



# **NATIONAL INVENTORY OF WOODLAND AND TREES**



## **ENGLAND**

**County Report for**

**ESSEX**



**Forestry Commission**

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## ACKNOWLEDGEMENTS

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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 Essex 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 Essex 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 With the statistics becoming increasingly out of date the Forestry Commission decided to undertake a new survey: the *National Inventory of Woodland and Trees*.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 Essex is 19,455 hectares. This represents 5.3% of the land area. (Table 1)
- Broadleaved woodland is the dominant forest type representing 80.1 % of all woodland. Conifer woodland represents 6.4 %, Mixed woodland 7.8 % and Open Space within woodlands 3.0 %. (Table 2)
- The main conifer species is pine covering 1,084 hectares or 57.5 % of all conifer species. The main broadleaved species is oak covering 5,091 hectares or 30.9 % of all broadleaved species. (Table 3)
- 467 hectares or 3 % of woodland over 2 hectares is owned by or leased to the Forestry Commission, and 14,954 hectares or 97 % of woodland is in Other ownership. (Table 6)
- There are a total of 1,462 woods over 2 ha within Essex with a mean wood area of 10.6 hectares. (Table 7a) There are a total of 7,300 woods from 0.1 - <2.0 hectares with a mean wood area of 0.55 hectares. (Table 14)
- There are 1.5 million live trees outside woodland in Essex. (Table 15)
- Woodland land cover increased by over 4,100 hectares from 4.1 % to 5.2 % of the land area between 1980 and 1998. (Table 19)
- The area of broadleaves increased by 48 % between 1980 and 1998, with the relative proportion of broadleaves to conifers increasing from 84 % to 90 %. (Table 20)

### INVENTORY REPORTS

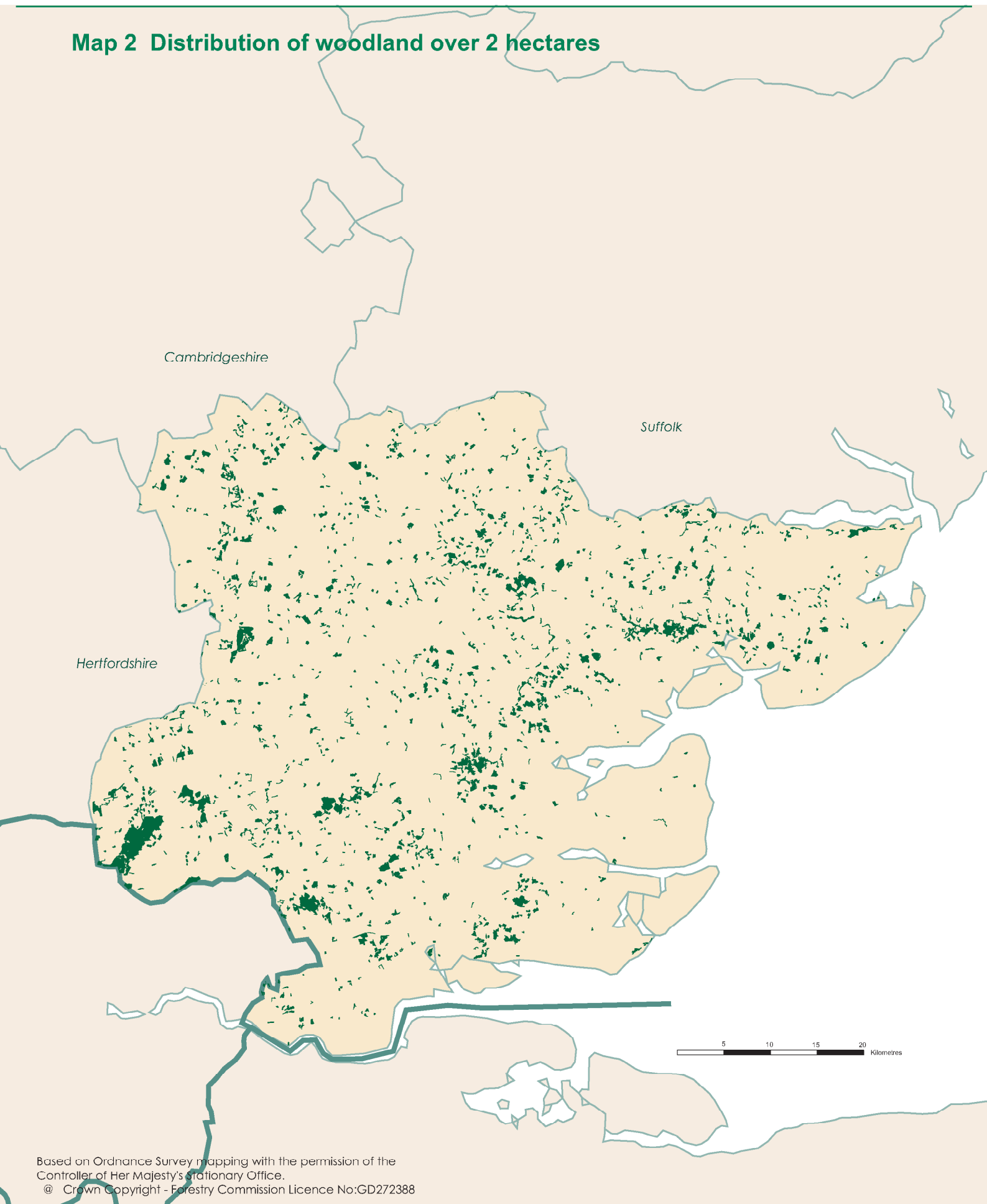
As well as this report for Essex, reports are available for the other counties in the region as shown on the map opposite. Also available are region and county reports for England as well as a report for the country as a whole. Wales and Scotland are also covered by reports.



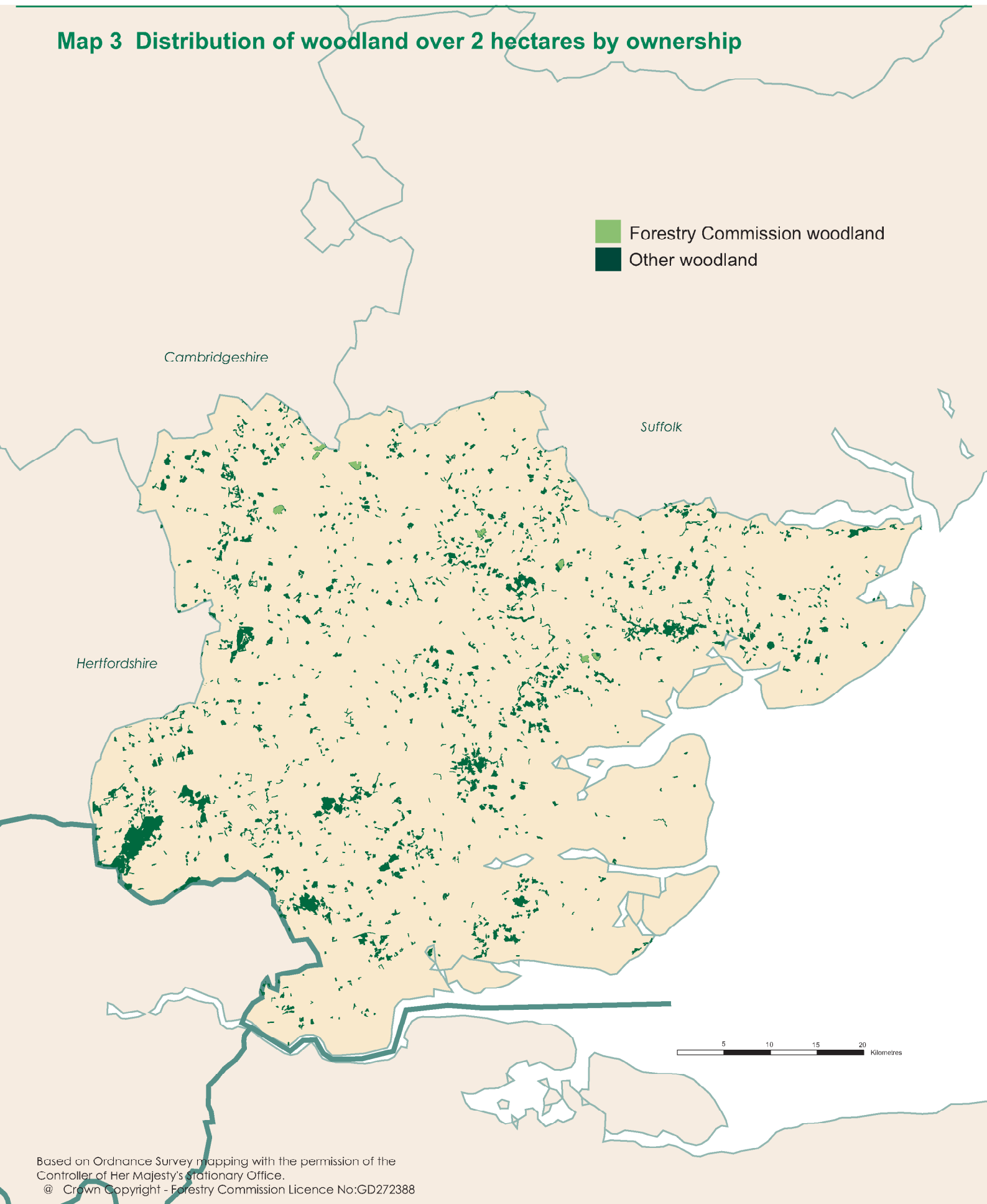
## Map 1 Regional and county boundaries



## Map 2 Distribution of woodland over 2 hectares



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



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



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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 Essex.

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	15,421	79.3
0.25 - < 2.00	3,689	19.0
0.10 - < 0.25	346	1.8
<b>Total area of woodland</b>	<b>19,455</b>	<b>100.0</b>
<b>% Woodland land cover</b>	<b>5.3</b>	

1. Area of Essex, including inland water, 367,344 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	823	422	1,245	6.4
Broadleaved	12,442	3,132	15,574	80.1
Mixed	1,158	365	1,523	7.8
Coppiced	88	0	88	0.5
Copp-w-standards	345	96	441	2.3
Windblow	0	0	0	0.0
Felled	0	0	0	0.0
Open Space	564	19	583	3.0
<b>Total</b>	<b>15,421</b>	<b>4,034</b>	<b>19,455</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	787	297	1,084	57.5	5.9
Sitka spruce	0	0	0	0.0	0.0
Larch	144	58	202	10.7	1.1
Other conifers	328	231	559	29.6	3.0
Mixed conifers	40	0	40	2.1	0.2
<b>Total conifers</b>	<b>1,300</b>	<b>586</b>	<b>1,886</b>	<b>100.0</b>	<b>10.3</b>
Oak	4,380	711	5,091	30.9	27.8
Beech	740	77	817	5.0	4.5
Sycamore	600	115	715	4.3	3.9
Ash	1,713	355	2,068	12.6	11.3
Birch	1,093	10	1,103	6.7	6.0
Elm	308	48	356	2.2	1.9
Other broadleaves	3,675	1,162	4,837	29.4	26.4
Mixed broadleaves	614	855	1,469	8.9	8.0
<b>Total broadleaves</b>	<b>13,124</b>	<b>3,333</b>	<b>16,457</b>	<b>100.0</b>	<b>89.7</b>
<b>Total all species***</b>	<b>14,423</b>	<b>3,919</b>	<b>18,342</b>		<b>100.0</b>

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

\*\*Species/group percentage of all species

\*\*\*Excludes the 1,112ha 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	11%
Broadleaves	3%
Pine	17%
Oak	6%
Ash	11%
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	39,000	284,900	7	78
Narrow Linear Features	20,400	1,141,100	56	311
Individual Trees	77,100	77,100	1	21
<b>Total</b>		<b>1,503,100</b>		<b>409</b>

1. Land area used to calculate tree density 367,344ha 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	52%
Narrow Linear Features	29%
Individual Trees	22%
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	0	0	0
Narrow Linear Features	20,400	2,206	600
<b>Total</b>		<b>2,206</b>	<b>600</b>

1. Land area used to calculate feature density 367,344ha 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	-
Narrow Linear Features	27%
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

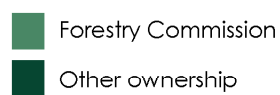
*Note: The figures in many of the tables may not add due to rounding*



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

Ownership	ha	% woodland
Forestry Commission	467	3
Other	14,954	97
<b>Total area of woodland</b>	<b>15,421</b>	<b>100</b>

1. Woodland area from aerial photographic interpretation map updated to 31 March 1998
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	1,147	4,962	32	4.3
10 - <20	180	2,559	17	14.2
20 - <50	96	2,828	18	29.5
50 - <100	23	1,529	10	66.5
<b>&lt;100</b>	<b>1,446</b>	<b>11,879</b>	<b>77</b>	<b>8.2</b>
<b>100 - &lt;500</b>	<b>15</b>	<b>2,598</b>	<b>17</b>	<b>173.2</b>
<b>500 and &gt;</b>	<b>1</b>	<b>973</b>	<b>6</b>	<b>973.4</b>
<b>All woods</b>	<b>1,462</b>	<b>15,451</b>	<b>100</b>	<b>10.6</b>

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

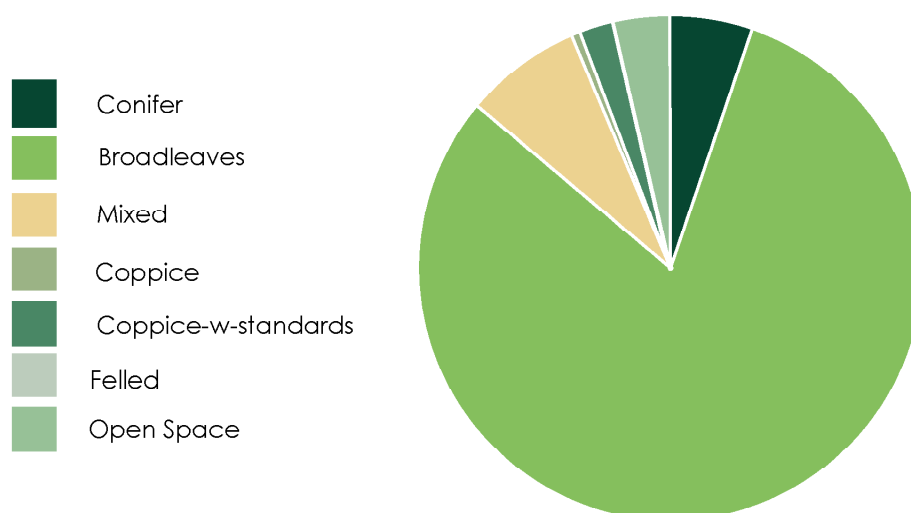
Size class (ha)	FC or Other	Number of woods	Total area (ha)	Percent of total area	Mean wood area (ha)
<10	FC	2	2	0	1.7
	O	1,157	4,981	32	4.3
10 - <20	FC	1	16	0	16.1
	O	180	2,555	17	14.2
20 - <50	FC	3	123	1	40.8
	O	96	2,820	18	29.4
50 - <100	FC	5	327	2	65.4
	O	16	1,056	7	66.0
<100	FC	11	467	3	42.5
	O	1,449	11,412	74	7.9
100 - <500	FC	0	0	0	0.0
	O	15	2,598	17	173.2
500 and >	FC	0	0	0	0.0
	O	1	973	6	973.4
<b>Total</b>	<b>FC</b>	<b>11</b>	<b>467</b>	<b>3</b>	<b>42.5</b>
	<b>O</b>	<b>1,465</b>	<b>14,984</b>	<b>97</b>	<b>10.2</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 30 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	222	47.5	601	4.0	823	5.3
Broadleaved	143	30.6	12,299	82.2	12,442	80.7
Mixed	100	21.4	1,059	7.1	1,158	7.5
Coppice	0	0.0	88	0.6	88	0.6
Copp-w-Stds	0	0.0	345	2.3	345	2.2
Windblow	0	0.0	0	0.0	0	0.0
Felled	0	0.0	0	0.0	0	0.0
Open Space	2	0.4	562	3.8	564	3.7
<b>Total</b>	<b>467</b>	<b>100.0</b>	<b>14,954</b>	<b>100.0</b>	<b>15,421</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	119	46	26	285	27	2	404	31	3
Corsican pine	108	42	23	275	26	2	383	29	3
Lodgepole pine	0	0	0	0	0	0	0	0	0
Sitka spruce	0	0	0	0	0	0	0	0	0
Norway spruce	0	0	0	105	10	1	105	8	1
European larch	0	0	0	0	0	0	0	0	0
Jap/Hybrid larch	0	0	0	144	14	1	144	11	1
Douglas fir	10	4	2	40	4	0	50	4	0
Other conifers	18	7	4	155	15	1	173	13	1
Mixed conifers	3	1	1	37	4	0	40	3	0
<b>Total conifers</b>	<b>259</b>	<b>100</b>	<b>56</b>	<b>1,041</b>	<b>100</b>	<b>7</b>	<b>1,300</b>	<b>100</b>	<b>9</b>
Oak	23	11	5	4,357	34	31	4,380	33	30
Beech	28	14	6	712	6	5	740	6	5
Sycamore	16	8	3	584	5	4	600	5	4
Ash	47	23	10	1,667	13	12	1,713	13	12
Birch	64	31	14	1,028	8	7	1,093	8	8
Poplar	0	0	0	207	2	1	207	2	1
Sweet chestnut	0	0	0	400	3	3	400	3	3
Elm	0	0	0	308	2	2	308	2	2
Other broadleaves	3	1	1	3,066	24	22	3,068	23	21
Mixed broadleaves	25	12	5	589	5	4	614	5	4
<b>Total broadleaves</b>	<b>206</b>	<b>100</b>	<b>44</b>	<b>12,917</b>	<b>100</b>	<b>93</b>	<b>13,124</b>	<b>100</b>	<b>91</b>
<b>Total - all species</b>	<b>465</b>		<b>100</b>	<b>13,959</b>		<b>100</b>	<b>14,423</b>		<b>100</b>
<b>Felled</b>	<b>0</b>			<b>0</b>			<b>0</b>		
<b>Total High Forest</b>	<b>465</b>			<b>13,959</b>			<b>14,423</b>		

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

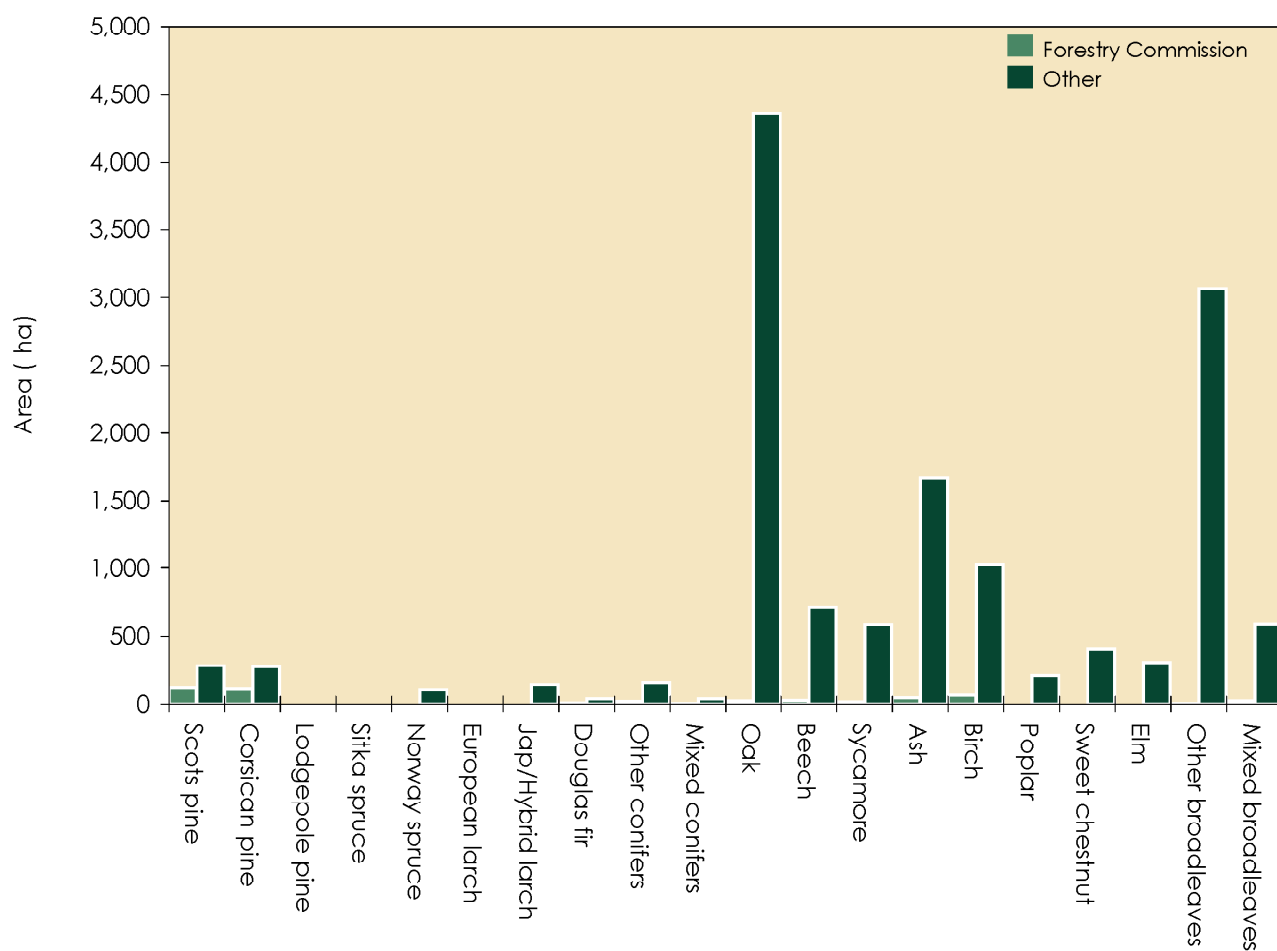
\*\*spp : percentage of all species in the ownership category



1. In addition to the areas shown there are 564ha 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	11%
Broadleaves	3%
Scots pine	26%
Oak	6%
Ash	11%
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	119	0	119	285	0	285	404	0	404
Corsican pine	108	0	108	275	0	275	383	0	383
Lodgepole pine	0	0	0	0	0	0	0	0	0
Sitka spruce	0	0	0	0	0	0	0	0	0
Norway spruce	0	0	0	105	0	105	105	0	105
European larch	0	0	0	0	0	0	0	0	0
Jap/Hybrid larch	0	0	0	144	0	144	144	0	144
Douglas fir	10	0	10	40	0	40	50	0	50
Other conifers	18	0	18	155	0	155	173	0	173
Mixed conifers	3	0	3	37	0	37	40	0	40
<b>Total conifers</b>	<b>259</b>	<b>0</b>	<b>259</b>	<b>1,041</b>	<b>0</b>	<b>1,041</b>	<b>1,300</b>	<b>0</b>	<b>1,300</b>
Oak	19	4	23	4,357	0	4,357	4,376	4	4,380
Beech	28	0	28	712	0	712	740	0	740
Sycamore	16	0	16	530	54	584	546	54	600
Ash	47	0	47	1,637	29	1,667	1,684	29	1,713
Birch	64	0	64	1,004	25	1,028	1,068	25	1,093
Poplar	0	0	0	197	10	207	197	10	207
Sweet chestnut	0	0	0	400	0	400	400	0	400
Elm	0	0	0	237	71	308	237	71	308
Other broadleaves	3	0	3	2,423	642	3,066	2,426	642	3,068
Mixed broadleaves	25	0	25	564	25	589	589	25	614
<b>Total broadleaves</b>	<b>202</b>	<b>4</b>	<b>206</b>	<b>12,062</b>	<b>856</b>	<b>12,917</b>	<b>12,264</b>	<b>860</b>	<b>13,124</b>
<b>Total - all species</b>	<b>461</b>	<b>4</b>	<b>465</b>	<b>13,103</b>	<b>856</b>	<b>13,959</b>	<b>13,564</b>	<b>860</b>	<b>14,423</b>

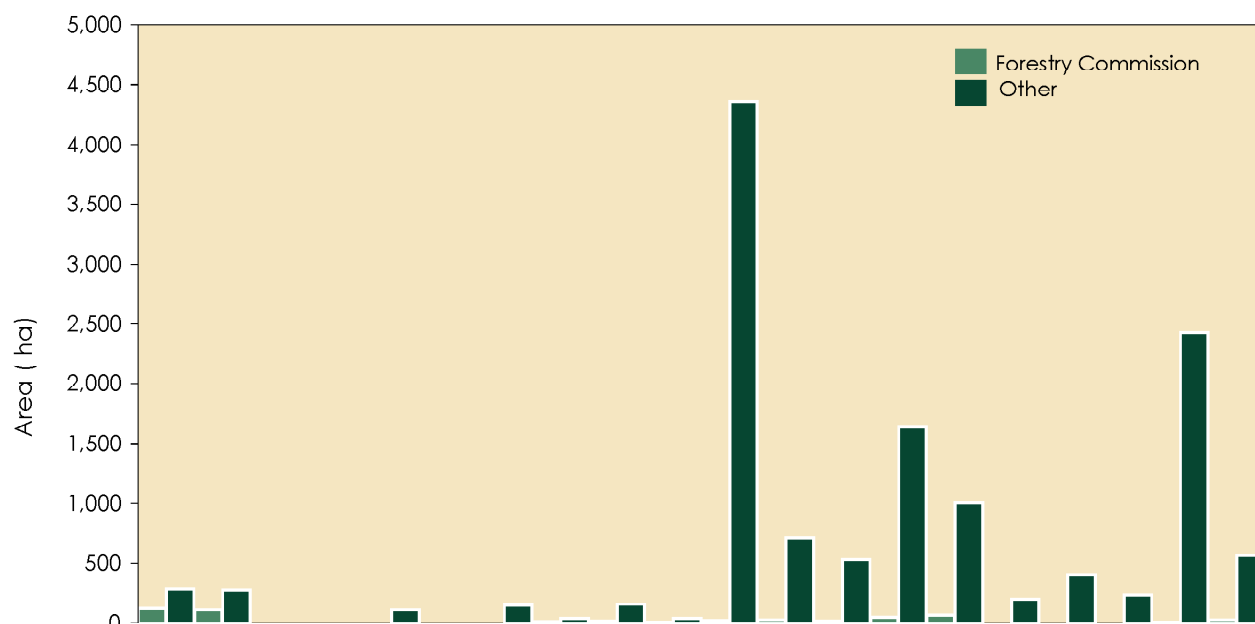
1. The standard errors of the all ownerships area estimates for the most common species or species groups (in all woodland types) are as follows

	Category 1*	Category 2*	Total High Forest	
Conifers	11%	-	11%	
Broadleaves	3%	14%	3%	
Scots pine	26%	-	26%	
Oak	6%	-	6%	
Ash	11%	84%	11%	*See Glossary for Category 1 and Category 2 descriptions

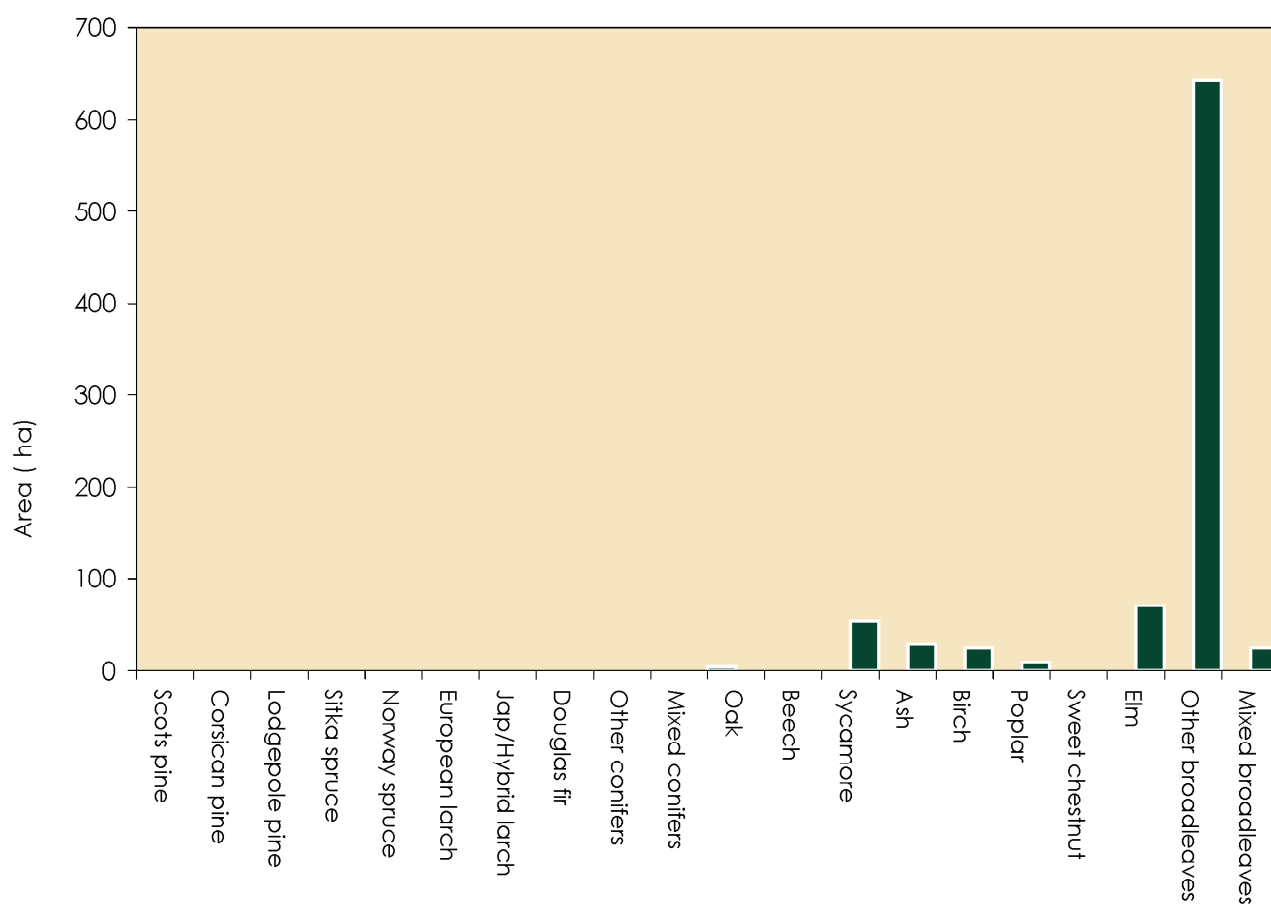
2. Where the standard errors of these summary measures are 10% or less, the confidence intervals will be approximately symmetrical; the true value is expected to be within +/- one standard error for about 68% (or about two-thirds) of all cases, and within +/- two standard errors for about 95% of all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

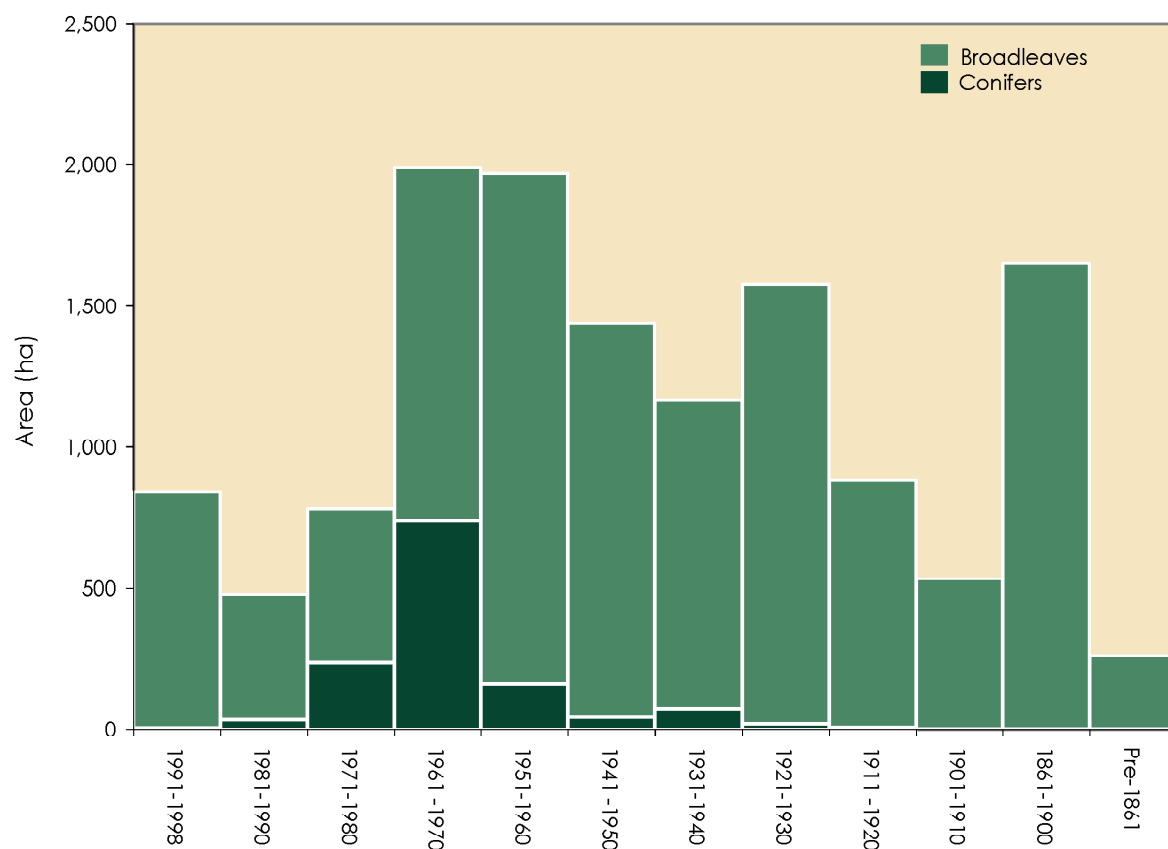


**Table 10a** High Forest Category 1 - Area by principal species and planting year class

Species	Planting year class*												Total (ha)
	1991-1998	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	137	162	74	18	11	0	4	0	0	0	404
Corsican pine	0	0	48	331	4	0	0	0	0	0	0	0	383
Lodgepole pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Sitka spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway spruce	0	29	4	33	24	11	4	0	0	0	0	0	105
European larch	0	0	0	0	0	0	0	0	0	0	0	0	0
Jap/Hybrid larch	0	0	0	95	38	0	11	0	0	0	0	0	144
Douglas fir	0	0	2	18	0	0	30	0	0	0	0	0	50
Other conifers	3	5	42	74	18	0	14	18	0	0	0	0	173
Mixed conifers	0	0	0	25	0	15	0	0	0	0	0	0	40
<b>Total conifers</b>	<b>3</b>	<b>34</b>	<b>233</b>	<b>738</b>	<b>158</b>	<b>43</b>	<b>70</b>	<b>18</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,300</b>
Oak	365	38	47	90	199	136	157	772	607	156	1,573	237	4,376
Beech	0	39	21	152	64	58	0	266	96	0	45	0	740
Sycamore	11	153	99	114	105	7	0	12	25	22	0	0	546
Ash	142	36	39	105	75	387	201	252	80	355	10	0	1,684
Birch	136	26	97	425	330	48	0	0	5	0	0	0	1,068
Poplar	0	87	0	27	4	64	15	0	0	0	0	0	197
Sweet chestnut	5	0	0	28	150	0	84	118	0	0	10	5	400
Elm	0	20	8	3	52	104	12	39	0	0	0	0	237
Other broadleaves	121	31	127	205	678	513	576	89	57	0	15	20	2,426
Mixed broadleaves	60	14	110	102	155	78	51	9	9	0	0	0	589
<b>Total broadleaves</b>	<b>838</b>	<b>444</b>	<b>548</b>	<b>1,251</b>	<b>1,811</b>	<b>1,395</b>	<b>1,096</b>	<b>1,556</b>	<b>878</b>	<b>532</b>	<b>1,652</b>	<b>262</b>	<b>12,264</b>
<b>Total - all species</b>	<b>841</b>	<b>478</b>	<b>781</b>	<b>1,988</b>	<b>1,969</b>	<b>1,438</b>	<b>1,166</b>	<b>1,574</b>	<b>882</b>	<b>532</b>	<b>1,652</b>	<b>262</b>	<b>13,564</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

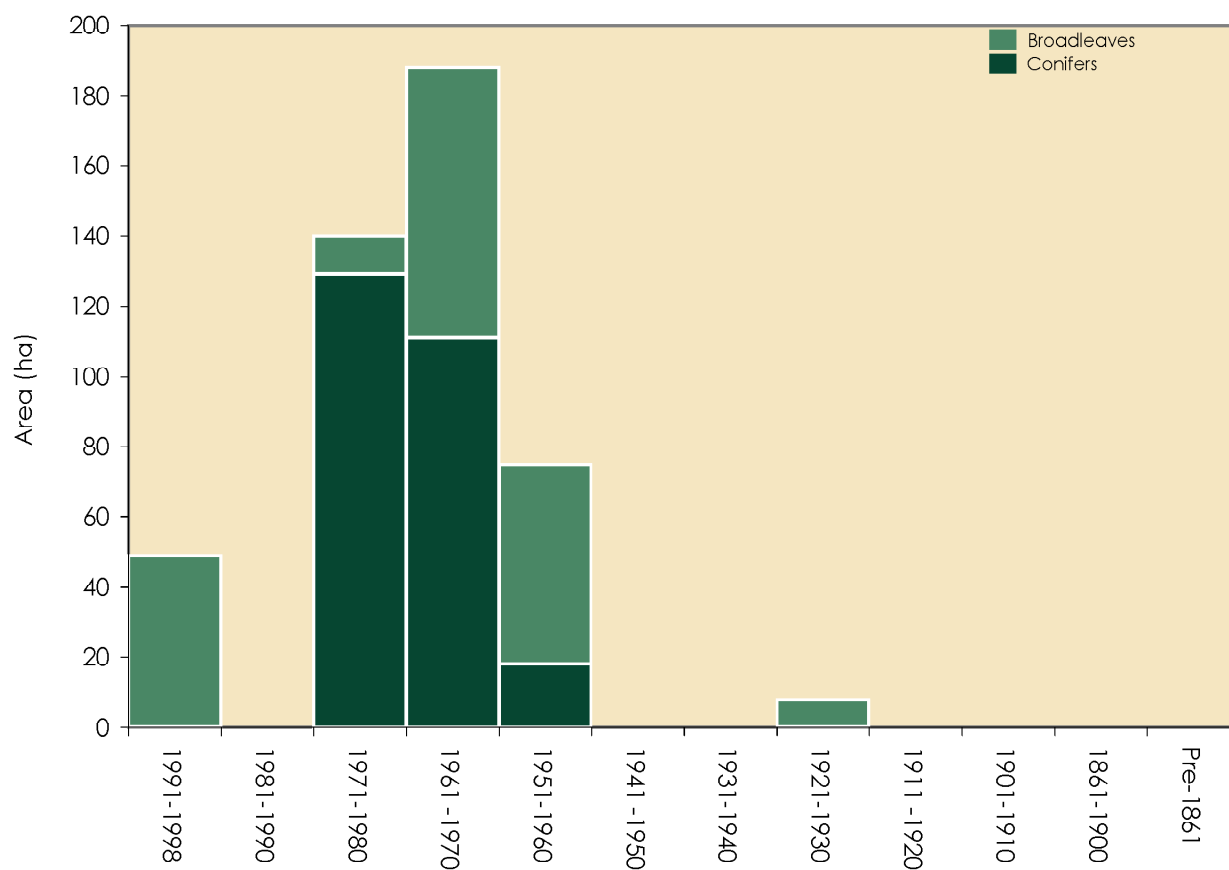


1. Most of the planting year classes cover 10 years, 1991-1998 is 8 years, and the classes prior to 1901 are 40 years or more.

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

Species	Planting year class*												Total (ha)
	1991 - 1998	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	83	36	0	0	0	0	0	0	0	0	119
Corsican pine	0	0	44	64	0	0	0	0	0	0	0	0	108
Lodgepole pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Sitka spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
European larch	0	0	0	0	0	0	0	0	0	0	0	0	0
Jap/Hybrid larch	0	0	0	0	0	0	0	0	0	0	0	0	0
Douglas fir	0	0	2	8	0	0	0	0	0	0	0	0	10
Other conifers	0	0	0	0	18	0	0	0	0	0	0	0	18
Mixed conifers	0	0	0	3	0	0	0	0	0	0	0	0	3
<b>Total conifers</b>	<b>0</b>	<b>0</b>	<b>129</b>	<b>111</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>259</b>
Oak	0	0	0	8	3	0	0	8	0	0	0	0	19
Beech	0	0	0	23	5	0	0	0	0	0	0	0	28
Sycamore	0	0	0	0	16	0	0	0	0	0	0	0	16
Ash	0	0	5	21	21	0	0	0	0	0	0	0	47
Birch	49	0	0	11	5	0	0	0	0	0	0	0	64
Poplar	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
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Other broadleaves	0	0	0	3	0	0	0	0	0	0	0	0	3
Mixed broadleaves	0	0	6	11	8	0	0	0	0	0	0	0	25
<b>Total broadleaves</b>	<b>49</b>	<b>0</b>	<b>11</b>	<b>77</b>	<b>57</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>202</b>
<b>Total - all species</b>	<b>49</b>	<b>0</b>	<b>140</b>	<b>188</b>	<b>76</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>461</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, 1991-1998 is 8 years, and the classes prior to 1901 are 40 years or more.

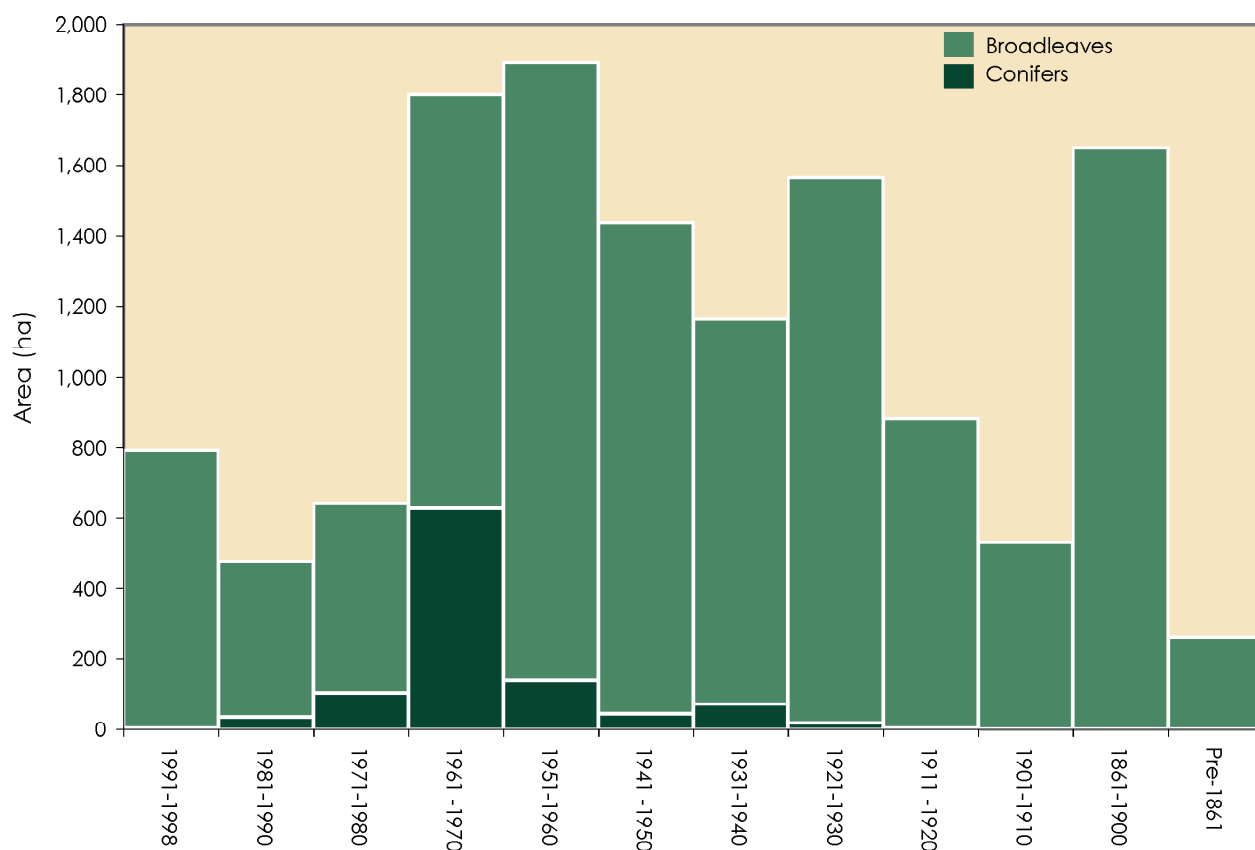
**Table 10c** High Forest Category 1 - Other ownership: area by principal species and planting year classes

Species	Planting year class*												Total (ha)
	1991-1998	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	54	125	74	18	11	0	4	0	0	0	285
Corsican pine	0	0	4	267	4	0	0	0	0	0	0	0	275
Lodgepole pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Silka spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway spruce	0	29	4	33	24	11	4	0	0	0	0	0	105
European larch	0	0	0	0	0	0	0	0	0	0	0	0	0
Jap/Hybrid larch	0	0	0	95	38	0	11	0	0	0	0	0	144
Douglas fir	0	0	0	10	0	0	30	0	0	0	0	0	40
Other conifers	3	5	42	74	0	0	14	18	0	0	0	0	155
Mixed conifers	0	0	0	23	0	15	0	0	0	0	0	0	37
<b>Total conifers</b>	<b>3</b>	<b>34</b>	<b>104</b>	<b>626</b>	<b>139</b>	<b>43</b>	<b>70</b>	<b>18</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,041</b>
Oak	365	38	47	81	196	136	157	764	607	156	1,573	237	4,357
Beech	0	39	21	128	59	58	0	266	96	0	45	0	712
Sycamore	11	153	99	114	89	7	0	12	25	22	0	0	530
Ash	142	36	34	84	55	387	201	252	80	355	10	0	1,637
Birch	87	26	97	415	325	48	0	0	5	0	0	0	1,004
Poplar	0	87	0	27	4	64	15	0	0	0	0	0	197
Sweet chestnut	5	0	0	28	150	0	84	118	0	0	10	5	400
Elm	0	20	8	3	52	104	12	39	0	0	0	0	237
Other broadleaves	121	31	127	202	678	513	576	89	57	0	15	20	2,423
Mixed broadleaves	60	14	105	91	147	78	51	9	9	0	0	0	564
<b>Total broadleaves</b>	<b>789</b>	<b>444</b>	<b>537</b>	<b>1,174</b>	<b>1,754</b>	<b>1,395</b>	<b>1,096</b>	<b>1,548</b>	<b>878</b>	<b>532</b>	<b>1,652</b>	<b>262</b>	<b>12,062</b>
<b>Total - all species</b>	<b>792</b>	<b>478</b>	<b>641</b>	<b>1,800</b>	<b>1,893</b>	<b>1,438</b>	<b>1,166</b>	<b>1,566</b>	<b>882</b>	<b>532</b>	<b>1,652</b>	<b>262</b>	<b>13,103</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. 1991-1998 is 8 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	%
1991-98	Oak	43	Ash	17	Birch	16
1981-90	Sycamore	26	Poplar	15	Other broadleaves	14
1971-80	Other broadleaves	19	Sycamore	18	Scots pine	16
1961-70	Birch	21	Corsican pine	16	Other broadleaves	11
1951-60	Other broadleaves	37	Birch	16	Oak	10
1941-50	Other broadleaves	38	Ash	26	Oak	9
1931-40	Other broadleaves	57	Ash	14	Oak	11
1921-30	Oak	46	Ash	17	Beech	16
1911-20	Oak	65	Beech	10	Other broadleaves	9
1901-10	Ash	67	Oak	29	Sycamore	4
1861-1900	Oak	90	Other broadleaves	6	Beech	2
Pre 1861	Oak	87	Other broadleaves	7	Poplar	4
<b>All years</b>	<b>Oak</b>	<b>30</b>	<b>Other broadleaves</b>	<b>21</b>	<b>Ash</b>	<b>12</b>

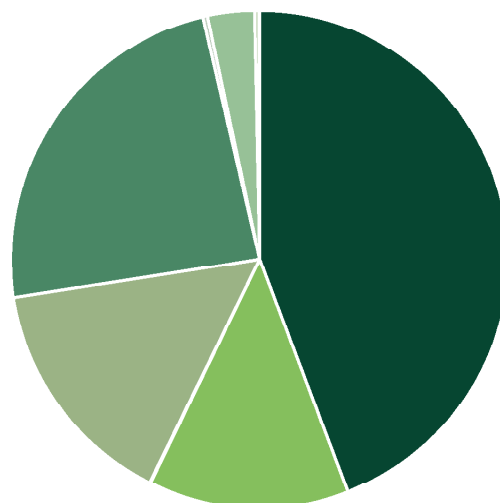
1. Principal species as a percentage of area in the planting year class.

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

Ownership type	Area (ha)	%
Personal	6,824	44.3
Business	2,006	13.0
Forestry or timber business	0	0.0
Charity	2,361	15.3
Local Authority	3,652	23.7
Other public (not FC)	49	0.3
Forestry Commission	467	3.0
Community ownership or common land	62	0.4
Unidentified	0	0.0
<b>Total</b>	<b>15,421</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	7,300	4,034	Area (ha)
Wide Linear Features	0	0	Area (ha)
Wide Linear Features	0	0	Length (Km)
Narrow Linear Features	20,400	2,206	Length (Km)
Narrow Linear Features	20,400	1,141,100	Number of live trees
Groups	39,000	284,900	Number of live trees
Individual Trees	77,100	77,100	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	346	3,689	4,034	7,300	0.55
Wide Linear Features	0	0	0	0	0.00
<b>Total</b>	<b>346</b>	<b>3,689</b>	<b>4,034</b>	<b>7,300</b>	<b>0.55</b>

1. See Glossary for definitions of feature types.

**Table 15** Numbers of live trees outside woodland by species and feature type (000's trees)

Species	Feature type				Total live trees	Percent of total trees	
	Boundary Trees	Middle Trees	Groups	Narrow Linear Features		Category	Species
Pine	0.0	0.0	0.9	0.0	0.9	4.2	0.1
Spruce	0.0	0.0	4.3	0.0	4.3	20.1	0.3
Larch	0.9	0.9	1.7	0.0	3.5	16.4	0.2
Cypress	0.0	0.0	5.2	0.0	5.2	24.3	0.3
Other conifers	0.0	0.0	1.7	5.8	7.5	35.0	0.5
Total conifers	0.9	0.9	13.9	5.8	21.4	100.0	1.4
Oak	26.8	6.1	44.2	119.2	196.3	13.3	13.1
Beech	0.0	0.0	0.0	7.8	7.8	0.5	0.5
Sycamore	0.9	0.9	4.3	22.3	28.4	1.9	1.9
Ash	19.0	1.7	39.0	95.0	154.7	10.4	10.3
Birch	0.0	0.0	18.2	0.0	18.2	1.2	1.2
Poplar	0.9	0.0	53.7	110.5	165.1	11.1	11.0
Sweet chestnut	0.0	0.0	0.9	7.8	8.7	0.6	0.6
Horse chestnut	0.0	0.9	0.9	26.2	28.0	1.9	1.9
Alder	0.0	0.0	0.0	14.5	14.5	1.0	1.0
Lime	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elm	2.6	0.9	14.7	184.2	202.4	13.7	13.5
Willow	6.1	0.0	4.3	51.4	61.8	4.2	4.1
Other broadleaves	7.8	0.0	90.9	496.4	595.1	40.2	39.6
Total broadleaves	64.1	10.5	271.0	1135.3	1481.0	100.0	98.5
Total - all species	65.0	11.4	284.9	1141.1	1503.0		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	22%
Groups	52%
Narrow Linear Features	29%
- 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	0.0	0.0	0.0	0.0	0.0	0.0
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total conifers</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
Oak	0.9	0.0	0.9	1.0	2.8	2.4	2.4
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	3.9	3.9	3.4	3.4
Birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Poplar	0.0	0.9	0.0	0.0	0.9	0.8	0.8
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	2.9	2.9	2.5	2.5
Lime	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elm	1.7	0.0	5.2	94.0	100.9	87.9	87.9
Willow	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other broadleaves	0.0	0.0	3.5	0.0	3.5	3.0	3.0
<b>Total broadleaves</b>	<b>2.6</b>	<b>0.9</b>	<b>9.5</b>	<b>101.8</b>	<b>114.8</b>	<b>100.0</b>	<b>100.0</b>
<b>Total - all species</b>	<b>2.6</b>	<b>0.9</b>	<b>9.5</b>	<b>101.8</b>	<b>114.8</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	0.0	0.9	0.0	0.9
Spruce	0.0	4.3	0.0	0.0	4.3
Larch	0.9	2.6	0.0	0.0	3.5
Cypress	3.5	0.0	1.7	0.0	5.2
Other conifers	0.0	7.5	0.0	0.0	7.5
<b>Total conifers</b>	<b>4.4</b>	<b>14.4</b>	<b>2.6</b>	<b>0.0</b>	<b>21.4</b>
Oak	25.0	79.6	82.3	9.4	196.3
Beech	0.0	1.9	5.8	0.0	7.7
Sycamore	1.7	21.1	5.5	0.0	28.3
Ash	5.2	87.8	53.1	8.7	154.8
Birch	0.0	18.2	0.0	0.0	18.2
Poplar	0.0	62.9	101.2	1.0	165.1
Sweet chestnut	0.9	8.6	0.0	0.0	9.5
Horse chestnut	1.7	23.3	2.9	0.0	27.9
Alder	0.0	0.0	14.5	0.0	14.5
Lime	0.0	0.0	0.0	0.0	0.0
Elm	87.7	114.6	0.0	0.0	202.3
Willow	1.7	48.9	7.7	3.5	61.8
Other broadleaves	345.1	250.0	0.0	0.0	595.1
<b>Total broadleaves</b>	<b>469.0</b>	<b>716.9</b>	<b>273.0</b>	<b>22.5</b>	<b>1,481.5</b>
<b>Total - all species</b>	<b>473.5</b>	<b>731.4</b>	<b>275.6</b>	<b>22.5</b>	<b>1,503.0</b>

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

Number of trees per Group*	Number of Groups (000's)
2	8
3-5	12
6-10	9
11-20	6
21-50	3
51-100	1
>100	1
<b>Total</b>	<b>39</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 1998 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 1998 Inventory
Table 20:	Comparison of High Forest area by species between 1980 Census and 1998 Inventory
Chart:	Comparison of High Forest area by species between 1980 Census and 1998 Inventory
Table 21:	Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1998 Inventory
Chart:	Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1998 Inventory
Table 22:	Comparison of numbers of live trees outside woodland between 1980 Census and 1998 Inventory
Table 23:	Comparison of density of non-woodland features between 1980 Census and 1998 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 1998 Inventory

Woodland size (ha)	1980 Census woodland area		1998 Inventory woodland area		Change (%)
	(ha)	(%)	(ha)	(%)	(%)
2.0 or more	13,709	91.4	15,421	80.7	12
0.25 - <2.0	1,287	8.6	3,689	19.3	187
<b>Total</b>	<b>14,996</b>		<b>19,110</b>		<b>27</b>
<b>% Woodland land cover</b>	<b>4.1</b>		<b>5.2</b>		

1. Differences in sampling methodology may account for some of the apparent differences.
2. The above figures from the 1998 Inventory exclude woodland between 0.1 and <0.25 ha, thereby matching the scope of the 1980 Census. The 1998 figures above will therefore not match those in the previous sections of the report.
3. Land area used to calculate woodland cover percent (1998), 367,344 ha, was based on the 1991 Census of Population digital boundaries.
4. Land area used to calculate woodland cover percent (1980), 367,188ha, (Ordnance Survey data)

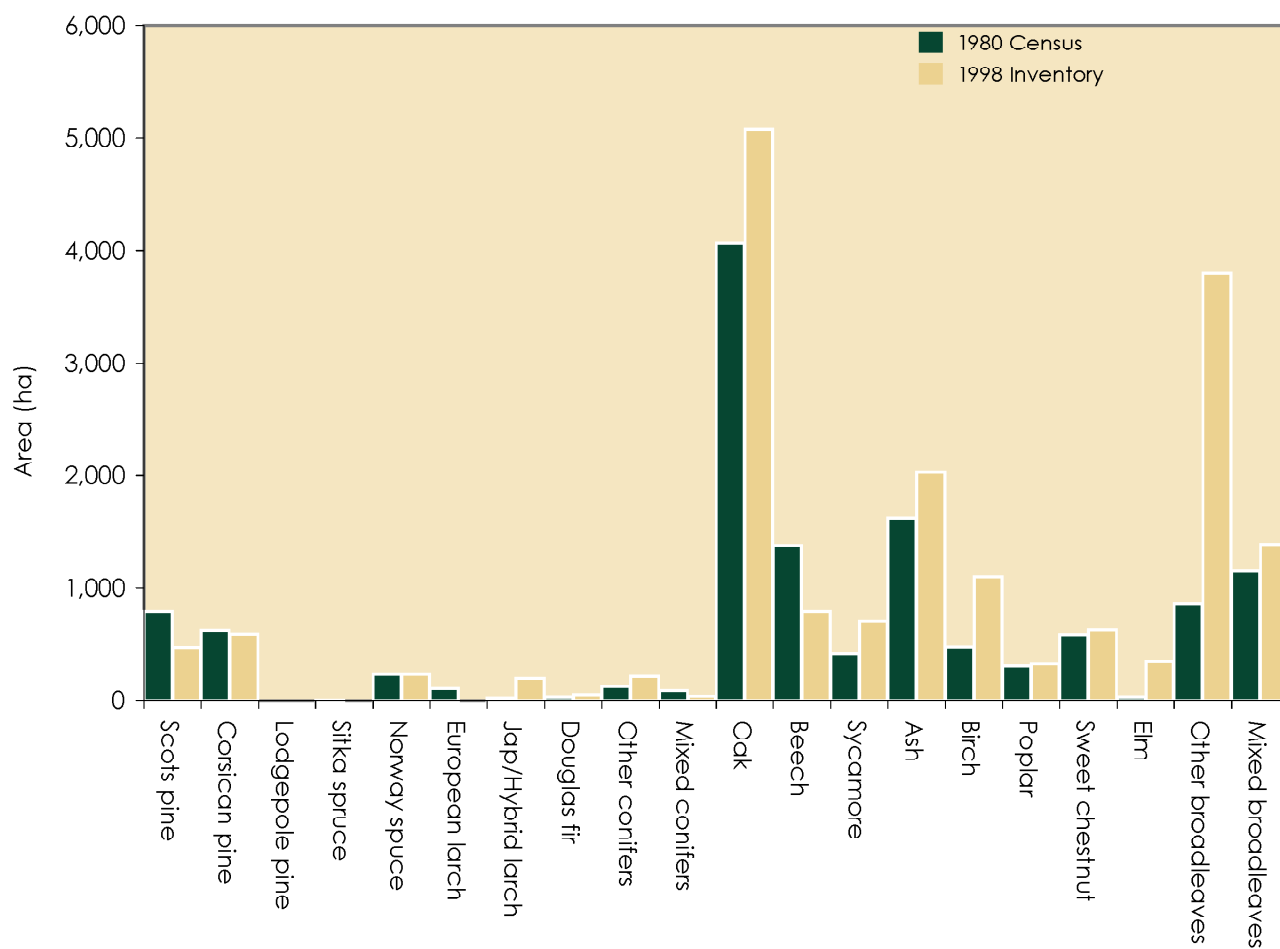
**Table 20** Comparison of High Forest area by species between 1980 Census and 1998 Inventory

Species	1980 Census woodland area (ha)	1998 Inventory woodland area (ha)	Change (%)
Scots pine	793	471	-41
Corsican pine	625	594	-5
Lodgepole pine	2	0	-100
Sitka spruce	3	0	-100
Norway spruce	240	239	0
European larch	107	0	-100
Jap/Hybrid larch	23	202	768
Douglas fir	33	50	52
Other conifers	127	221	74
Mixed conifers	88	40	-55
<b>Total conifers</b>	<b>2,040</b>	<b>1,817</b>	<b>-11</b>
Oak	4,067	5,072	25
Beech	1,376	788	-43
Sycamore	420	706	68
Ash	1,624	2,030	25
Birch	476	1,103	132
Poplar	309	322	4
Sweet chestnut	583	631	8
Elm	32	346	981
Other broadleaves	858	3,798	343
Mixed broadleaves	1,153	1,382	20
<b>Total broadleaves</b>	<b>10,898</b>	<b>16,178</b>	<b>48</b>
<b>Total all species</b>	<b>12,938</b>	<b>17,995</b>	<b>39</b>
<b>Felled</b>	<b>248</b>	<b>0</b>	<b>-100</b>
<b>Total High Forest</b>	<b>13,187</b>	<b>17,995</b>	<b>36</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 3.0% (Table 2). To obtain meaningful comparisons between the two datasets the 1980 Census data have therefore been reduced by 3.0%.
3. The above figures from the 1998 Inventory exclude woodland between 0.1 and <0.25 ha, thereby matching the scope of the 1980 Census. The 1998 figures above will therefore not match those in the previous sections of the report.
4. The 1980 figures include scrub to enable comparison



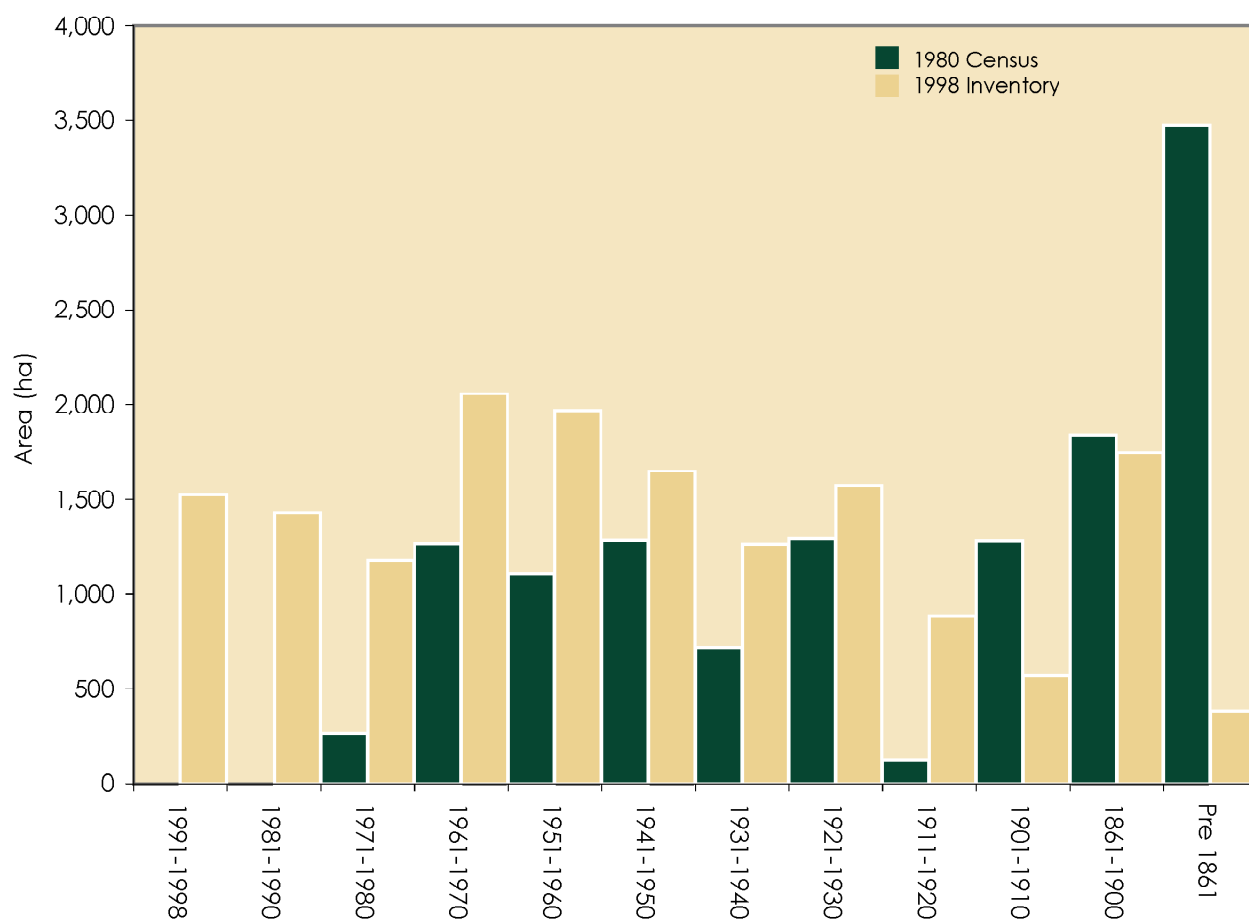
Comparison of High Forest area by species between 1980 Census and 1998 Inventory



**Table 21** Comparison of High Forest Category 1 area by planting year class  
between 1980 Census and 1998 Inventory

Planting year class	1980 Census woodland area (ha)	1998 Inventory woodland area (ha)	Change (%)
1991-1998	0	1,523	see note
1981-1990	0	1,429	see note
1971-1980	264	1,175	345
1961-1970	1,267	2,056	62
1951-1960	1,104	1,969	78
1941-1950	1,282	1,649	29
1931-1940	718	1,262	76
1921-1930	1,289	1,574	22
1911-1920	126	882	599
1901-1910	1,279	570	-55
1861-1900	1,836	1,748	-5
Pre 1861	3,475	377	-89
<b>Total all years</b>	<b>12,641</b>	<b>16,214</b>	<b>28</b>

1. The first two classes, 1991-1998 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 1998 Inventory**

**Table 22** Comparison of numbers of live trees outside woodland between 1980 Census and 1998 Inventory (000's)

Feature type	1980 Census	1998 Inventory	Change (%)
Boundary Tree	91	65	-29
Middle Tree	562	12	-98
Total Individual Trees	653	76	-88
Groups	766	230	-70
Linear Features	346	734	112
<b>Total</b>	<b>1,765</b>	<b>1,040</b>	<b>-41</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 1998 Inventory figures have been adjusted accordingly. The 1998 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 1998 Inventory, the two surveys are not directly comparable - 1980 used 7cm diameter at breast height, and 1998 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 1998 Inventory

Feature type	1980 Census	1998 Inventory	Change (%)
Individual Trees (per sq km)	177.8	20.9	-88
Groups (per sq km)	47.6	10.0	-79
Linear Features (m per sq km)	419.4	597.4	42

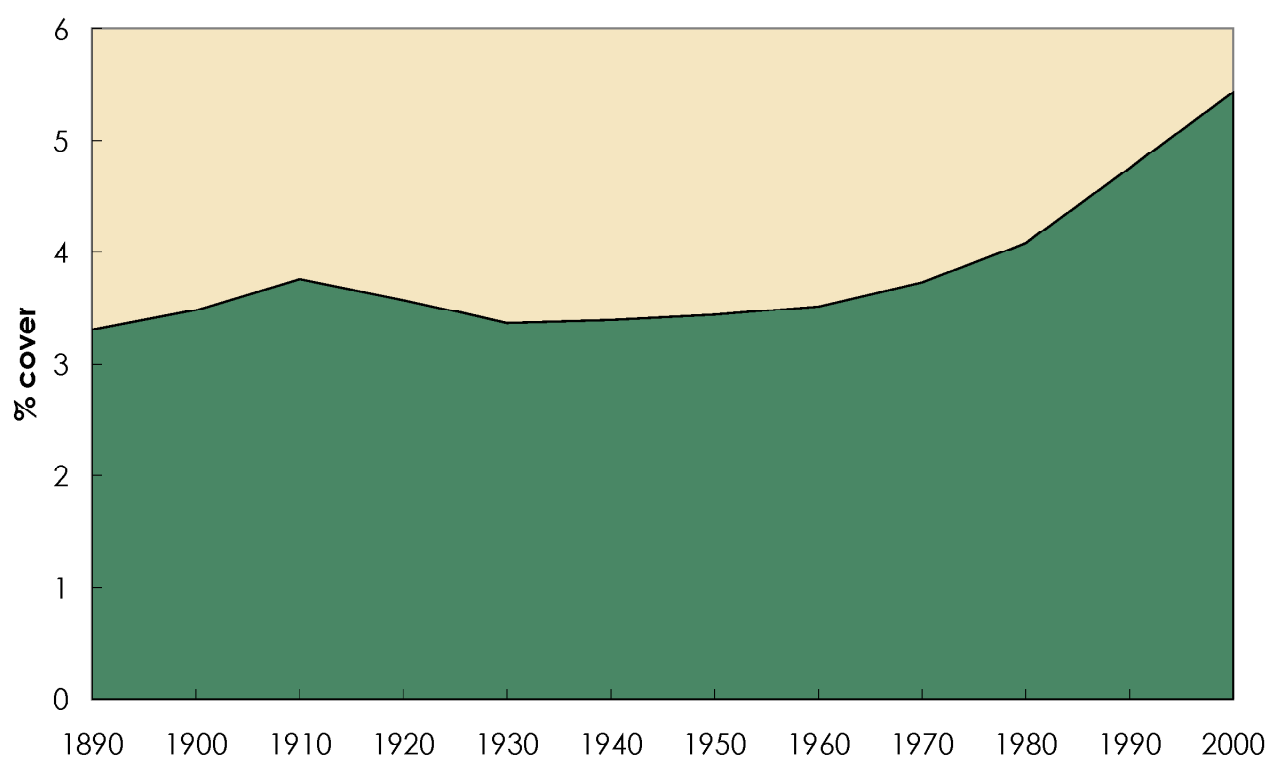
1. The Survey of Small Woodland and Trees did not record information referring to tree features (I.e. Individual trees, Groups and Narrow Linear Features) within developed land.
2. In the 1980 Census hazel, hawthorn, blackthorn and goat willow were excluded, the 1998 Inventory figures have been adjusted accordingly. The 1998 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 1998 Inventory, the two surveys are not directly comparable - 1980 used 7cm diameter at breast height, and 1998 used 2m height, as minimum criteria for inclusion.
4. See Glossary for definitions of feature type.

## WOODLAND COVER

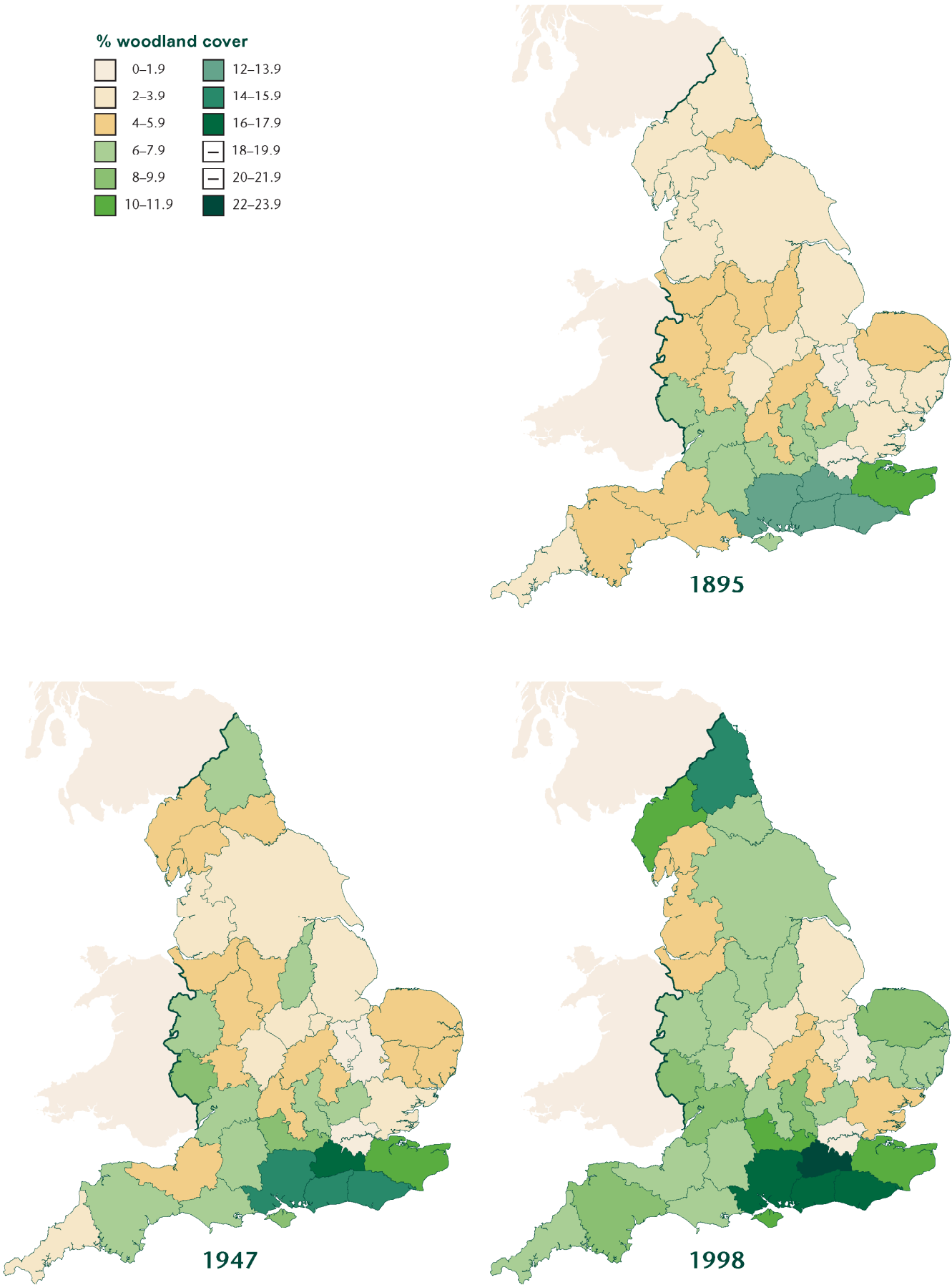
Woodland area data is available from Ministry of Agriculture surveys since 1871, and from Forestry Commission national woodland inventories since 1924. The following chart and maps show the changes in woodland area through time.

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)



# 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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