ha : every fifth wood
- 100ha - <500ha : two woods in five
- 500ha and larger : all woods

1 hectare square plots were used to sample the selected woodlands on the ground. This was a change of practice from all previous Census surveys, where whole woods have been selected for survey. For each of the three bands of woodland area a different sampling grid was used with the density of the squares being reduced as the woodlands increase in size. The overall aim was to sample 1% of the woodland in each size class.

### Survey of Small Woodland and Trees

The land area of England was stratified into coastal and inland 1 km x 1 km squares and a random sample of 1 km<sup>2</sup> plots were then selected, representing around 1% of the land area. 1:25 000 scale aerial photos were then used to identify features in each sample square. Each 1 km<sup>2</sup> was then divided into 16 parts, and two of these were selected at random for field data collection. Data was collected on Small Woodlands (0.10 - <2.00 ha), Linear Features, Groups and Individual Trees. The survey did not collect information from areas of developed land of 2 hectares or more.

### MAIN POINTS FROM THE SURVEY RESULTS

- The total area of woodland of 0.1 hectares and over in Devon is 66,661 hectares. This represents 9.9 % of the land area. (Table 1)
- Broadleaved woodland is the dominant forest type representing 59.1 % of all woodland. Conifer woodland represents 25.2 %, Mixed woodland 13.2 % and Open Space within woodlands 1.5 %. (Table 2)
- The main conifer species is Sitka spruce covering 3,955 hectares or 19.4 % of all conifer species. The main broadleaved species is oak covering 8,208 hectares or 18.4 % of all broadleaved species. (Table 3)
- 9,053 hectares or 14 % of woodland over 2 hectares is owned by or leased to the Forestry Commission, and 55,135 hectares or 86 % of woodland is in Other ownership. (Table 6)
- There are a total of 2,473 woods over 2 ha within Devon with a mean wood area of 16.8 hectares. (Table 7a) There are a total of 6,203 woods from 0.1 - <2.0 hectares with a mean wood area of 0.40 hectares. (Table 14)
- There are 7.6 million live trees outside woodland in Devon. (Table 15)
- Woodland land cover increased by over 12,600 hectares from 8.0 % to 9.9 % of the land area between 1980 and 1997. (Table 19)
- The area of broadleaves increased by 45% between 1980 and 1997, with the relative proportion of broadleaves to conifers increasing from 59 % to 69 %. (Table 20)

### INVENTORY REPORTS

As well as this report for Devon, reports are available for the other counties in the region as shown on the map opposite. Also available are region and county reports for England as well as a report for the country as a whole. Wales and Scotland are also covered by reports.

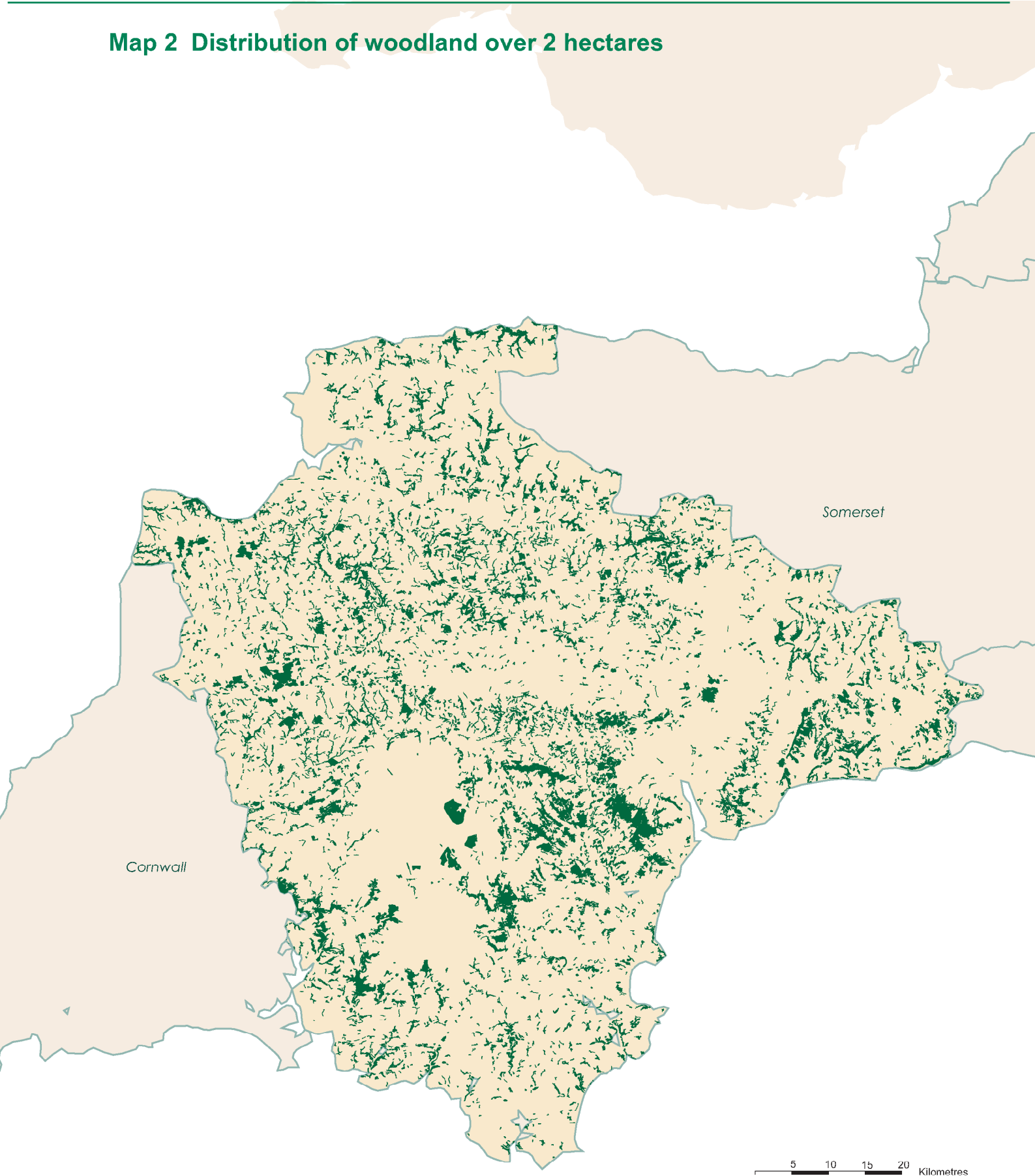


## Map 1 Regional and county boundaries



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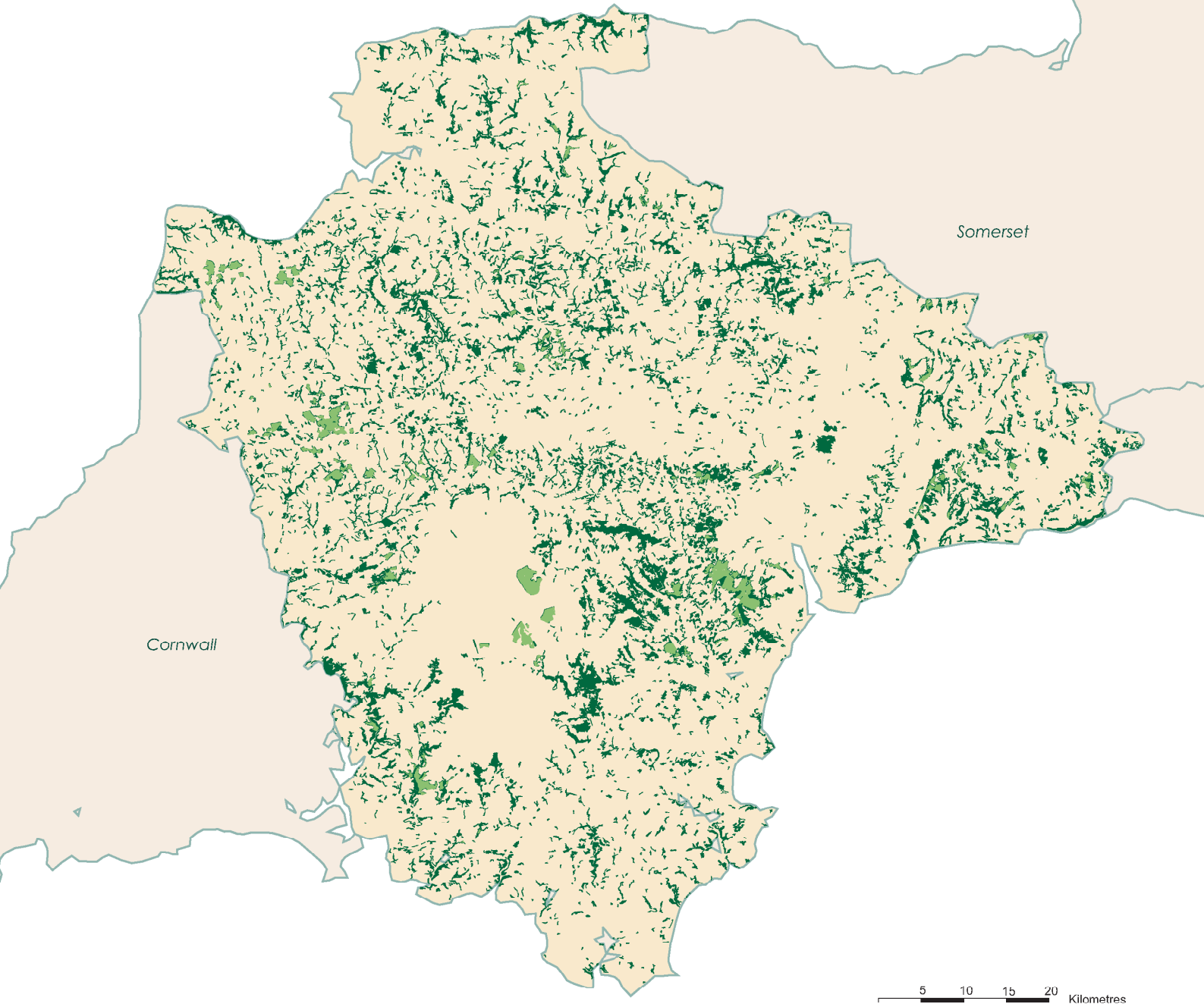
## Map 2 Distribution of woodland over 2 hectares



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### Map 3 Distribution of woodland over 2 hectares by ownership

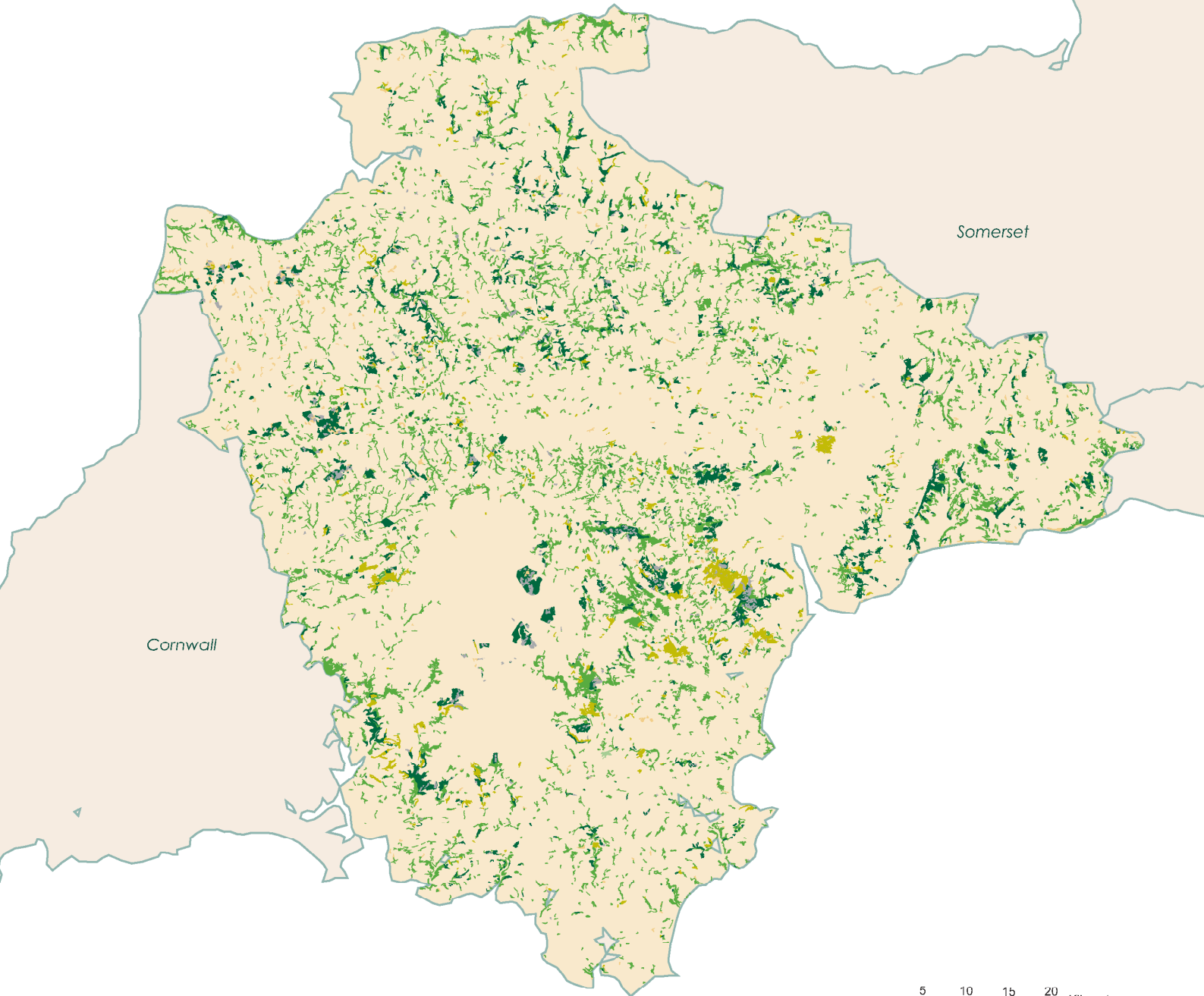
- Forestry Commission woodland
- Other woodland



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## Map 4 Distribution of woodland over 2 hectares by Interpreted Forest Type

- Broadleaves
- Conifer
- Mixed
- Felled
- Young trees & shrubs
- Ground prepared for planting
- Coppice



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## SUMMARY RESULTS FROM THE NATIONAL INVENTORY OF WOODLAND AND TREES (NIWT)

Both the Main Woodland Survey and the Survey of Small Woodland and Trees contributed to the estimate of woodland area for Devon.

Tables 1-3 show the combined woodland area from the Main Woodland Survey and the Survey of Small Woodland and Trees.

Tables 4 and 5 summarise the numbers of live trees outside woodland, and the lengths of Linear Features from the Survey of Small Woodland and Trees.

Table 1:	Woodland area by woodland size class
Table 2:	Woodland area by forest type and woodland size
Table 3:	Woodland area by principal species and woodland size
Table 4:	Numbers of live trees outside woodland by feature type
Table 5:	Lengths of Linear Features

*Note:* The figures in many of the tables may not add due to rounding



**Table 1** Woodland area by woodland size class

Woodland size (ha)	Woodland area (ha)	% of Woodland area
2.00 and over	64,188	96.3
0.25 - < 2.00	2,276	3.4
0.10 - < 0.25	197	0.3
<b>Total area of woodland</b>	<b>66,661</b>	<b>100.0</b>
<b>% Woodland land cover</b>	<b>9.9</b>	

1. Area of Devon, including inland water, 670,961 ha based on digital boundaries used in the 1991 Census of Population

**Table 2** Woodland area by forest type and woodland size

Forest type	Woodland size (ha)		Total area (ha)	Percentage of total area
	2.0 and over	0.1 - <2.0		
Conifer	16,783	9	16,792	25.2
Broadleaved	37,615	1,803	39,418	59.1
Mixed	8,136	652	8,788	13.2
Coppiced	140	0	140	0.2
Copp-w-standards	64	0	64	0.1
Windblow	0	0	0	0.0
Felled	451	0	451	0.7
Open Space	999	9	1,008	1.5
<b>Total</b>	<b>64,188</b>	<b>2,473</b>	<b>66,661</b>	<b>100</b>

1. See Glossary for definitions of forest types.



**Table 3** Woodland area by principal species and woodland size

Species/Groups	Woodland size (ha)		Total area (ha)	Percentage of total area	
	2.0 and over	0.1 -<2.0		Category*	Species**
Pine	1,744	9	1,753	8.6	2.7
Sitka spruce	3,955	0	3,955	19.4	6.1
Larch	3,742	90	3,832	18.8	5.9
Other conifers	8,978	84	9,062	44.6	13.9
Mixed conifers	1,733	0	1,733	8.5	2.7
<b>Total conifers</b>	<b>20,153</b>	<b>183</b>	<b>20,336</b>	<b>100.0</b>	<b>31.3</b>
Oak	7,960	248	8,208	18.4	12.6
Beech	2,020	454	2,474	5.5	3.8
Sycamore	1,198	318	1,516	3.4	2.3
Ash	2,446	284	2,730	6.1	4.2
Birch	1,767	0	1,767	4.0	2.7
Elm	39	45	84	0.2	0.1
Other broadleaves	2,056	859	2,915	6.5	4.5
Mixed broadleaves	24,897	73	24,970	55.9	38.4
<b>Total broadleaves</b>	<b>42,382</b>	<b>2,281</b>	<b>44,663</b>	<b>100.0</b>	<b>68.7</b>
<b>Total all species***</b>	<b>62,535</b>	<b>2,464</b>	<b>64,999</b>		<b>100.0</b>

\*Category - species/group percentage of conifer or broadleaved category

\*\*Species/group percentage of all species

\*\*\*Excludes the 1,663 ha of Coppice, Felled and Open space areas which were included in Table 2

1. The standard errors of the area estimates for woodland of 2 ha and over for the most common species or species groups are as follows
 

Conifers	4%
Broadleaves	2%
Sitka spruce	12%
Oak	8%
Ash	12%
2. Where the standard errors of these summary measures are 10% or less, the confidence intervals will be approximately symmetrical; the true value is expected to be within +/- one standard error for about 68% (or about two-thirds) of all cases, and within +/- two standard errors for about 95% of all cases. Where percentage standard errors are larger, e.g. for less common species or more variable species composition, the confidence intervals will be less symmetrical (and wider).

**Table 4** Numbers of live trees outside woodland by feature type

Feature type	Total number of features	Total number of live trees	Mean number of trees per feature	Tree density (per sq km)
Groups	155,100	1,589,500	10	237
Narrow Linear Features	58,900	5,918,900	100	882
Individual Trees	123,300	123,300	1	18
<b>Total</b>		<b>7,631,700</b>		<b>1,137</b>

1. Land area used to calculate tree density 670,961 ha based on digital boundaries used in 1991 Census of Population
2. The standard errors of the live tree number estimates for these feature types are:
 

Groups	19%
Narrow Linear Features	26%
Individual Trees	14%
3. Where the standard errors of these summary measures are 10% or less, the confidence intervals will be approximately symmetrical; the true value is expected to be within +/- one standard error for about 68% (or about two-thirds) of all cases, and within +/- two standard errors for about 95% of all cases. Where percentage standard errors are larger, e.g. for less common species or more variable species composition, the confidence intervals will be less symmetrical (and wider).
4. See Glossary for definitions of feature types.

**Table 5** Lengths of Linear Features

Feature type	Total number of features	Total length of features (km)	Density of features (m per sq km)
Wide Linear Features	4,402	571	85
Narrow Linear Features	58,900	5,089	758
<b>Total</b>		<b>5,659</b>	<b>843</b>

1. Land area used to calculate tree density 670,961 ha based on digital boundaries used in 1991 Census of Population
2. The standard errors of the length estimates for these feature types are:
 

Wide Linear Features	57%
Narrow Linear Features	20%
3. Where the standard errors of these summary measures are 10% or less, the confidence intervals will be approximately symmetrical; the true value is expected to be within +/- one standard error for about 68% (or about two-thirds) of all cases, and within +/- two standard errors for about 95% of all cases. Where percentage standard errors are larger, e.g. for less common species or more variable species composition, the confidence intervals will be less symmetrical (and wider).
4. See Glossary for definitions of feature type.

## RESULTS FROM THE MAIN WOODLAND SURVEY (MWS)

### Survey Method

Woods were selected from the digital map of woodland of 2 hectares and over, then sampled using a random grid of 1 hectare sample plots. The density of sample plots was reduced as the sampled woodland increase in size, the general aim being to sample 1% of the woodland area. The ground sampling evaluated a wide range of data such as species, age and stocking.

Table 6:	Summary of woodland area by ownership
Chart:	Woodland area by ownership
Table 7a:	Size class distribution of woodland
Table 7b:	Size class distribution of woodland by ownership units
Table 8:	Area of woodland by forest type and ownership
Chart:	Area of woodland by forest type
Table 9a:	Area of High Forest by principal species and ownership
Graph:	Area of High Forest by principal species and ownership
Table 9b:	Area of High Forest by principal species, ownership and category
Graph:	High Forest Category 1 Area by principal species and ownership
Graph:	High Forest Category 2 Area by principal species and ownership
Table 10a:	High Forest Category 1 Area by principal species and planting year class
Graph:	High Forest Category 1 Area by planting year class
Table 10b:	High Forest Category 1 Forestry Commission: area by principal species and planting year class
Graph:	High Forest Category 1 Forestry Commission - area by planting year class
Table 10c:	High Forest Category 1 Other ownership: area by principal species and planting year class
Graph:	High Forest Category 1 Other ownership: area by planting year class
Table 11:	High Forest: principal species by planting year class
Table 12:	Ownership type by area and percentage
Chart:	Ownership type by area

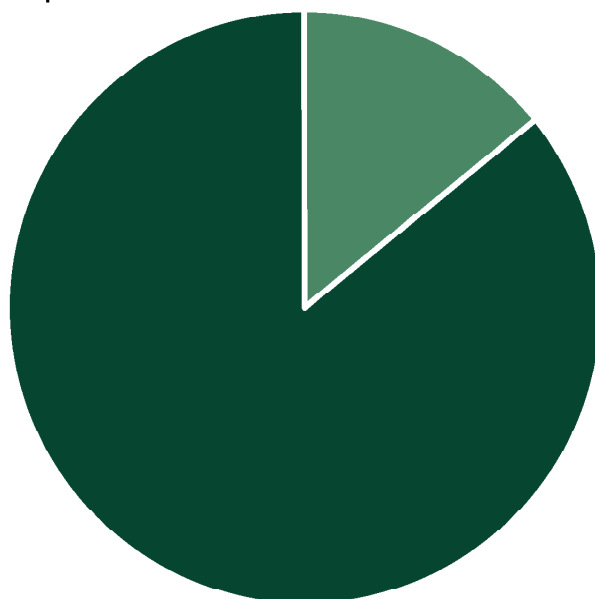
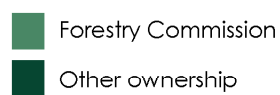
*Note: The figures in many of the tables may not add due to rounding*



**Table 6** Summary of woodland area by ownership

Ownership	ha	% woodland
Forestry Commission	9,053	14
Other	55,135	86
<b>Total area of woodland</b>	<b>64,188</b>	<b>100</b>

1. Woodland area from aerial photographic interpretation map updated to 31 March 1997
2. See Glossary for definitions of ownership types

**Woodland area by ownership**

**Table 7a** Size class distribution of woodland

Size class (ha)	Number of woods	Total area (ha)	Percent of total area	Mean wood area (ha)
<10	2,758	11,988	19	4.3
10 - <20	501	6,923	11	13.8
20 - <50	352	10,947	17	31.1
50 - <100	132	9,011	14	68.3
<b>&lt;100</b>	<b>3,743</b>	<b>38,869</b>	<b>60</b>	<b>10.4</b>
<b>100 - &lt;500</b>	<b>89</b>	<b>16,598</b>	<b>26</b>	<b>186.5</b>
<b>500 and &gt;</b>	<b>12</b>	<b>8,996</b>	<b>14</b>	<b>749.7</b>
<b>All woods</b>	<b>3,844</b>	<b>64,463</b>	<b>100</b>	<b>16.8</b>

**Table 7b** Size class distribution of woodland by ownership units

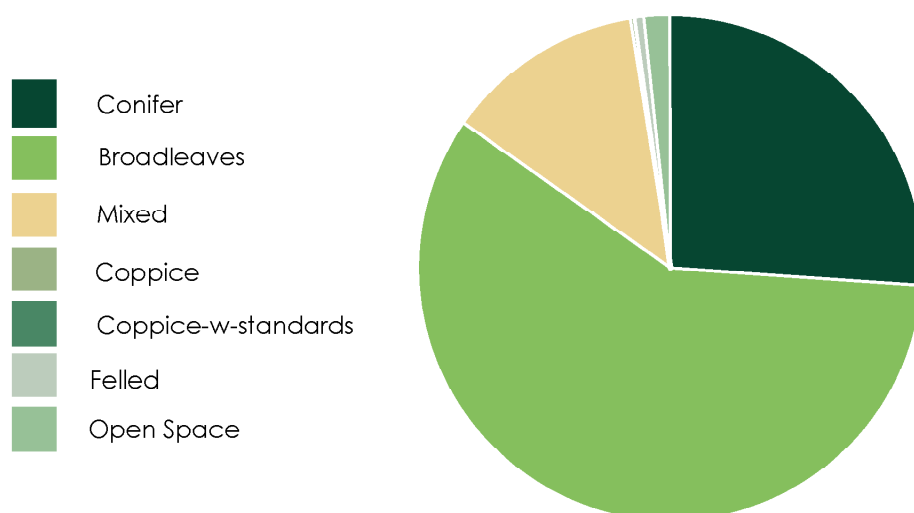
Size class (ha)	FC or Other	Number of woods	Total area (ha)	Percent of total area	Mean wood area (ha)
<10	FC	45	249	0	5.5
	O	3,002	12,596	20	4.2
10 - <20	FC	24	329	1	13.7
	O	522	7,212	11	13.8
20 - <50	FC	51	1,617	3	31.7
	O	351	10,993	17	31.3
50 - <100	FC	23	1,602	2	69.7
	O	119	8,008	12	67.3
<100	FC	143	3,797	6	26.6
	O	3,994	38,810	60	9.7
100 - <500	FC	18	3,424	5	190.2
	O	70	12,794	20	182.8
500 and >	FC	3	1,832	3	610.8
	O	5	3,806	6	761.2
<b>Total</b>	<b>FC</b>	<b>164</b>	<b>9,053</b>	<b>14</b>	<b>55.2</b>
	<b>O</b>	<b>4,069</b>	<b>55,410</b>	<b>86</b>	<b>13.6</b>

1. Table 7a and 7b are based solely on the digital woodland map. The other MWS tables are derived from the field sample data
2. The total area in Tables 7a and 7b is 275 hectares more than recorded in Table 6. This is mainly due to the field samples recording some land in other land uses not differentiated from woodland in the digital map
3. The data available from the digital map enable the identification of woodlands according to their ownerships, Forestry Commission or Other. The entries in table 7b cannot be added to derive table 7a as some woods may consist of both Forestry Commission and Other ownership(s)

For example, the Forestry Commission may own most of a large wood with some parts in Other ownership(s). In Table 7a the whole area would be treated as one wood and the area allocated to one size category. In Table 7b each of the ownership units would be allocated to the size category for that unit. Dividing woods by ownership can occasionally generate part woods of less than 2 hectares

**Table 8** Area of woodland by forest type and ownership

Forest type	Forestry Commission		Other		All ownerships	
	ha	%	ha	%	ha	%
Conifer	5,642	62.3	11,141	20.2	16,783	26.1
Broadleaved	1,182	13.1	36,432	66.1	37,615	58.6
Mixed	1,757	19.4	6,379	11.6	8,136	12.7
Coppice	0	0.0	140	0.3	140	0.2
Copp-w-Stds	0	0.0	64	0.1	64	0.1
Windblow	0	0.0	0	0.0	0	0.0
Felled	305	3.4	146	0.3	451	0.7
Open Space	167	1.8	831	1.5	999	1.6
<b>Total</b>	<b>9,053</b>	<b>100.0</b>	<b>55,135</b>	<b>100.0</b>	<b>64,188</b>	<b>100.0</b>

**Area of woodland by forest type**

**Table 9a** Area of High Forest by principal species and ownership

Species	Forestry Commission			Other			All ownerships		
	area (ha)	cat* %	spp** %	area (ha)	cat* %	spp** %	area (ha)	cat* %	spp** %
Scots pine	241	4	3	760	6	1	1,002	5	2
Corsican pine	435	7	5	269	2	0	703	3	1
Lodgepole pine	39	1	0	0	0	0	39	0	0
Sitka spruce	2,549	40	30	1,405	10	3	3,955	20	6
Norway spruce	611	10	7	1,213	9	2	1,823	9	3
European larch	21	0	0	513	4	1	534	3	1
Jap/Hybrid larch	506	8	6	2,702	20	5	3,208	16	5
Douglas fir	1,561	24	18	4,231	31	8	5,792	29	9
Other conifers	168	3	2	1,194	9	2	1,363	7	2
Mixed conifers	285	4	3	1,448	11	3	1,733	9	3
<b>Total conifers</b>	<b>6,418</b>	<b>100</b>	<b>75</b>	<b>13,735</b>	<b>100</b>	<b>25</b>	<b>20,153</b>	<b>100</b>	<b>32</b>
Oak	238	11	3	7,721	19	14	7,960	19	13
Beech	334	15	4	1,686	4	3	2,020	5	3
Sycamore	5	0	0	1,193	3	2	1,198	3	2
Ash	195	9	2	2,250	6	4	2,446	6	4
Birch	480	22	6	1,287	3	2	1,767	4	3
Poplar	0	0	0	115	0	0	115	0	0
Sweet chestnut	32	1	0	265	1	0	297	1	0
Elm	0	0	0	39	0	0	39	0	0
Other broadleaves	73	3	1	1,571	4	3	1,644	4	3
Mixed broadleaves	806	37	9	24,091	60	45	24,897	59	40
<b>Total broadleaves</b>	<b>2,163</b>	<b>100</b>	<b>25</b>	<b>40,218</b>	<b>100</b>	<b>75</b>	<b>42,382</b>	<b>100</b>	<b>68</b>
<b>Total - all species</b>	<b>8,581</b>		<b>100</b>	<b>53,953</b>		<b>100</b>	<b>62,534</b>		<b>100</b>
<b>Felled</b>	<b>305</b>			<b>146</b>			<b>451</b>		
<b>Total High Forest</b>	<b>8,886</b>			<b>54,099</b>			<b>62,985</b>		

\*cat : species percentage of Conifer or Broadleaved in the ownership category

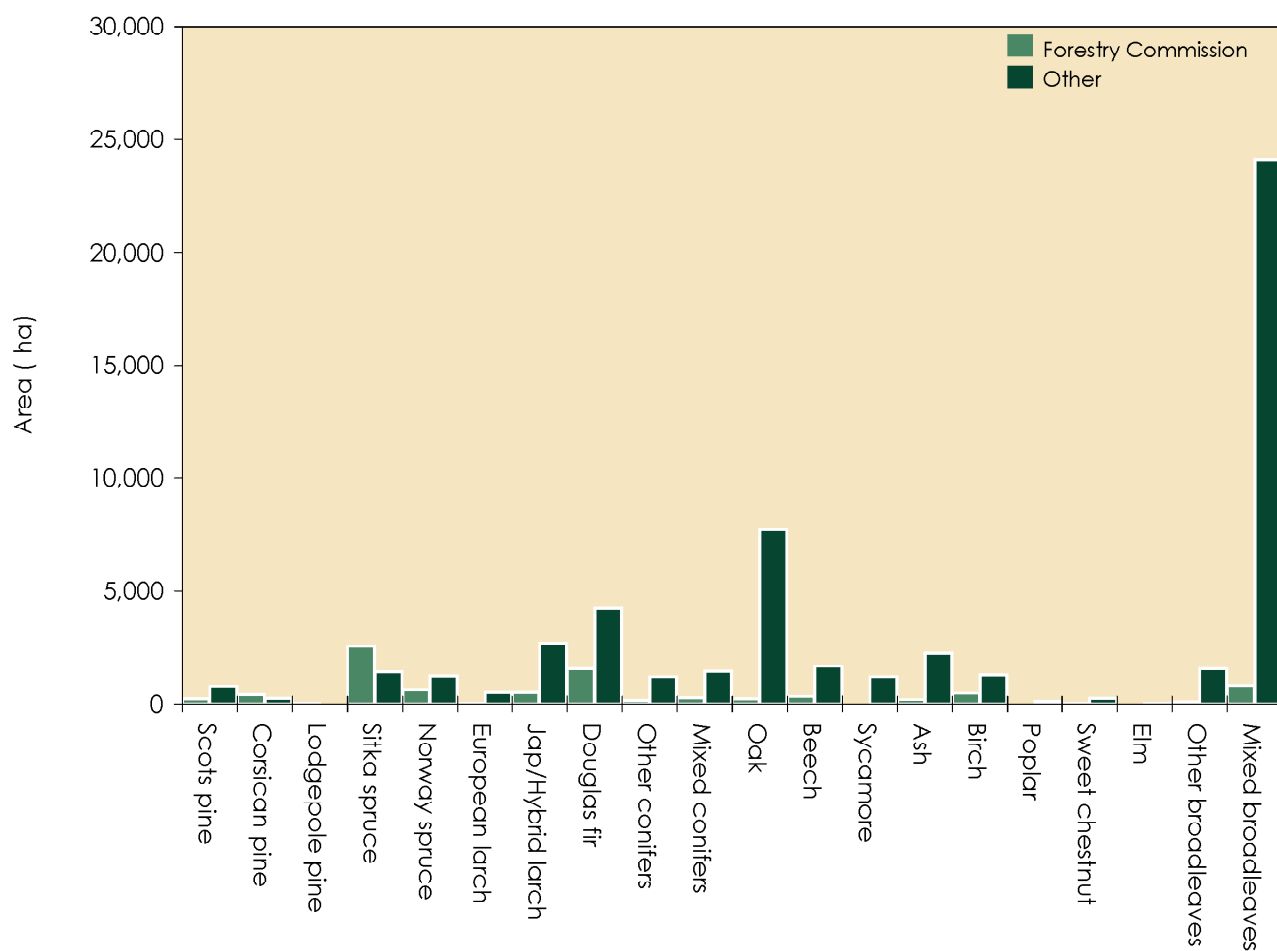
\*\*spp : percentage of all species in the ownership category



1. In addition to the areas shown there are 999 ha of other areas integral to the woodland not stocked with tree species.
2. The standard errors of the all ownerships area estimates for the most common species or species groups are as follows;
 

Conifers	4%
Broadleaves	2%
Douglas fir	9%
Oak	8%
Ash	12%
3. Mixtures: where possible the species in mixtures have been separately recorded. Where this has not been possible they were described as 'Mixed conifers' or 'Mixed broadleaves'.
4. Confidence Intervals: where the standard errors of these summary measures are 10% or less, the confidence intervals will be approximately symmetrical; the true value is expected to be within +/- one standard error for about 68% (or about two-thirds) of all cases, and within +/- two standard errors for about 95% of all cases. Where percentage standard errors are larger, e.g. for less common species or more variable species composition, the confidence intervals will be less symmetrical (and wider).

#### Area of High Forest by principal species and ownership



**Table 9b** Area of High Forest by principal species,ownership and category

Species	Forestry Commission			Other			All ownerships		
	cat. 1	cat. 2	Total (ha)	cat. 1	cat. 2	Total (ha)	cat. 1	cat. 2	Total (ha)
Scots pine	241	0	241	760	0	760	1,002	0	1,002
Corsican pine	435	0	435	269	0	269	703	0	703
Lodgepole pine	31	8	39	0	0	0	31	8	39
Sitka spruce	2,544	5	2,549	1,405	0	1,405	3,950	5	3,955
Norway spruce	537	74	611	1,213	0	1,213	1,749	74	1,823
European larch	21	0	21	513	0	513	534	0	534
Jap/Hybrid larch	506	0	506	2,702	0	2,702	3,208	0	3,208
Douglas fir	1,561	0	1,561	4,231	0	4,231	5,792	0	5,792
Other conifers	168	0	168	1,176	18	1,194	1,345	18	1,363
Mixed conifers	276	10	285	1,443	5	1,448	1,719	14	1,733
<b>Total conifers</b>	<b>6,321</b>	<b>97</b>	<b>6,418</b>	<b>13,712</b>	<b>23</b>	<b>13,735</b>	<b>20,033</b>	<b>120</b>	<b>20,153</b>
Oak	231	8	238	7,352	370	7,721	7,582	377	7,960
Beech	317	17	334	1,621	65	1,686	1,938	82	2,020
Sycamore	5	0	5	991	202	1,193	996	202	1,198
Ash	185	11	195	2,110	140	2,250	2,295	151	2,446
Birch	204	276	480	524	763	1,287	728	1,039	1,767
Poplar	0	0	0	115	0	115	115	0	115
Sweet chestnut	32	0	32	258	7	265	290	7	297
Elm	0	0	0	0	39	39	0	39	39
Other broadleaves	18	55	73	456	1,115	1,571	474	1,169	1,644
Mixed broadleaves	505	300	806	21,310	2,781	24,091	21,815	3,082	24,897
<b>Total broadleaves</b>	<b>1,497</b>	<b>666</b>	<b>2,163</b>	<b>34,735</b>	<b>5,483</b>	<b>40,218</b>	<b>36,232</b>	<b>6,149</b>	<b>42,382</b>
<b>Total - all species</b>	<b>7,818</b>	<b>763</b>	<b>8,581</b>	<b>48,447</b>	<b>5,506</b>	<b>53,953</b>	<b>56,265</b>	<b>6,269</b>	<b>62,534</b>

1. The standard errors of the all ownerships area estimates for the most common species or species groups (in all woodland types) are as follows

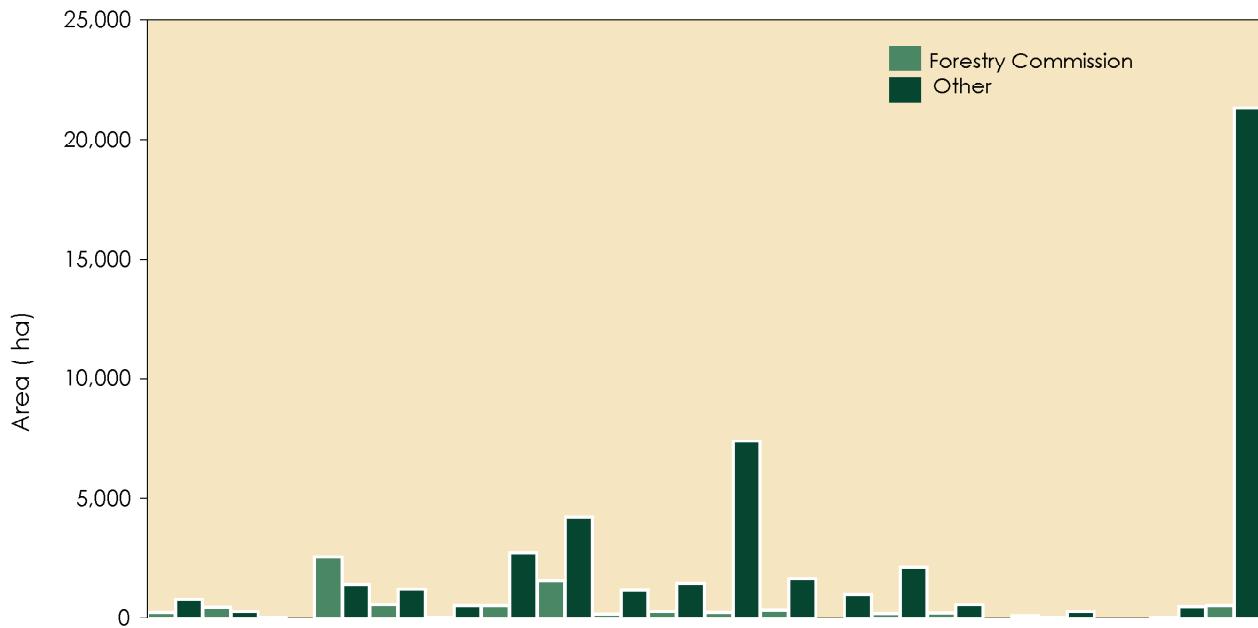
	Category 1*	Category 2*	Total High Forest
Conifers	4%	60%	4%
Broadleaves	2%	5%	2%
Douglas fir	9%	-	9%
Oak	8%	33%	8%
Ash	12%	42%	12%

\*See Glossary for Category 1 and Category 2 descriptions

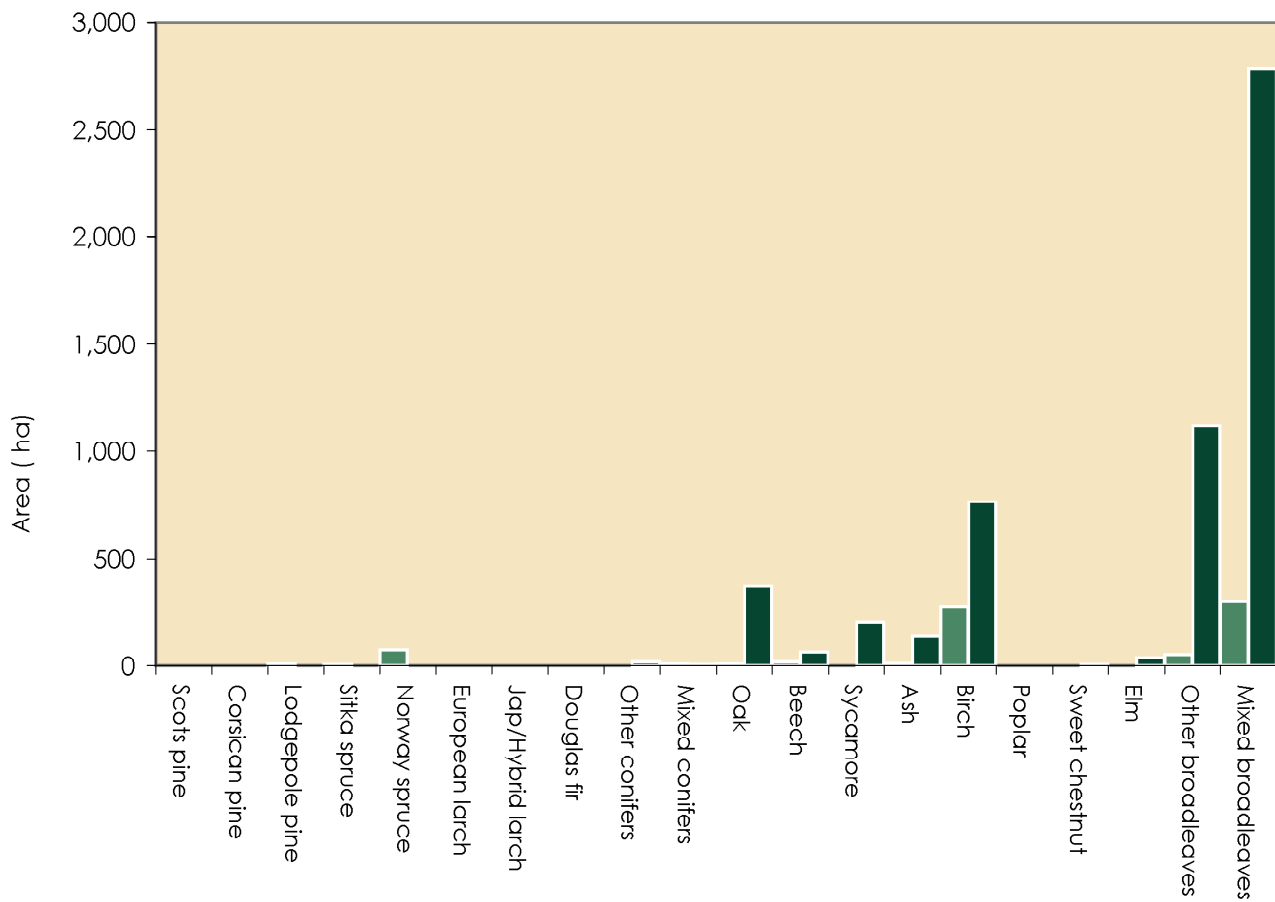
2. Where the standard errors of these summary measures are 10% or less, the confidence intervals will be approximately symmetrical; the true value is expected to be within +/- one standard error for about 68% (or about two-thirds) of all cases, and within +/- two standard errors for about 95% of all cases. Where percentage standard errors are larger, e.g. for less common species or more variable species composition, the confidence intervals will be less symmetrical (and wider).

3. Where possible the species in mixtures have been separately recorded. Where this has not been possible they were described as 'Mixed conifers' or 'Mixed broadleaves'.

### High Forest Category 1 - Area by principal species and ownership



### High Forest Category 2 - Area by principal species and ownership

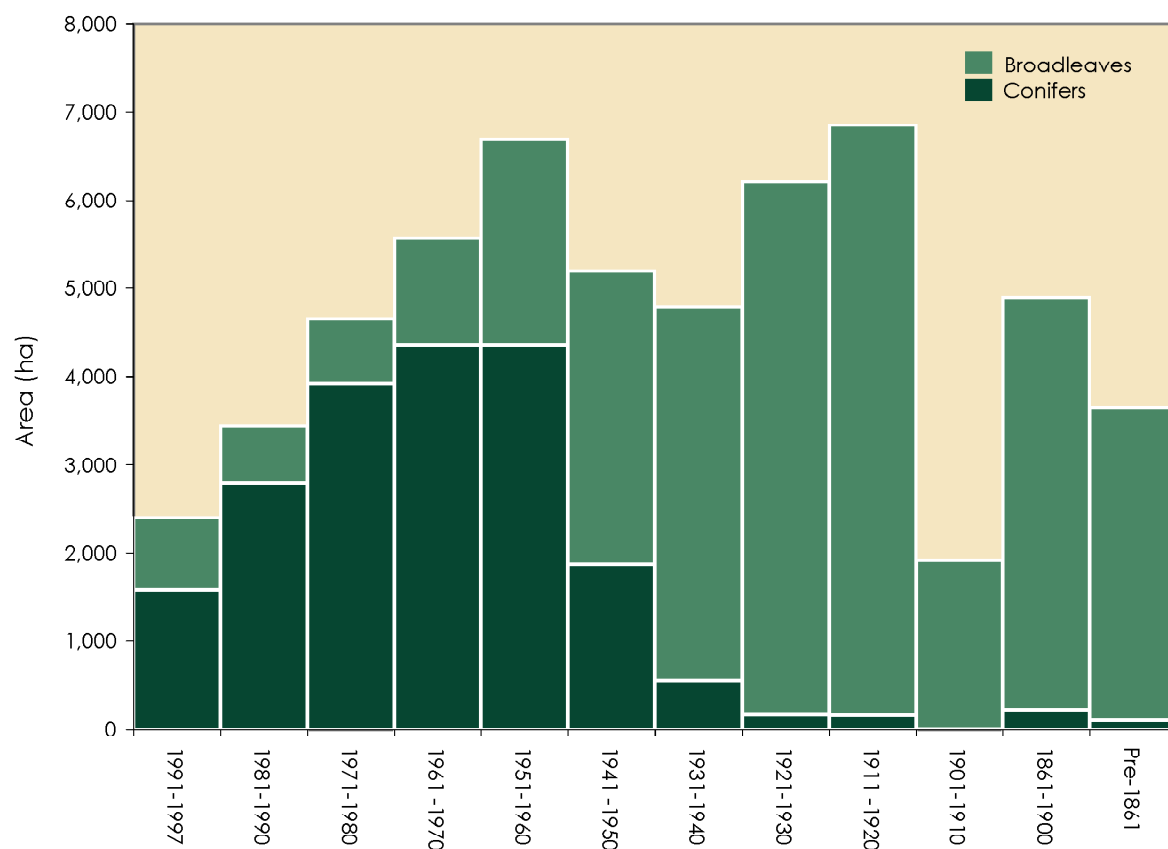


**Table 10a** High Forest Category 1 - Area by principal species and planting year class

Species	Planting year class*												Total (ha)
	1991-1997	1981-1990	1971-1980	1961-1970	1951-1960	1941-1950	1931-1940	1921-1930	1911-1920	1901-1910	1861-1900	Pre-1861	
Scots pine	0	31	1/2	12/	291	95	89	68	51	0	//	0	1,002
Corsican pine	17	0	110	400	71	105	0	0	0	0	0	0	703
Lodgepole pine	0	0	0	21	10	0	0	0	0	0	0	0	31
Sitka spruce	630	519	1,546	690	341	107	116	0	0	0	0	0	3,950
Norway spruce	161	140	470	347	451	74	84	21	0	0	0	0	1,749
European larch	5	28	49	187	126	140	0	0	0	0	0	0	534
Jap/Hybrid larch	17	416	516	976	714	437	104	0	0	0	28	0	3,208
Douglas fir	738	1,141	730	764	1,874	338	94	0	0	0	87	26	5,792
Other conifers	5	419	228	357	118	162	9	0	0	0	9	41	1,345
Mixed conifers	0	92	93	484	360	404	46	75	107	0	20	37	1,719
<b>Total conifers</b>	<b>1,572</b>	<b>2,785</b>	<b>3,914</b>	<b>4,353</b>	<b>4,357</b>	<b>1,863</b>	<b>541</b>	<b>164</b>	<b>159</b>	<b>0</b>	<b>221</b>	<b>103</b>	<b>20,033</b>
Oak	241	150	122	180	849	682	726	898	918	239	1,580	999	7,582
Beech	27	9	19	102	241	247	26	173	138	71	514	371	1,938
Sycamore	0	94	121	86	246	226	27	32	59	17	89	0	996
Ash	40	136	58	207	368	345	236	414	192	30	259	9	2,295
Birch	17	174	173	79	119	9	78	0	6	0	0	72	728
Poplar	0	0	9	66	0	0	0	0	39	0	0	0	115
Sweet chestnut	40	17	0	35	21	33	5	0	48	0	26	65	290
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Other broadleaves	24	20	5	65	149	122	83	0	0	4	5	0	474
Mixed broadleaves	445	57	229	393	344	1,670	3,062	4,533	5,289	1,560	2,208	2,027	21,815
<b>Total broadleaves</b>	<b>834</b>	<b>657</b>	<b>736</b>	<b>1,213</b>	<b>2,337</b>	<b>3,333</b>	<b>4,242</b>	<b>6,050</b>	<b>6,688</b>	<b>1,919</b>	<b>4,680</b>	<b>3,543</b>	<b>36,232</b>
<b>Total - all species</b>	<b>2,406</b>	<b>3,442</b>	<b>4,650</b>	<b>5,567</b>	<b>6,694</b>	<b>5,196</b>	<b>4,783</b>	<b>6,214</b>	<b>6,847</b>	<b>1,919</b>	<b>4,901</b>	<b>3,646</b>	<b>56,265</b>

\*Age determined from records where these were available. Where records were not available or were clearly inaccurate age-class was assigned by reference to similar crops of known age in the locality.

## High Forest Category 1 - Area by planting year class

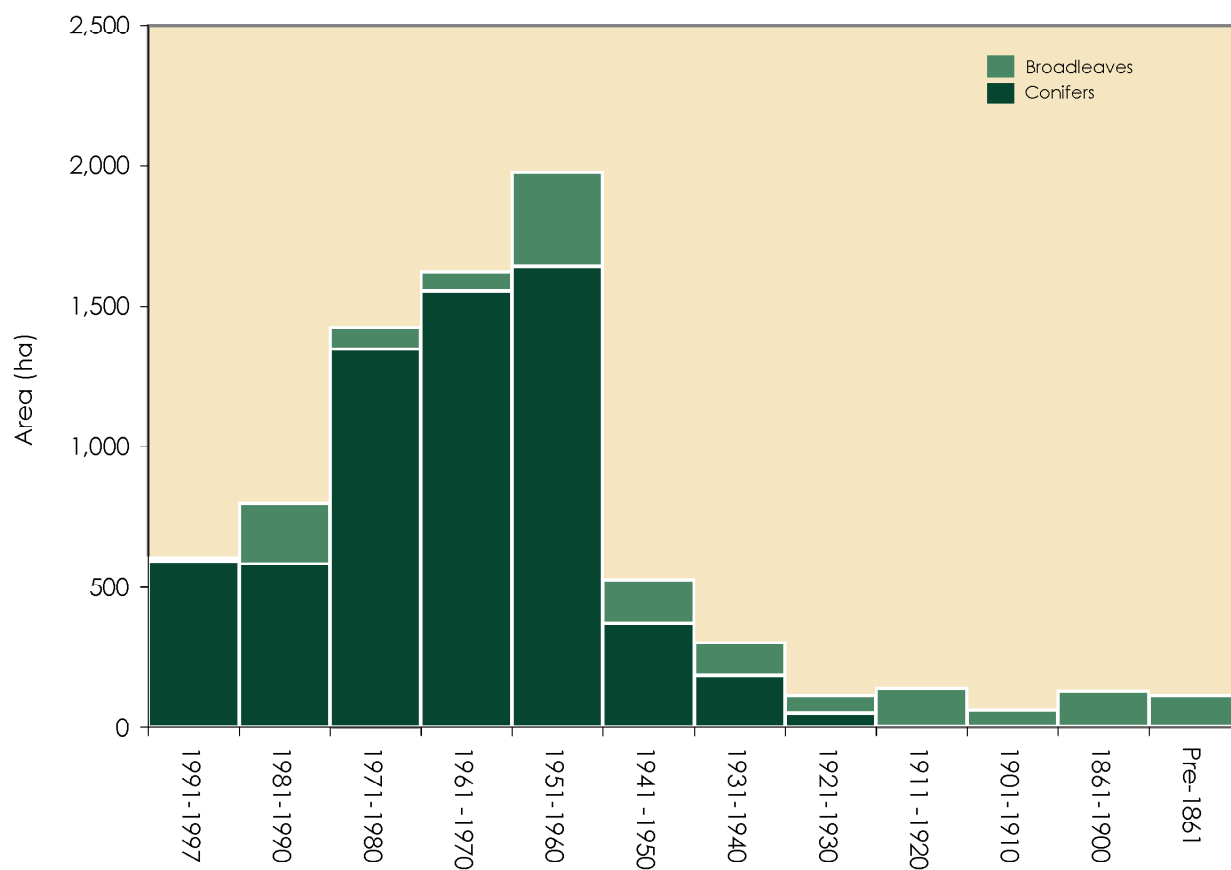


1. Most of the planting year classes cover 10 years, 1991-1997 is 7 years, and the classes prior to 1901 are 40 years or more.

**Table 10b** High Forest Category 1 - Forestry Commission : area by principal species and planting year classes

Species	Planting year class*												Total (ha)
	1991-1997	1981-1990	1971-1980	1961-1970	1951-1960	1941-1950	1931-1940	1921-1930	1911-1920	1901-1910	1861-1900	Pre-1861	
Scots pine	0	0	0	70	172	0	0	0	0	0	0	0	241
Corsican pine	0	0	0	386	48	0	0	0	0	0	0	0	435
Lodgepole pine	0	0	0	21	10	0	0	0	0	0	0	0	31
Sitka spruce	523	414	817	376	254	54	107	0	0	0	0	0	2,544
Norway spruce	70	0	156	106	106	0	77	21	0	0	0	0	537
European larch	0	0	0	0	21	0	0	0	0	0	0	0	21
Jap/Hybrid larch	0	43	11	155	150	148	0	0	0	0	0	0	506
Douglas fir	0	123	240	317	785	95	0	0	0	0	0	0	1,561
Other conifers	0	0	70	16	40	43	0	0	0	0	0	0	168
Mixed conifers	0	0	54	106	55	31	0	30	0	0	0	0	276
<b>Total conifers</b>	<b>592</b>	<b>580</b>	<b>1,347</b>	<b>1,553</b>	<b>1,642</b>	<b>371</b>	<b>185</b>	<b>52</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Oak	0	8	0	0	79	0	107	0	5	0	31	0	231
Beech	0	0	19	0	192	5	0	0	0	64	11	25	317
Sycamore	0	0	0	5	0	0	0	0	0	0	0	0	5
Ash	0	31	20	45	26	23	0	12	0	0	28	0	185
Birch	0	161	27	16	0	0	0	0	0	0	0	0	204
Poplar	0	0	0	0	0	0	0	0	0	0	0	0	0
Sweet chestnut	0	0	0	0	21	5	5	0	0	0	0	0	32
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Other broadleaves	11	0	0	0	8	0	0	0	0	0	0	0	18
Mixed broadleaves	0	21	11	0	11	122	5	52	133	0	61	89	505
<b>Total broadleaves</b>	<b>11</b>	<b>221</b>	<b>77</b>	<b>67</b>	<b>337</b>	<b>156</b>	<b>118</b>	<b>63</b>	<b>138</b>	<b>64</b>	<b>131</b>	<b>114</b>	<b>1,497</b>
<b>Total - all species</b>	<b>603</b>	<b>802</b>	<b>1,424</b>	<b>1,619</b>	<b>1,979</b>	<b>527</b>	<b>303</b>	<b>115</b>	<b>138</b>	<b>64</b>	<b>131</b>	<b>114</b>	<b>7,818</b>

\*Age determined from records where these were available. Where records were not available or were clearly inaccurate age-class was assigned by reference to similar crops of known age in the locality.

**High Forest Category 1 - Forestry Commission: area by planting year class**

1. Most of the planting year classes cover 10 years, 1991-1997 is 7 years, and the classes prior to 1901 are 40 years or more.

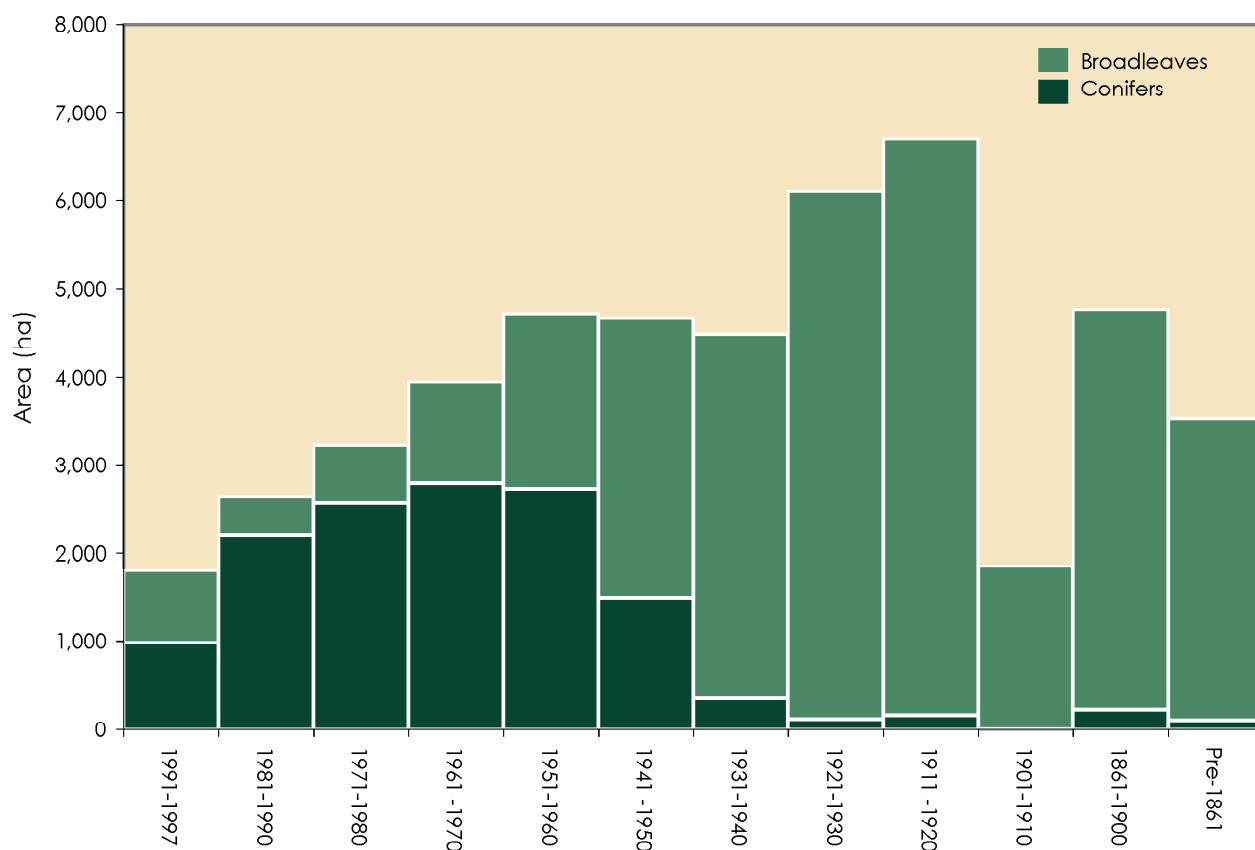
**Table 10c** High Forest Category 1 - Other ownership: area by principal species and planting year classes

Species	Planting year class*												Total (ha)
	1991-1997	1981-1990	1971-1980	1961-1970	1951-1960	1941-1950	1931-1940	1921-1930	1911-1920	1901-1910	1861-1900	Pre-1861	
Scots pine	0	31	172	57	119	95	89	68	51	0	77	0	760
Corsican pine	17	0	110	14	23	105	0	0	0	0	0	0	269
Lodgepole pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Silka spruce	107	105	729	315	87	53	9	0	0	0	0	0	1,405
Norway spruce	91	140	315	241	345	74	6	0	0	0	0	0	1,213
European larch	5	28	49	187	105	140	0	0	0	0	0	0	513
Jap/Hybrid larch	17	373	505	821	564	289	104	0	0	0	28	0	2,702
Douglas fir	738	1,017	490	448	1,089	242	94	0	0	0	87	26	4,231
Other conifers	5	419	158	341	78	119	9	0	0	0	9	41	1,176
Mixed conifers	0	92	39	378	305	373	46	45	107	0	20	37	1,443
<b>Total conifers</b>	<b>980</b>	<b>2,204</b>	<b>2,568</b>	<b>2,801</b>	<b>2,715</b>	<b>1,492</b>	<b>357</b>	<b>113</b>	<b>159</b>	<b>0</b>	<b>221</b>	<b>103</b>	<b>13,712</b>
Oak	241	142	122	180	770	682	618	898	913	239	1,549	999	7,352
Beech	27	9	0	102	49	241	26	173	138	6	504	347	1,621
Sycamore	0	94	121	81	246	226	27	32	59	17	89	0	991
Ash	40	105	38	162	342	323	236	402	192	30	231	9	2,110
Birch	17	13	146	63	119	9	78	0	6	0	0	72	524
Poplar	0	0	9	66	0	0	0	0	39	0	0	0	115
Sweet chestnut	40	17	0	35	0	28	0	0	48	0	26	65	258
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Other broadleaves	13	20	5	65	141	122	83	0	0	4	5	0	456
Mixed broadleaves	445	36	218	393	333	1,548	3,057	4,481	5,156	1,560	2,147	1,937	21,310
<b>Total broadleaves</b>	<b>823</b>	<b>436</b>	<b>659</b>	<b>1,147</b>	<b>2,000</b>	<b>3,178</b>	<b>4,124</b>	<b>5,987</b>	<b>6,550</b>	<b>1,855</b>	<b>4,549</b>	<b>3,429</b>	<b>34,735</b>
<b>Total - all species</b>	<b>1,803</b>	<b>2,640</b>	<b>3,226</b>	<b>3,947</b>	<b>4,715</b>	<b>4,669</b>	<b>4,480</b>	<b>6,100</b>	<b>6,709</b>	<b>1,855</b>	<b>4,770</b>	<b>3,532</b>	<b>48,447</b>

\*Age determined from records where these were available. Where records were not available or were clearly inaccurate age-class was assigned by reference to similar crops of known age in the locality.



## High Forest Category 1 - Other Ownership: area by planting year class



1. Most of the planting year classes cover 10 years, 1991-1997 is 7 years, and the classes prior to 1901 are 40 years or more.

**Table 11** High Forest : principal species by planting year class

Planting year class	First	%	Second	%	Third	%
1991-97	Douglas fir	29	Sitka spruce	25	Mixed broadleaves	20
1981-90	Douglas fir	28	Sitka spruce	13	Other conifers	11
1971-80	Sitka spruce	30	Douglas fir	14	Jap/Hybrid larch	10
1961-70	Jap/Hybrid larch	15	Douglas fir	12	Mixed broadleaves	11
1951-60	Douglas fir	23	Oak	13	Mixed broadleaves	10
1941-50	Mixed broadleaves	31	Oak	12	Other broadleaves	8
1931-40	Mixed broadleaves	68	Oak	13	Ash	4
1921-30	Mixed broadleaves	73	Oak	14	Ash	6
1911-20	Mixed broadleaves	77	Oak	13	Ash	3
1901-10	Mixed broadleaves	80	Oak	14	Beech	4
1861-1900	Mixed broadleaves	46	Oak	31	Beech	10
Pre 1861	Mixed broadleaves	58	Oak	26	Beech	10
<b>All years</b>	<b>Mixed broadleaves</b>	<b>40</b>	<b>Oak</b>	<b>13</b>	<b>Douglas fir</b>	<b>9</b>

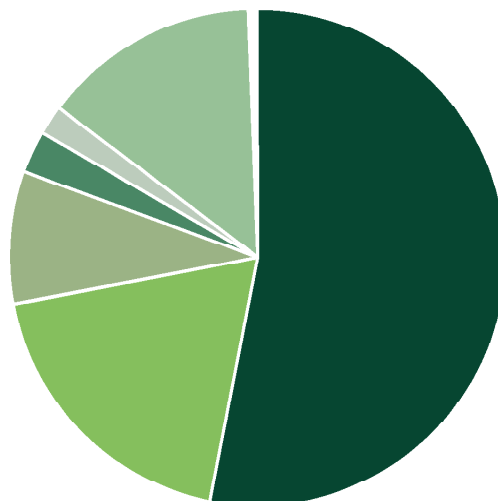
1. Principal species as a percentage of area in the planting year class.

**Table 12** Ownership type\* by area and percentage

Ownership type	Area (ha)	%
Personal	34,078	53.1
Business	12,075	18.8
Forestry or timber business	0	0.0
Charity	5,532	8.6
Local Authority	1,785	2.8
Other public (not FC)	1,281	2.0
Forestry Commission	9,053	14.1
Community ownership or common land	81	0.1
Unidentified	304	0.5
<b>Total</b>	<b>64,188</b>	<b>100.0</b>

\* This table is produced from data contributed on a voluntary basis by owners or their representatives.

#### Ownership type by area





# RESULTS FROM THE SURVEY OF SMALL WOODLAND AND TREES (SSWT)

## Survey Method

The land area of England was stratified into coastal and inland 1 km x 1 km squares and a random sample of 1 km<sup>2</sup> plots were then selected, representing around 1% of the land area. 1:25 000 scale aerial photos were then used to identify features in each sample square. Each 1 km<sup>2</sup> was then divided into 16 parts, and two of these were selected at random for field data collection. Data was collected on Small Woodlands (0.10 - <2.00 ha), Linear Features, Groups and Individual Trees. The survey did not collect information from areas of developed land of 2 hectares or more.

Table 13:	Summary of information from the Survey of Small Woodland and Trees
Table 14:	Woodland area by feature type and woodland size
Table 15:	Numbers of live trees outside woodland by species and feature type
Table 16 :	Numbers of dead trees outside woodland by species and feature type
Table 17:	Numbers of live trees outside woodland by species and height band
Table 18:	Numbers of Groups by group size

*Note: The figures in many of the tables may not add due to rounding*



**Table 13** Summary of information from the Survey of Small Woodlands and Trees

Feature type	Number of features	Total	Unit
Small Woods	1,801	1,081	Area (ha)
Wide Linear Features	4,402	1,392	Area (ha)
Wide Linear Features	4,402	571	Length (Km)
Narrow Linear Features	58,900	5,089	Length (Km)
Narrow Linear Features	58,900	5,918,900	Number of live trees
Groups	155,100	1,589,500	Number of live trees
Individual Trees	123,300	123,300	Number of live trees

1. See Glossary for definitions of feature types.

**Table 14** Woodland area by feature type and woodland size

Feature type	Woodland size (ha)		Total area (ha)	Number of features	Mean size (ha)
	0.1 - <0.25	0.25 - <2.0			
Small Woods	54	1,027	1,081	1,801	0.60
Wide Linear Features	143	1,249	1,392	4,402	0.32
<b>Total</b>	<b>197</b>	<b>2,276</b>	<b>2,473</b>	<b>6,203</b>	<b>0.40</b>

1. See Glossary for definitions of feature types.

Species	Feature type				Total live trees	Percent of total trees	
	Boundary Trees	Middle Trees	Groups	Narrow Linear Features		Category	Species
Pine	1.6	5.4	3.9	2.8	13.7	16.4	0.2
Spruce	0.0	0.0	0.0	4.4	4.4	5.3	0.1
Larch	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	0.8	0.0	3.1	0.0	3.9	4.7	0.1
Other conifers	3.1	3.9	27.1	27.5	61.6	73.7	0.8
Total conifers	5.4	9.3	34.1	34.7	83.6	100.0	1.1
Oak	41.9	10.1	136.5	630.5	819.0	10.8	10.7
Beech	8.5	1.6	108.6	730.1	848.8	11.2	11.1
Sycamore	3.1	0.0	205.5	472.1	680.7	9.0	8.9
Ash	16.3	3.1	252.8	572.7	844.9	11.2	11.1
Birch	1.6	3.9	21.7	74.3	101.5	1.3	1.3
Poplar	0.8	0.0	7.8	0.0	8.6	0.1	0.1
Sweet chestnut	0.0	0.8	0.0	0.0	0.8	0.0	0.0
Horse chestnut	0.8	0.0	0.0	0.6	1.4	0.0	0.0
Alder	0.8	0.0	36.4	102.9	140.1	1.9	1.8
Lime	0.0	0.8	3.1	5.5	9.4	0.1	0.1
Elm	3.9	0.0	180.7	228.9	413.5	5.5	5.4
Willow	0.8	0.0	344.3	1220.9	1566.0	20.7	20.5
Other broadleaves	7.0	3.1	258.2	1845.9	2114.2	28.0	27.7
Total broadleaves	85.3	23.3	1555.4	5884.3	7548.9	100.0	98.9
Total - all species	90.7	32.6	1589.5	5918.9	7631.7		100.0

- Percentages  
  
Category : species percentage of conifer or broadleaved.  
Species : percentage of all species.
- The standard errors of the total tree number estimates for these feature types are:  
  

Individual Trees	14%
Groups	19%
Narrow Linear Features	26%
- See Glossary for definitions of feature types.



**Table 16** Numbers of dead trees outside woodland by species and feature type (000's trees)

Species	Feature type				Total dead trees	Percent of total trees	
	Boundary Trees	Middle Trees	Groups	Narrow Linear Features		Category	Species
Pine	0.0	0.8	0.0	0.0	0.8	26.7	4.0
Spruce	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Larch	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other conifers	0.8	0.0	0.8	0.6	2.2	73.3	11.1
<b>Total conifers</b>	<b>0.8</b>	<b>0.8</b>	<b>0.8</b>	<b>0.6</b>	<b>3.0</b>	<b>100.0</b>	<b>15.1</b>
Oak	0.0	0.0	0.8	0.0	0.8	4.7	4.0
Beech	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sycamore	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ash	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Poplar	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sweet chestnut	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Horse chestnut	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alder	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lime	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elm	0.0	0.0	8.5	7.7	16.2	95.3	81.4
Willow	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other broadleaves	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total broadleaves</b>	<b>0.0</b>	<b>0.0</b>	<b>9.3</b>	<b>7.7</b>	<b>17.0</b>	<b>100.0</b>	<b>85.4</b>
<b>Total - all species</b>	<b>0.8</b>	<b>0.8</b>	<b>10.1</b>	<b>8.3</b>	<b>19.9</b>		<b>100.0</b>

1. See Glossary for definitions of feature types.

**Table 17** Numbers of live trees outside woodland by species and height band (000's trees)

Species	Height band (m)				Total live trees
	2-5	5-15	15-20	>20	
Pine	0.0	6.0	7.1	0.6	13.7
Spruce	0.0	3.9	0.6	0.0	4.5
Larch	0.0	0.0	0.0	0.0	0.0
Cypress	3.1	0.8	0.0	0.0	3.9
Other conifers	0.8	19.8	32.5	8.5	61.6
<b>Total conifers</b>	<b>3.9</b>	<b>30.5</b>	<b>40.2</b>	<b>9.1</b>	<b>83.7</b>
Oak	15.7	550.2	220.6	32.5	819.0
Beech	5.4	696.7	127.4	19.2	848.7
Sycamore	0.8	483.7	196.1	0.0	680.6
Ash	21.4	662.7	156.2	4.7	845.0
Birch	8.4	74.3	18.7	0.0	101.4
Poplar	0.0	0.0	8.5	0.0	8.5
Sweet chestnut	0.0	0.0	0.0	0.8	0.8
Horse chestnut	0.0	0.0	1.3	0.0	1.3
Alder	0.0	104.9	35.2	0.0	140.1
Lime	0.0	2.7	6.0	0.8	9.5
Elm	7.0	395.0	10.7	0.8	413.5
Willow	40.8	1,497.5	27.6	0.0	1,565.9
Other broadleaves	1,032.0	1,043.9	38.2	0.0	2,114.1
<b>Total broadleaves</b>	<b>1,131.5</b>	<b>5,511.6</b>	<b>846.5</b>	<b>58.8</b>	<b>7,548.4</b>
<b>Total - all species</b>	<b>1,135.3</b>	<b>5,542.0</b>	<b>886.7</b>	<b>67.8</b>	<b>7,631.7</b>

**Table 18** Number of Groups by group size

Number of trees per Group*	Number of Groups (000's)
2	11
3-5	44
6-10	37
11-20	38
21-50	19
51-100	5
>100	1
<b>Total</b>	<b>155</b>

\*The size of the group is determined by the total number of trees, live plus dead.



## COMPARISON OF RESULTS WITH THE 1980 CENSUS AND PREVIOUS SURVEYS

### Survey Method

The 1980 Census and 1997 Inventory were undertaken using very different sampling methods.

Inventory practice and technology have moved on since the 1980 Census; this has led to changes in sampling methodology, scope and woodland definitions. For example, the Main Woodland Survey used the digital woodland map, created from aerial photos as a basis for sampling whereas the 1980 Census relied only on the woodland shown on the 1:50,000 Ordnance Survey map. Also in contrast to the 1980 Census, the Survey of Small Woodland and Trees did not record information within developed land e.g. residential or industrial areas of 2 or more hectares.

Where possible adjustments have been made to both the 1980 Census and the Inventory to achieve the nearest available comparison. The apparent changes indicated in the following tables and charts should therefore be treated with caution, particularly where areas are small.

Table 19:	Comparison of woodland area between 1980 Census and 1997 Inventory
Table 20:	Comparison of High Forest area by species between 1980 Census and 1997 Inventory
Chart:	Comparison of High Forest area by species between 1980 Census and 1997 Inventory
Table 21:	Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1997 Inventory
Chart:	Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1997 Inventory
Table 22:	Comparison of numbers of live trees outside woodland between 1980 Census and 1997 Inventory
Table 23:	Comparison of density of non-woodland features between 1980 Census and 1997 Inventory

### Woodland cover

Chart	Change in woodland cover through time (1890 – 2000)
Maps:	Woodland by county through time (1895 – 1998)

*Note: The figures in many of the tables may not add due to rounding*



**Table 19** Comparison of woodland area between 1980 Census and 1997 Inventory

Woodland size (ha)	1980 Census woodland area		1997 Inventory woodland area		Change (%)
	(ha)	(%)	(ha)	(%)	(%)
2.0 or more	48,998	91.1	64,188	96.6	31
0.25 - <2.0	4,815	8.9	2,276	3.4	-53
<b>Total</b>	<b>53,813</b>		<b>66,464</b>		<b>24</b>
<b>% Woodland land cover</b>	<b>8.0</b>		<b>9.9</b>		

1. Differences in sampling methodology may account for some of the apparent differences.
2. The above figures from the 1997 Inventory exclude woodland between 0.1 and <0.25 ha, thereby matching the scope of the 1980 Census. The 1997 figures above will therefore not match those in the previous sections of the report.
3. Land area used to calculate woodland cover percent (1997), 670,961 ha, was based on the 1991 Census of Population digital boundaries.
4. Land area used to calculate woodland cover percent (1980), 671,087 ha, (Ordnance Survey data)

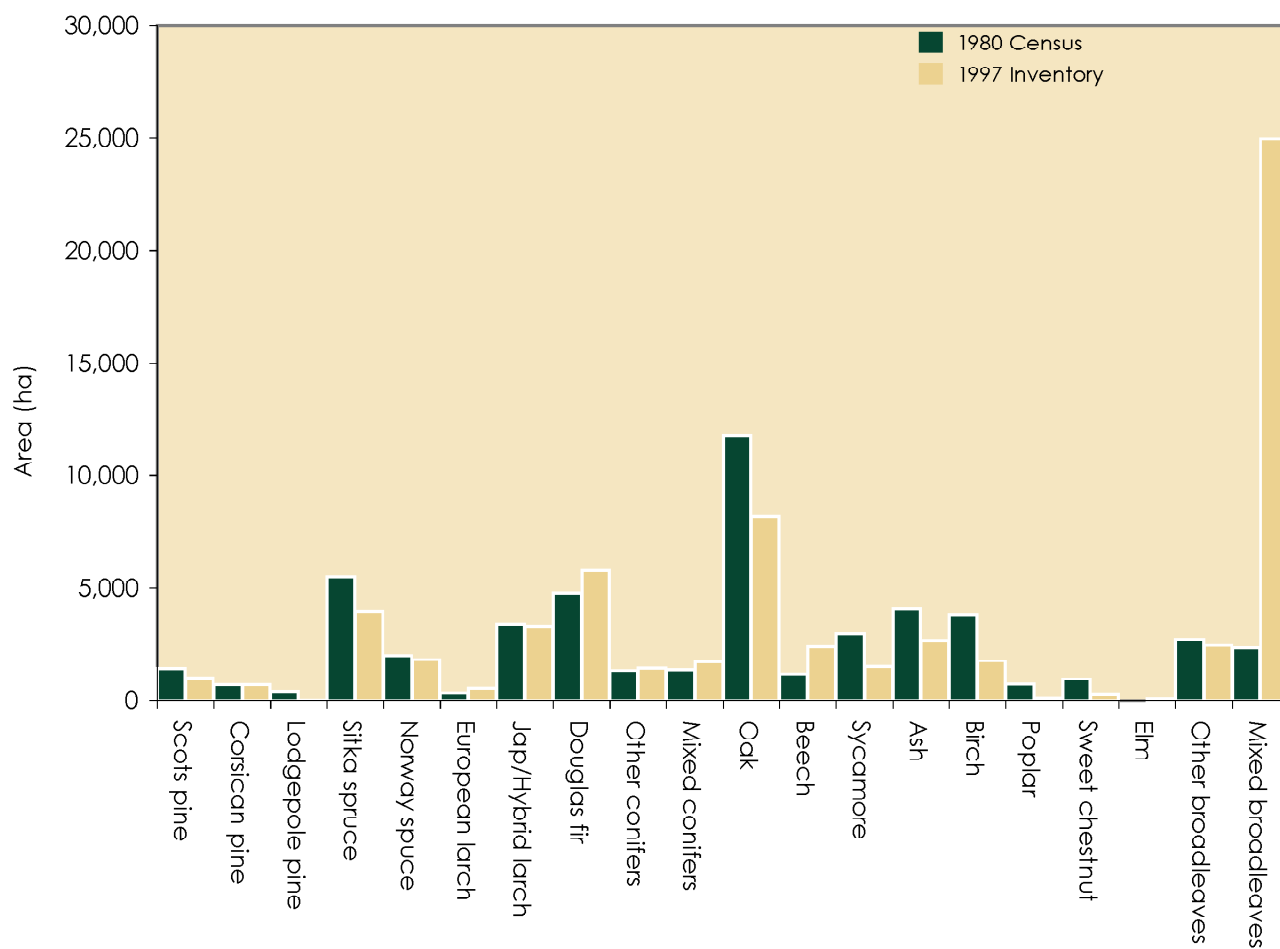
**Table 20** Comparison of High Forest area by species between 1980 Census and 1997 Inventory

Species	1980 Census woodland area (ha)	1997 Inventory woodland area (ha)	Change (%)
Scots pine	1,416	1,011	-29
Corsican pine	701	703	0
Lodgepole pine	385	39	-90
Sitka spruce	5,530	3,955	-28
Norway spruce	2,027	1,823	-10
European larch	337	534	59
Jap/Hybrid larch	3,397	3,298	-3
Douglas fir	4,783	5,792	21
Other conifers	1,340	1,447	8
Mixed conifers	1,351	1,733	28
<b>Total conifers</b>	<b>21,267</b>	<b>20,335</b>	<b>-4</b>
Oak	11,813	8,186	-31
Beech	1,183	2,414	104
Sycamore	2,987	1,507	-50
Ash	4,060	2,661	-34
Birch	3,816	1,767	-54
Poplar	742	115	-84
Sweet chestnut	962	297	-69
Elm	5	84	1606
Other broadleaves	2,726	2,466	-10
Mixed broadleaves	2,349	24,970	963
<b>Total broadleaves</b>	<b>30,643</b>	<b>44,467</b>	<b>45</b>
<b>Total all species</b>	<b>51,910</b>	<b>64,802</b>	<b>25</b>
<b>Felled</b>	<b>980</b>	<b>451</b>	<b>-54</b>
<b>Total High Forest</b>	<b>52,890</b>	<b>65,253</b>	<b>23</b>

1. Differences in sampling methodology may account for some of the apparent differences.
2. In the 1980 Census the areas assigned to species included any associated open space such as roads and rides. In the Inventory open spaces are separately identified and the overall proportion is 1.5% (Table 2). To obtain meaningful comparisons between the two datasets the 1980 Census data have therefore been reduced by 1.5%.
3. The above figures from the 1997 Inventory exclude woodland between 0.1 and <0.25 ha, thereby matching the scope of the 1980 Census. The 1997 figures above will therefore not match those in the previous sections of the report.
4. The 1980 figures include scrub to enable comparison



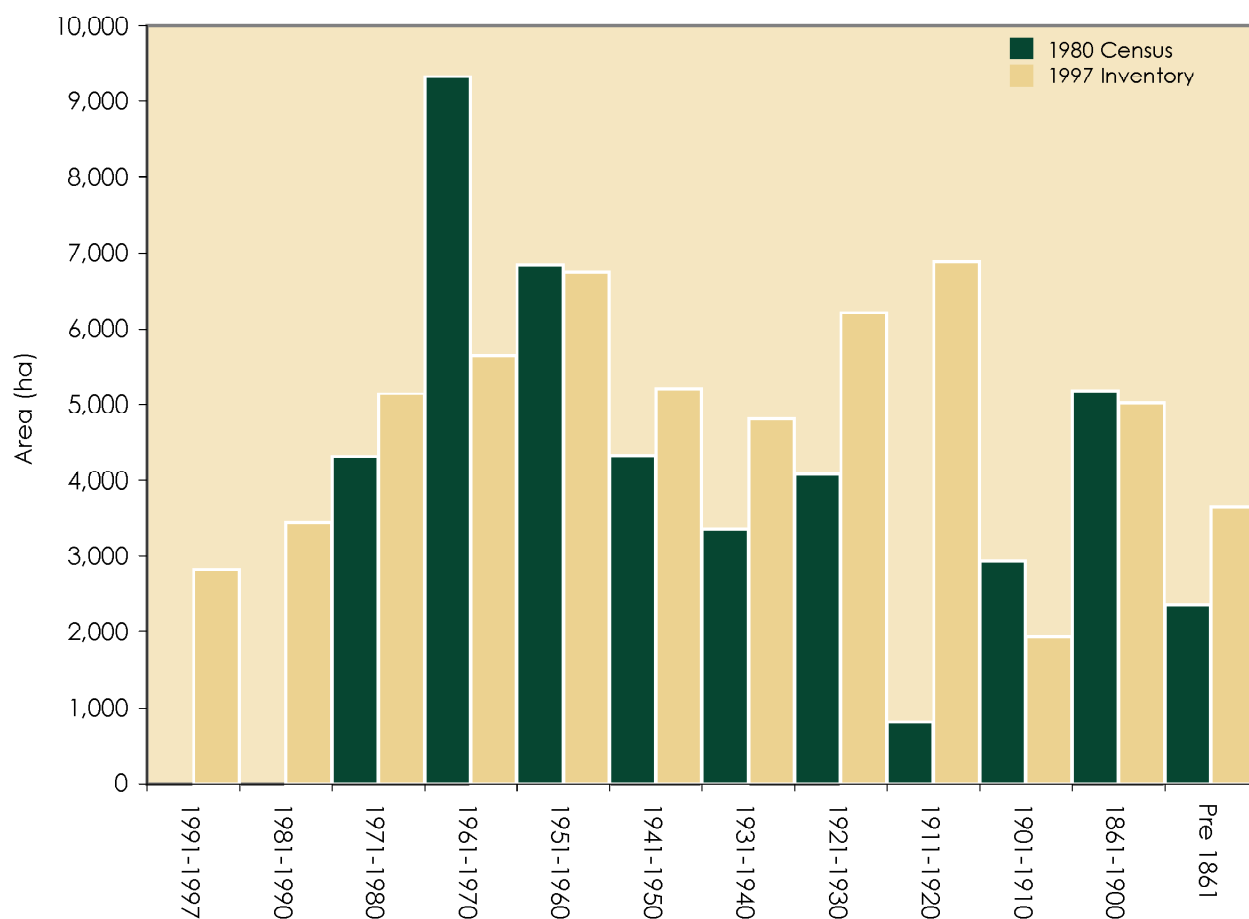
Comparison of High Forest area by species between 1980 Census and 1997 Inventory



**Table 21** Comparison of High Forest Category 1 area by planting year class  
between 1980 Census and 1997 Inventory

Planting year class	1980 Census woodland area (ha)	1997 Inventory woodland area (ha)	Change (%)
1991-1997	0	2,820	see note
1981-1990	0	3,442	see note
1971-1980	4,314	5,146	19
1961-1970	9,322	5,638	-40
1951-1960	6,841	6,748	-1
1941-1950	4,323	5,213	21
1931-1940	3,358	4,816	43
1921-1930	4,082	6,214	52
1911-1920	812	6,883	748
1901-1910	2,927	1,936	-34
1861-1900	5,188	5,027	-3
Pre 1861	2,368	3,646	54
<b>Total all years</b>	<b>43,535</b>	<b>57,529</b>	<b>32</b>

1. The first two classes, 1991-1997 and 1981-1990, cover the period since the 1980 Census and no comparison is therefore available.
2. The definition of High Forest Category 1 in the Inventory does not fully coincide with High Forest as defined in the 1980 Census.

**Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1997 Inventory**

**Table 22** Comparison of numbers of live trees outside woodland between 1980 Census and 1997 Inventory (000's)

Feature type	1980 Census	1997 Inventory	Change (%)
Boundary Tree	526	92	-82
Middle Tree	312	31	-90
Total Individual Trees	838	123	-85
Groups	3,292	1,390	-58
Linear Features	3,161	4,142	31
<b>Total</b>	<b>7,291</b>	<b>5,656</b>	<b>-22</b>

1. The Survey of Small Woodland and Trees did not record information referring to tree features (I.e. Individual trees, Groups and Narrow Linear Features) within developed land.
2. In the 1980 Census hazel, hawthorn, blackthorn and goat willow were excluded, the 1997 Inventory figures have been adjusted accordingly. The 1997 figures above will therefore not match those in the previous sections of the report.
3. Changes stated in this table are indicative only. Even with adjustments to the 1997 Inventory, the two surveys are not directly comparable - 1980 used 7cm diameter at breast height, and 1997 used 2m height, as minimum criteria for inclusion.
4. See Glossary for definitions of feature type.

**Table 23** Comparison of density of non-woodland features between 1980 Census and 1997 Inventory

Feature type	1980 Census	1997 Inventory	Change (%)
Individual Trees (per sq km)	124.8	18.4	-85
Groups (per sq km)	61.5	21.6	-65
Linear Features (m per sq km)	783.8	753.7	-4

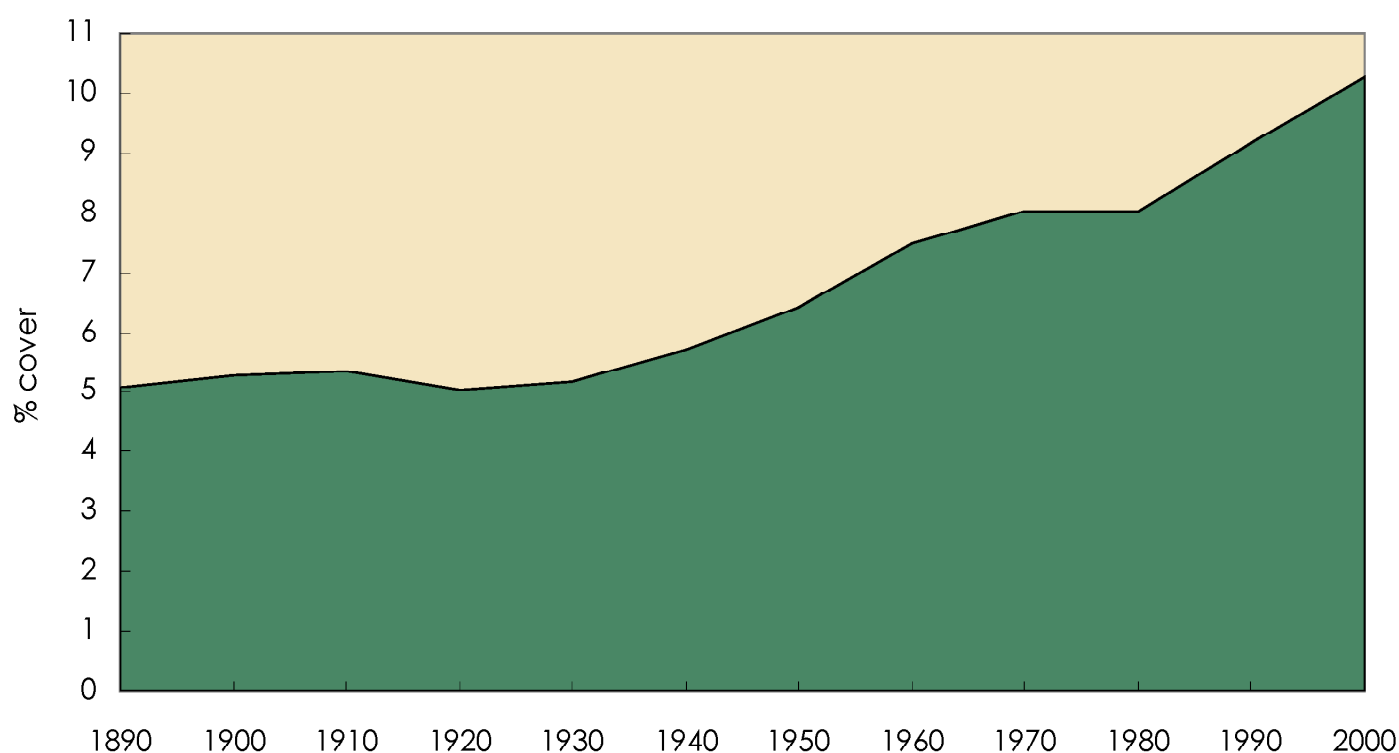
1. The Survey of Small Woodland and Trees did not record information referring to tree features (I.e. Individual trees, Groups and Narrow Linear Features) within developed land.
2. In the 1980 Census hazel, hawthorn, blackthorn and goat willow were excluded, the 1997 Inventory figures have been adjusted accordingly. The 1997 figures above will therefore not match those in the previous sections of the report.
3. Changes stated in this table are indicative only. Even with adjustments to the 1997 Inventory, the two surveys are not directly comparable - 1980 used 7cm diameter at breast height, and 1997 used 2m height, as minimum criteria for inclusion.
4. See Glossary for definitions of feature type.

## WOODLAND COVER

Woodland area data is available from Ministry of Agriculture surveys since 1871, and from Forestry Commission national woodland inventories since 1924. The following chart and maps show the changes in woodland area through time.

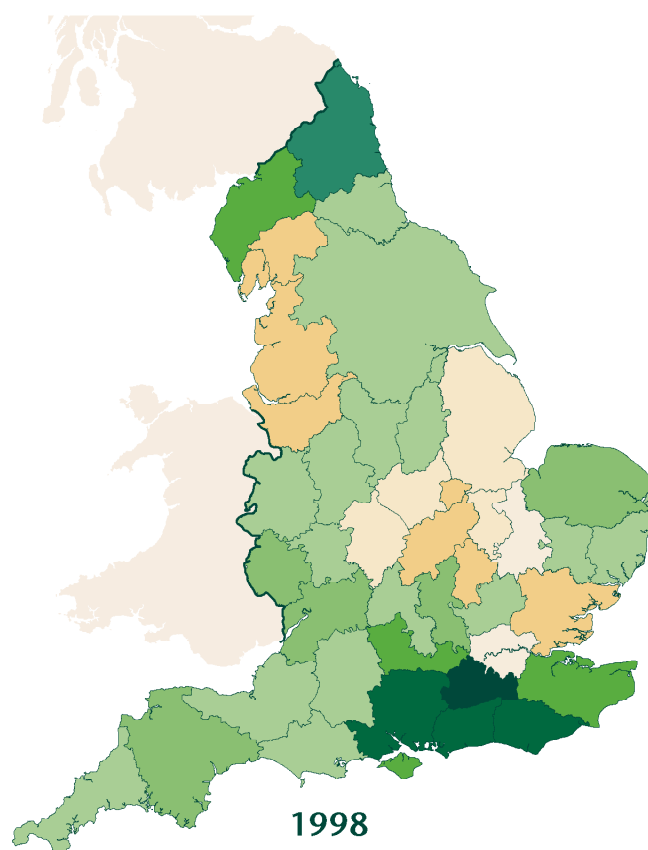
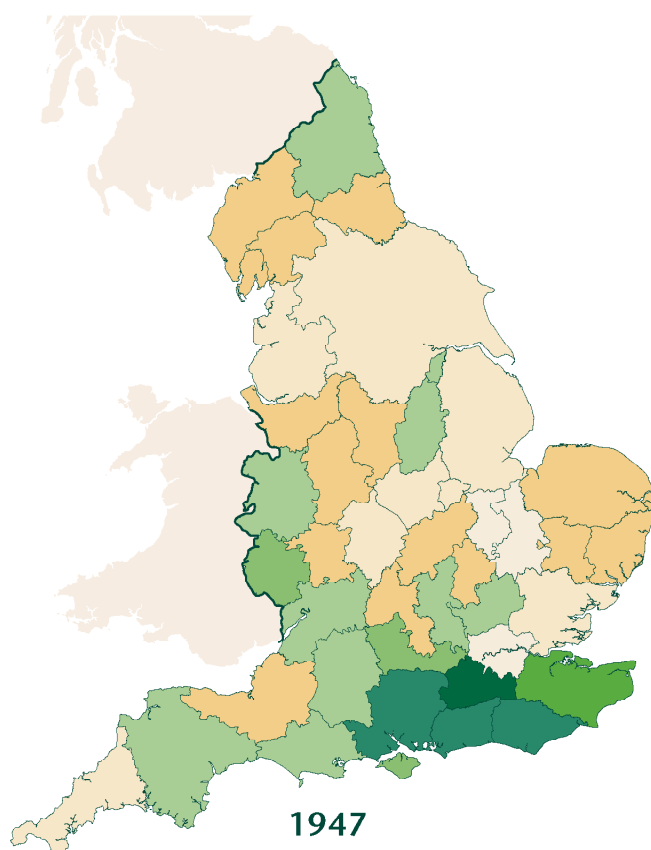
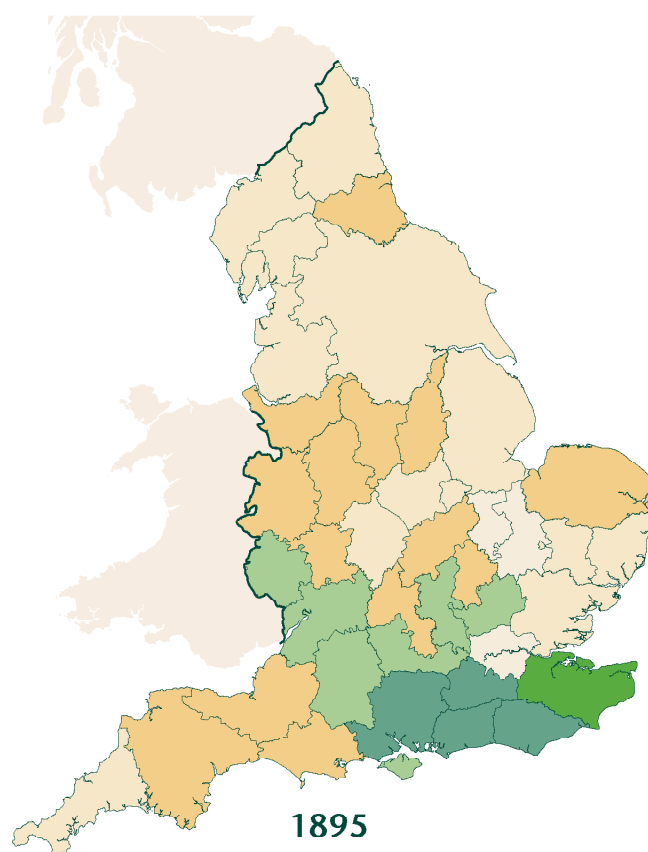
The maps use the old County structure data of England, as reported on in 1895 and 1947. The data from these counties could not be re-worked for different geographic areas. In contrast, the digital woodland map, which forms the basis of the current inventory, can be analysed for any geographic area.

### Change in county woodland cover through time (1890 – 2000)



**Map 5 Woodland Cover in England by County through time (1895–1998)****% woodland cover**

0–1.9	12–13.9
2–3.9	14–15.9
4–5.9	16–17.9
6–7.9	18–19.9
8–9.9	20–21.9
10–11.9	22–23.9



# GLOSSARY

## Woodland

In the United Kingdom woodland is defined as land with a minimum area of 0.1 ha under stands of trees with, or the potential to achieve, tree crown cover of more than 20%. Areas of open space integral to the woodland are also included. Orchards and urban woodland between 0.1 and 2 ha are excluded. Intervening land-classes such as roads, rivers or pipelines are disregarded if less than 50m in extent. 'Scrubby' vegetation is not included as a separate category but as Conifer, Broadleaved or Mixed tree types. There is additional information on the quality of woodland within the inventory database.

Woodland of 2 ha and over, and with a minimum width of 50m, is included in the Main Woodland Survey; other woodland and trees are assessed in the Survey of Small Woodland and Trees.

## Interpreted Forest Types

The woodland map derived from aerial photographs is differentiated into Interpreted Forest Types (IFTs) which are: Conifer, Broadleaved, Mixed, Coppice, Coppice-with-Standards, Shrubs, Young Trees, Ground Prepared for Planting and Felled. Note that forest types (see below) based on ground survey data are used for reporting purposes because they are more reliable.

## High Forest

All woodland except stands managed as Coppice or Coppice-with-Standards with, or with the potential to achieve a tree cover of more than 20%. Two categories of High Forest are recognised:

- **High Forest Category 1**  
Stands which are, or could become, capable of producing wood of a size and quality suitable for sawlogs.
- **High Forest Category 2**  
Stands of lower quality than High Forest Category 1.

## Mixtures

Where possible the species in mixtures have been separately recorded. Where this has not been possible they were described as 'Mixed conifers' or 'Mixed broadleaves'.

## Forest Types

- **Conifer**  
Woodland containing more than 80% by area of coniferous species.
- **Broadleaved**  
Woodland containing more than 80% by area of broadleaved species.
- **Mixed**  
A combination of broadleaved and coniferous species where each category occupies at least 20% of the canopy (see note on mixtures above.)

- **Coppice**

Crops of marketable broadleaved species that have at least 2 stems per stool and are either being worked or are capable of being worked on rotation. With the exception of hazel coppice more than half the stems should be capable of producing 1m timber lengths of good form.

- **Coppice with Standards**

Two-storey stands where the overstorey consists of at least 25 stems per ha that are older than the understorey of worked coppice by at least one coppice rotation.

- **Felled**

Woodland areas that have been felled or stands where the stocking has been reduced to less than 20% and where it is expected that these areas will be replanted.

- **Windblow**

Areas of blown woodland which remain uncleared and not regenerated.

- **Open Space**

Areas within a woodland that are not covered by trees but are integral to the woodland such as open areas, streamsides, deer glades, rides and forest roads.

### Ownership types

- **Other Ownership**

Woodland other than that owned by, or leased to, the Forestry Commission

- **Personal**

types of private occupation, e.g. individuals, private family trusts and family partnerships.

- **Private forestry or timber business**

owned by wood processing industry. This category does not include forest management companies.

- **Other private business**

occupiers, e.g. companies, partnerships, syndicates and pension funds.

- **Local Authority**

Region, County, District or other Council

- **Other public bodies (not FC)**

Government department/agency, nationalised industry, etc.

- **Charitable organisations**

organisations funded by voluntary public subscription, e.g. National Trust, churches and colleges.



**- Community ownership or common land**

the common property of all members of the community.

- **Forestry Commission**

Land owned by or land leased to the Forestry Commission

**Feature types**

- **Small Wood**

A woodland with an area of 0.1 ha or over but less than 2 ha.

- **Group**

A group containing two or more trees with an area less than 0.1ha.

- **Individual Tree**

A tree the crown of which has no contact with any other tree crown and which is at least 2m tall. Two types of individual tree are recognised:

- Boundary Tree (an Individual Tree on any boundary)
- Middle Tree (an Individual Tree not on a boundary)

- **Linear Feature**

A feature with a length of 25 m or more, and one which is at least four times as long as it is broad. It can be up to 50m wide or as narrow as a single line of trees. Two types of Linear Features are recognised:

- Narrow Linear Features (with a width of 1.6 m or less)
- Wide Linear Features (with a width greater than 1.6 m)

## NOTES



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