



NATIONAL INVENTORY OF WOODLAND AND TREES



ENGLAND

County Report for

GLOUCESTERSHIRE



Forestry Commission

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CONTENTS

Acknowledgements	v
Introduction	1
Background	1
Survey method	1
Main points from the survey results	2
Inventory Reports	2
Map 1: County boundaries	3
Map 2: Distribution of woodland over 2 hectares	4
Map 3: Distribution of woodland over 2 hectares by ownership	5
Map 4: Distribution of woodland over 2 hectares by Interpreted Forest Type	6
Summary results from the National Inventory of Woodland and Trees (NIWT)	7
Tables 1 – 5	
Table 1: Woodland area by woodland size class	9
Table 2: Woodland area by forest type and woodland size	10
Table 3: Woodland area by principal species and woodland size	11
Table 4: Numbers of live trees outside woodland by feature type	12
Table 5: Lengths of Linear Features	12
Results from the Main Woodland Survey (MWS)	13
Tables 6 - 12	
Table 6: Summary of woodland area by ownership	15
Chart: Woodland area by ownership	15
Table 7a: Size class distribution of woodland	16
Table 7b: Size class distribution of woodland by ownership units	16
Table 8: Area of woodland by forest type and ownership	17
Chart: Area of woodland by forest type	17
Table 9a: Area of High Forest by principal species and ownership	18
Graph: Area of High Forest by principal species and ownership	19
Table 9b: Area of High Forest by principal species, ownership and category	20
Graph: High Forest Category 1	
Area by principal species and ownership	21
Graph: High Forest Category 2	
Area by principal species and ownership	21
Table 10a: High Forest Category 1	
Area by principal species and planting year class	22
Graph: High Forest Category 1	
Area by planting year class	23

Table 10b:	High Forest Category 1	
	Forestry Commission: area by principal species and planting year class	24
Graph:	High Forest Category 1	
	Forestry Commission - area by planting year class	25
Table 10c:	High Forest Category 1	
	Other ownership : area by principal species and planting year class	26
Graph:	High Forest Category 1	
	Other ownership: area by planting year class	27
Table 11:	High Forest: principal species by planting year class	28
Table 12:	Ownership type by area and percentage	29
Chart:	Ownership type by area	29

Results from the Survey of Small Woodland and Trees (SSWT) 31

Tables 13 – 18

Table 13:	Summary of information from the Survey of Small Woodland and Trees	33
Table 14:	Woodland area by feature type and woodland size	33
Table 15:	Numbers of live trees outside woodland by species and feature type	34
Table 16:	Numbers of dead trees outside woodland by species and feature type	35
Table 17:	Numbers of live trees outside woodland by species and height band	36
Table 18:	Numbers of Groups by group size	37

Comparison of results with the 1980 Census and previous surveys 39

Tables 19 - 23

Table 19:	Comparison of woodland area between 1980 Census and 1997 Inventory	41
Table 20:	Comparison of High Forest area by species between 1980 Census and 1997 Inventory	42
Chart:	Comparison of High Forest area by species between 1980 Census and 1997 Inventory	43
Table 21:	Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1997 Inventory	44
Chart:	Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1997 Inventory	45
Table 22:	Comparison of numbers of live trees outside woodland between 1980 Census and 1997 Inventory	46
Table 23:	Comparison of density of non-woodland features between 1980 Census and 1997 Inventory	46

Woodland cover

Chart:	Change in woodland cover through time (1890 – 2000)	47
Maps:	Woodland cover by county through time (1895 – 1998)	48

Glossary 49

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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 Gloucestershire 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 Gloucestershire 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 km² 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 km² 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 Gloucestershire is 29,752 hectares. This represents 11.2 % of the land area. (Table 1)
- Broadleaved woodland is the dominant forest type representing 49.8 % of all woodland. Conifer woodland represents 21.9 %, Mixed woodland 16.2 % and Open Space within woodlands 10.7 %. (Table 2)
- The main conifer species is larch covering 2,217 hectares or 25.1 % of all conifer species. The main broadleaved species is beech covering 4,484 hectares or 25.9 % of all broadleaved species. (Table 3)
- 9,376 hectares or 33 % of woodland over 2 hectares is owned by or leased to the Forestry Commission, and 19,370 hectares or 67 % of woodland is in Other ownership. (Table 6)
- There are a total of 1,388 woods over 2 ha within Gloucestershire with a mean wood area of 21.1 hectares. (Table 7a) There are a total of 2,153 woods from 0.1 - <2.0 hectares with a mean wood area of 0.47 hectares. (Table 14)
- There are 3.0 million live trees outside woodland in Gloucestershire. (Table 15)
- Woodland land cover increased by over 3,300 hectares from 10.0 % to 11.2 % of the land area between 1980 and 1997. (Table 19)
- The area of broadleaves increased by 36% between 1980 and 1997, with the relative proportion of broadleaves to conifers increasing from 54 % to 66 %. (Table 20)

INVENTORY REPORTS

As well as this report for Gloucestershire, reports are available for the other counties in the region

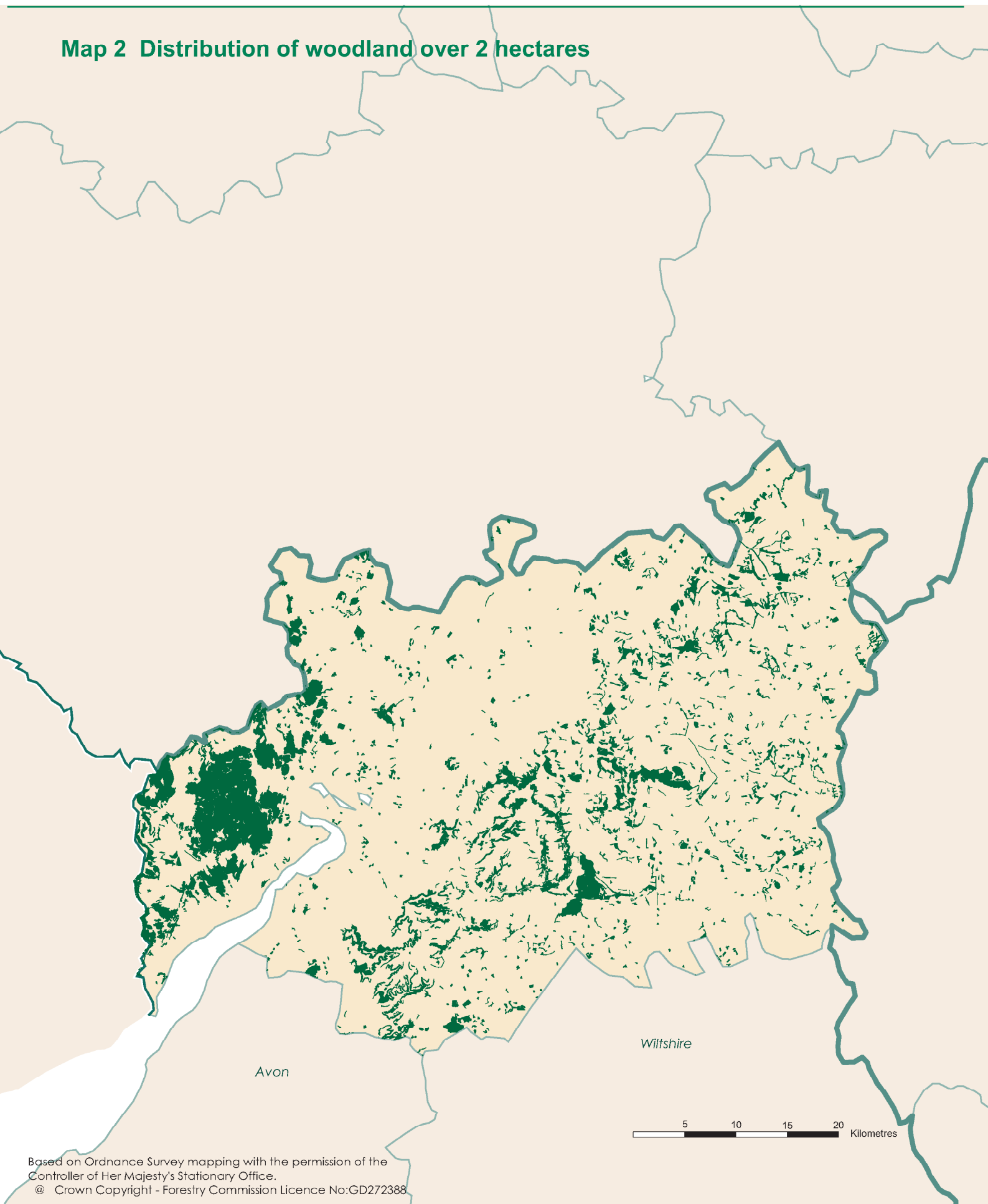
as shown on the map opposite. Also available are region and county reports for England as well as a report for the country as a whole. Wales and Scotland are also covered by reports.

Map 1 Regional and county boundaries



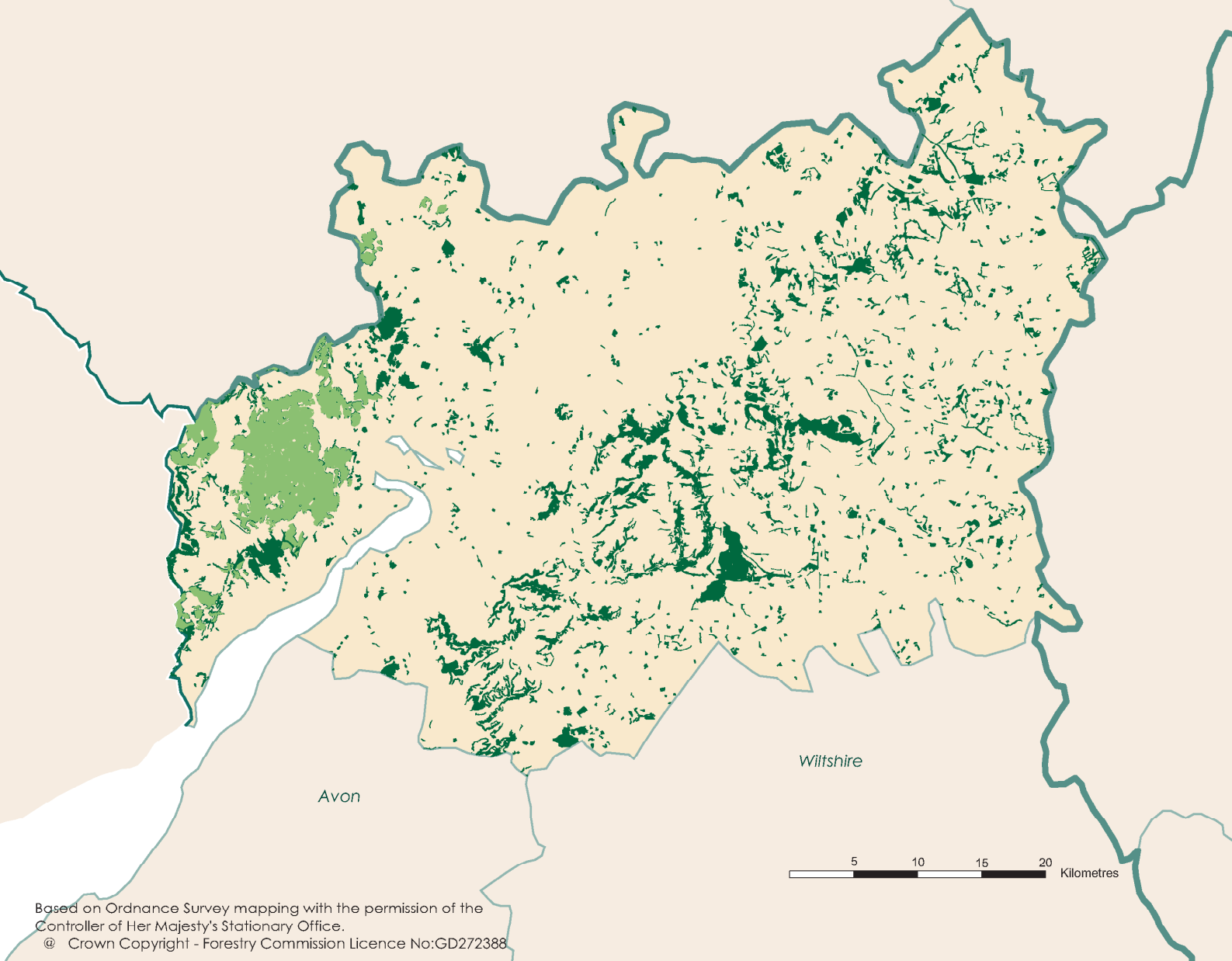
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Map 2 Distribution of woodland over 2 hectares



Map 3 Distribution of woodland over 2 hectares by ownership

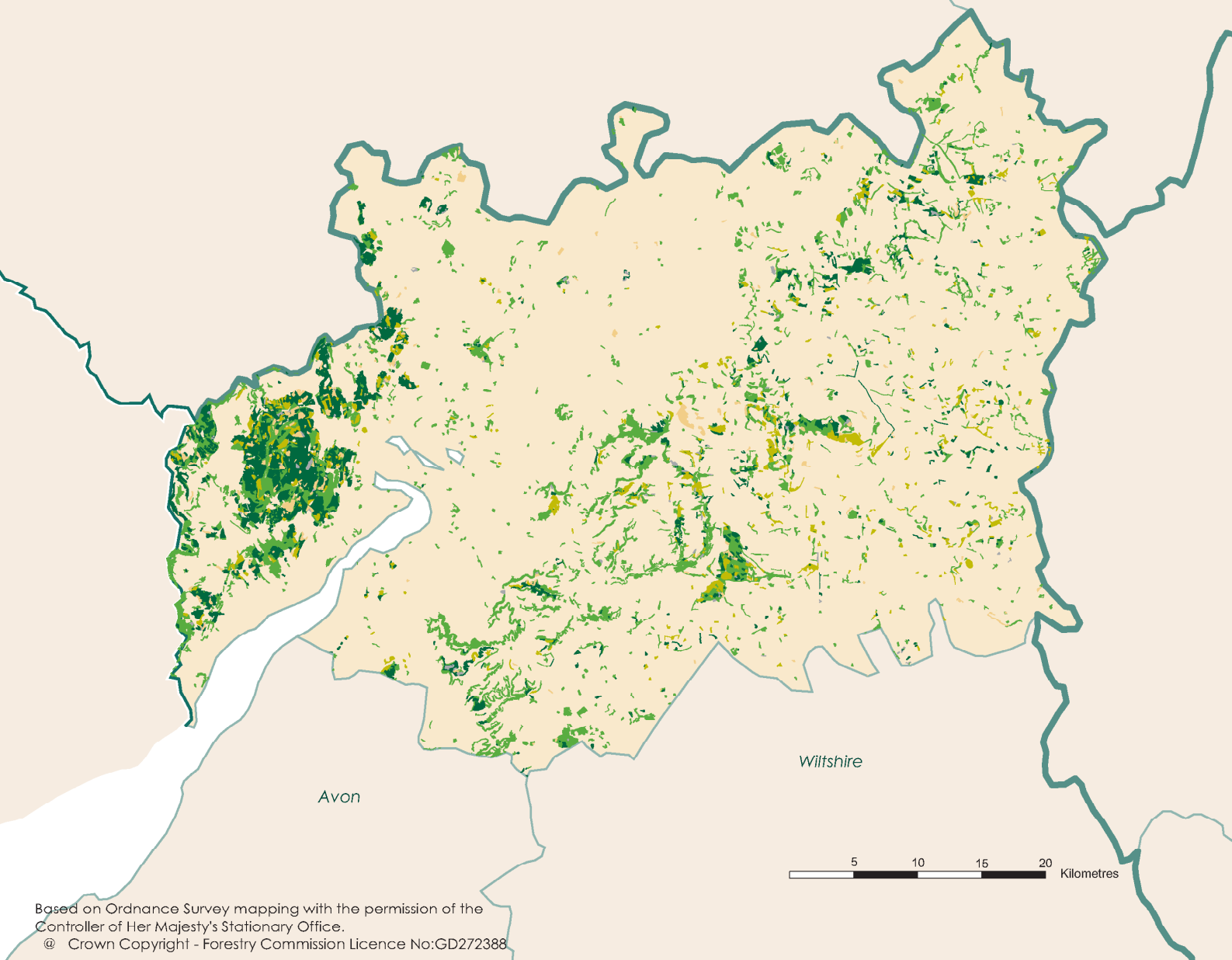
- Forestry Commission woodland
- Other woodland



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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 (none present)
- 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 Gloucestershire.

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	28,746	96.6
0.25 - < 2.00	970	3.3
0.10 - < 0.25	36	0.1
Total area of woodland	29,752	100.0
% Woodland land cover	11.2	

1. Area of Gloucestershire, including inland water, 265,327 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	6,234	292	6,526	21.9
Broadleaved	14,357	468	14,825	49.8
Mixed	4,573	240	4,813	16.2
Coppiced	209	0	209	0.7
Copp-w-standards	120	0	120	0.4
Windblow	0	0	0	0.0
Felled	75	0	75	0.3
Open Space	3,179	6	3,185	10.7
Total	28,746	1,006	29,752	100

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	1,615	82	1,697	19.2	6.5
Sitka spruce	15	0	15	0.2	0.1
Larch	1,948	269	2,217	25.1	8.5
Other conifers	4,540	30	4,570	51.7	17.5
Mixed conifers	339	0	339	3.8	1.3
Total conifers	8,457	382	8,839	100.0	33.8
Oak	3,379	66	3,445	19.9	13.2
Beech	4,262	222	4,484	25.9	17.1
Sycamore	1,000	102	1,102	6.4	4.2
Ash	4,331	72	4,403	25.4	16.8
Birch	534	0	534	3.1	2.0
Elm	24	30	54	0.3	0.2
Other broadleaves	1,921	114	2,035	11.7	7.8
Mixed broadleaves	1,255	12	1,267	7.3	4.8
Total broadleaves	16,707	618	17,325	100.0	66.2
Total all species***	25,164	1,000	26,164		100.0

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

**Species/group percentage of all species

***Excludes the 3,589 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	5%
Broadleaves	3%
Larch	14%
Beech	8%
Ash	7%
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	109,500	600,300	5	226
Narrow Linear Features	54,300	2,183,300	40	823
Individual Trees	236,800	236,800	1	89
Total		3,020,400		1,138

1. Land area used to calculate tree density 265,327 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	21%
Narrow Linear Features	34%
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	952	95	36
Narrow Linear Features	54,300	3,774	1,423
Total		3,870	1,458

1. Land area used to calculate tree density 265,327 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	98%
Narrow Linear Features	28%
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	9,376	33
Other	19,370	67
Total area of woodland	28,746	100

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

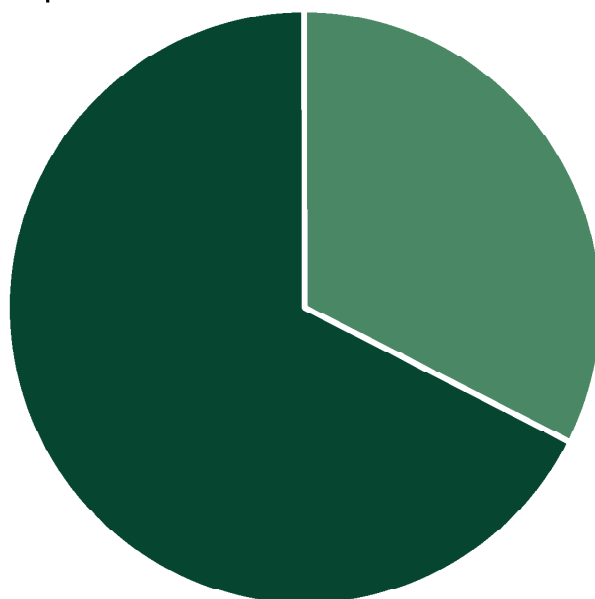
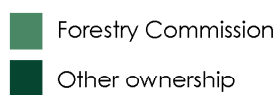
Woodland area by ownership

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	1,083	4,480	15	4.1
10 - <20	136	1,900	6	14.0
20 - <50	94	2,881	10	30.6
50 - <100	36	2,665	9	74.0
<100	1,349	11,926	41	8.8
100 - <500	31	5,533	19	178.5
500 and >	8	11,801	40	1475.1
All woods	1,388	29,260	100	21.1

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	13	61	0	4.7
	O	1,184	4,717	16	4.0
10 - <20	FC	5	69	0	13.8
	O	140	1,976	7	14.1
20 - <50	FC	12	422	1	35.2
	O	87	2,619	9	30.1
50 - <100	FC	3	195	1	65.0
	O	34	2,515	9	74.0
<100	FC	33	746	3	22.6
	O	1,445	11,828	40	8.2
100 - <500	FC	5	904	3	180.8
	O	30	5,258	18	175.3
500 and >	FC	3	7,725	26	2575.0
	O	4	2,798	10	699.6
Total	FC	41	9,375	32	228.7
	O	1,479	19,884	68	13.4

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 514 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	4,091	43.6	2,142	11.1	6,234	21.7
Broadleaved	3,358	35.8	10,999	56.8	14,357	49.9
Mixed	1,222	13.0	3,351	17.3	4,573	15.9
Coppice	0	0.0	209	1.1	209	0.7
Copp-w-Stds	0	0.0	120	0.6	120	0.4
Windblow	0	0.0	0	0.0	0	0.0
Felled	10	0.1	65	0.3	75	0.3
Open Space	696	7.4	2,483	12.8	3,179	11.1
Total	9,376	100.0	19,370	100.0	28,746	100.0

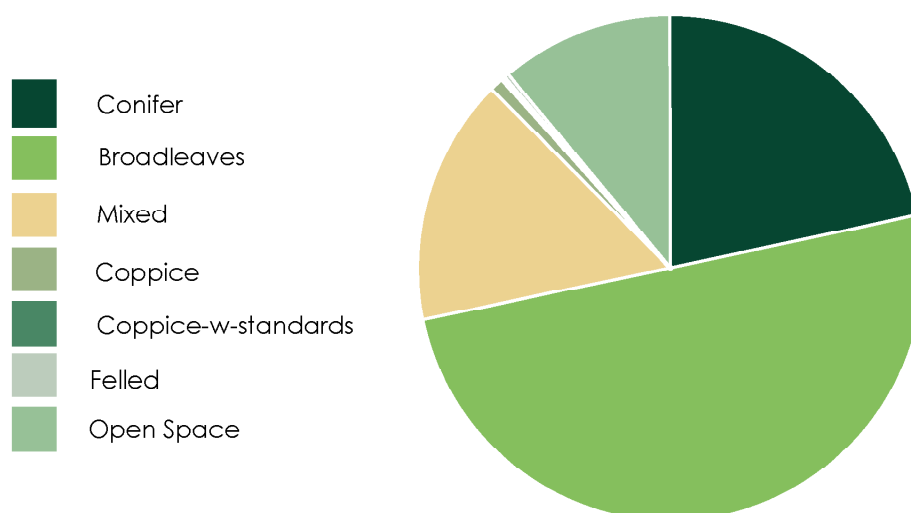
Area of woodland by forest type

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	480	10	6	269	7	2	749	9	3
Corsican pine	441	9	5	425	11	3	866	10	3
Lodgepole pine	0	0	0	0	0	0	0	0	0
Sitka spruce	0	0	0	15	0	0	15	0	0
Norway spruce	1,097	24	13	815	21	5	1,911	23	8
European larch	412	9	5	88	2	1	501	6	2
Jap/Hybrid larch	399	9	5	1,048	28	6	1,447	17	6
Douglas fir	1,304	28	15	464	12	3	1,768	21	7
Other conifers	499	11	6	362	10	2	861	10	3
Mixed conifers	29	1	0	310	8	2	339	4	1
Total conifers	4,660	100	54	3,797	100	23	8,457	100	34
Oak	1,738	43	20	1,641	13	10	3,379	20	13
Beech	727	18	8	3,535	28	21	4,262	26	17
Sycamore	132	3	2	868	7	5	1,000	6	4
Ash	415	10	5	3,916	31	24	4,331	26	17
Birch	379	9	4	155	1	1	534	3	2
Poplar	29	1	0	252	2	2	280	2	1
Sweet chestnut	212	5	2	166	1	1	378	2	2
Elm	5	0	0	19	0	0	24	0	0
Other broadleaves	270	7	3	993	8	6	1,263	8	5
Mixed broadleaves	104	3	1	1,152	9	7	1,255	8	5
Total broadleaves	4,010	100	46	12,696	100	77	16,707	100	66
Total - all species	8,671		100	16,493		100	25,164		100
Felled	10			65			75		
Total High Forest	8,681			16,558			25,239		

*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 3,179 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	5%
Broadleaves	3%
Norway spruce	14%
Beech	8%
Ash	7%
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

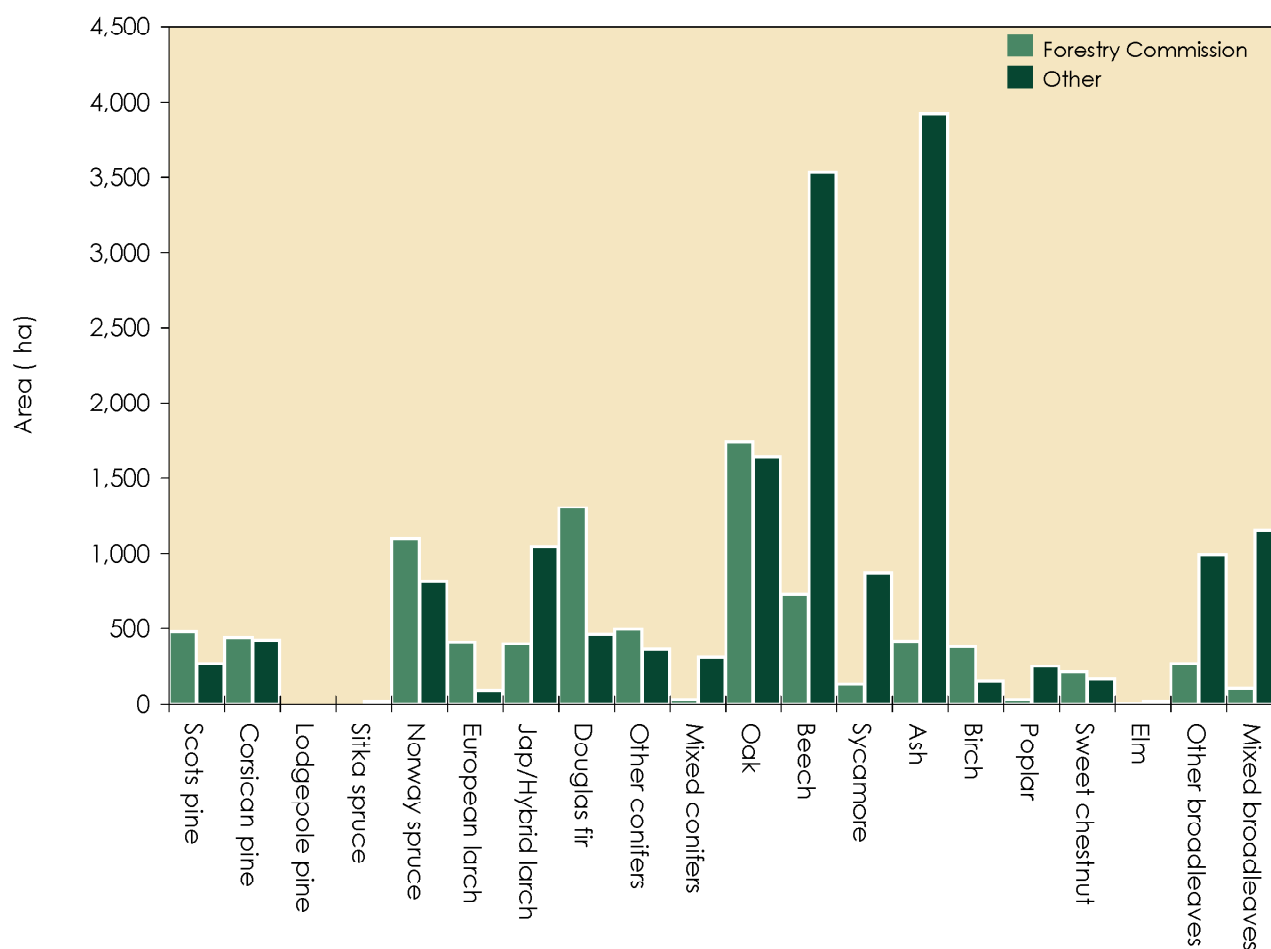


Table 9b Area of High Forest by principal species,ownership and category

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	480	0	480	240	28	269	720	28	749
Corsican pine	441	0	441	405	20	425	846	20	866
Lodgepole pine	0	0	0	0	0	0	0	0	0
Sitka spruce	0	0	0	15	0	15	15	0	15
Norway spruce	1,097	0	1,097	803	12	815	1,899	12	1,911
European larch	412	0	412	84	4	88	497	4	501
Jap/Hybrid larch	399	0	399	1,038	10	1,048	1,437	10	1,447
Douglas fir	1,299	5	1,304	464	0	464	1,763	5	1,768
Other conifers	475	24	499	323	39	362	798	62	861
Mixed conifers	29	0	29	299	11	310	328	11	339
Total conifers	4,632	29	4,660	3,673	124	3,797	8,305	152	8,457
Oak	1,600	138	1,738	1,583	59	1,641	3,183	197	3,379
Beech	694	33	727	3,016	519	3,535	3,710	552	4,262
Sycamore	66	67	132	639	228	868	705	295	1,000
Ash	276	140	415	2,809	1,107	3,916	3,085	1,246	4,331
Birch	258	122	379	66	89	155	323	211	534
Poplar	29	0	29	252	0	252	280	0	280
Sweet chestnut	207	5	212	128	38	166	335	43	378
Elm	0	5	5	0	19	19	0	24	24
Other broadleaves	203	67	270	250	743	993	453	810	1,263
Mixed broadleaves	81	23	104	654	498	1,152	735	521	1,255
Total broadleaves	3,413	598	4,010	9,397	3,300	12,696	12,809	3,897	16,707
Total - all species	8,045	626	8,671	13,069	3,423	16,493	21,114	4,050	25,164

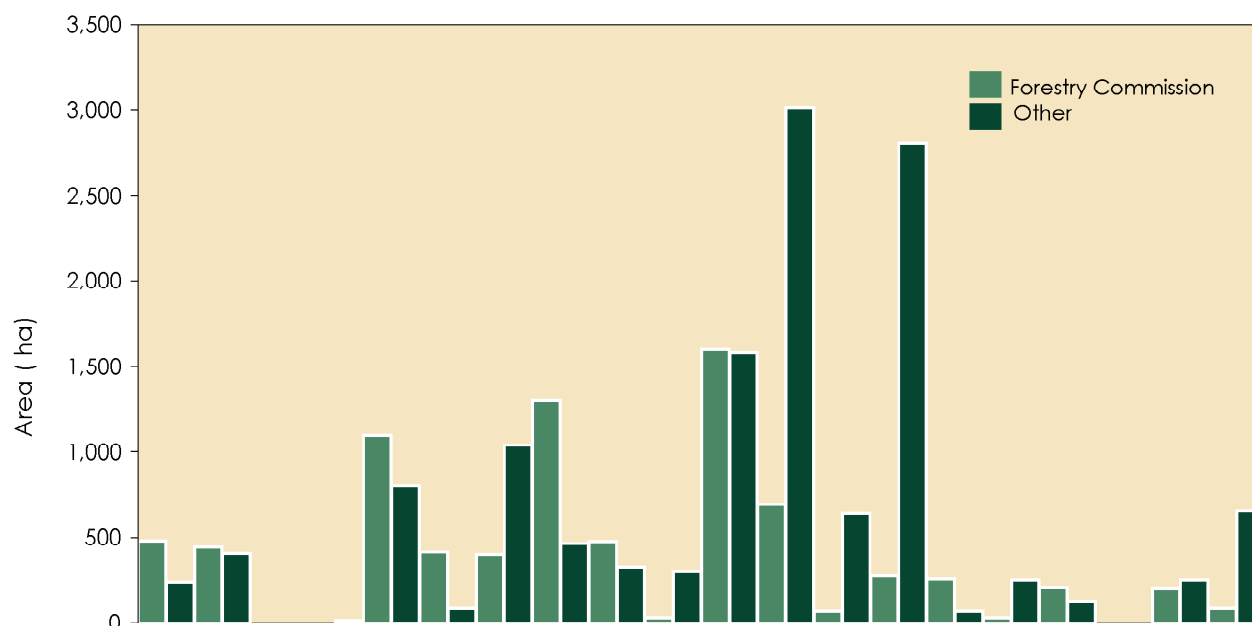
1. The standard errors of the all ownerships area estimates for the most common species or species groups (in all woodland types) are as follows

	Category 1*	Category 2*	Total High Forest
Conifers	5%	30%	5%
Broadleaves	4%	7%	3%
Norway spruce	14%	-	14%
Beech	9%	24%	8%
Ash	8%	14%	7%

*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

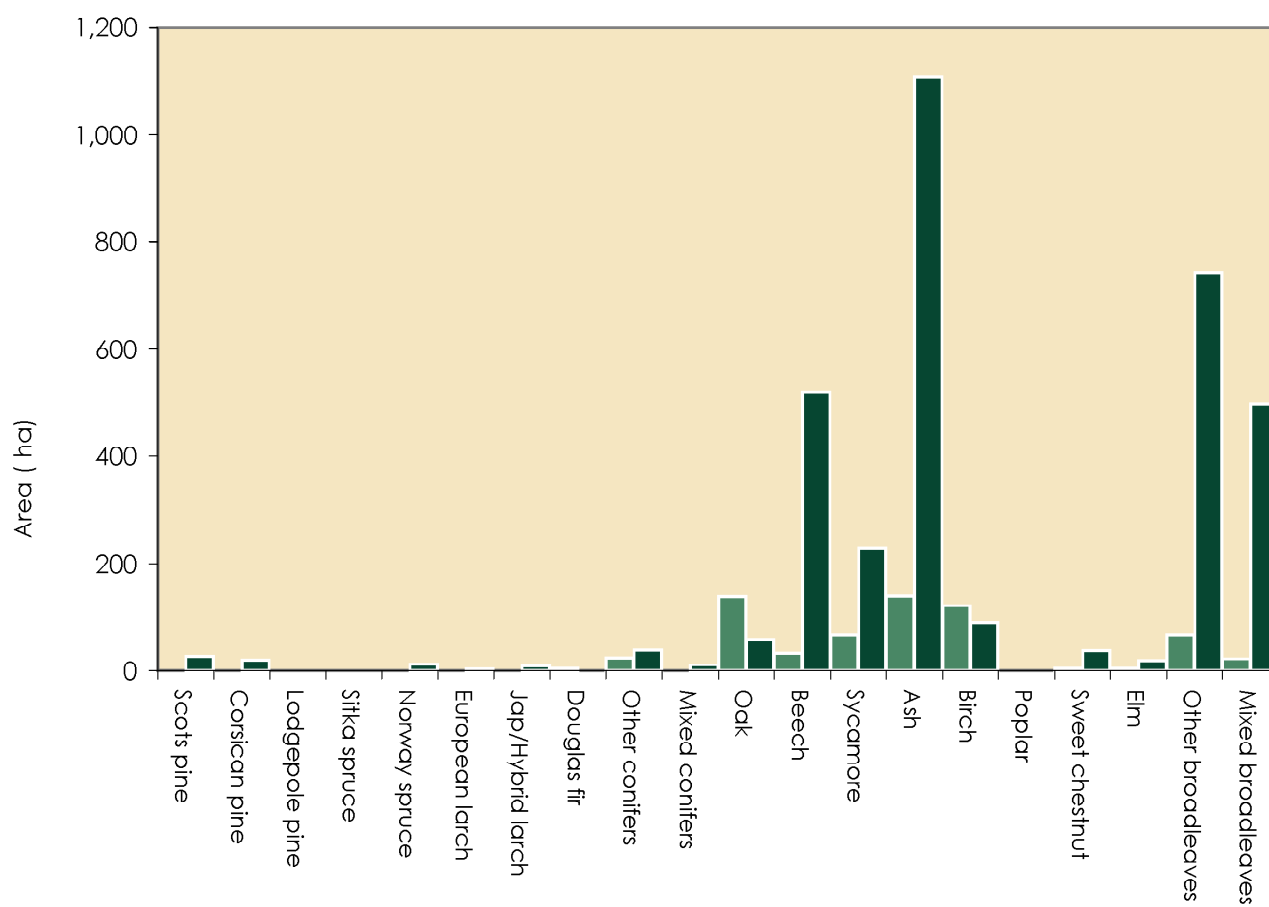
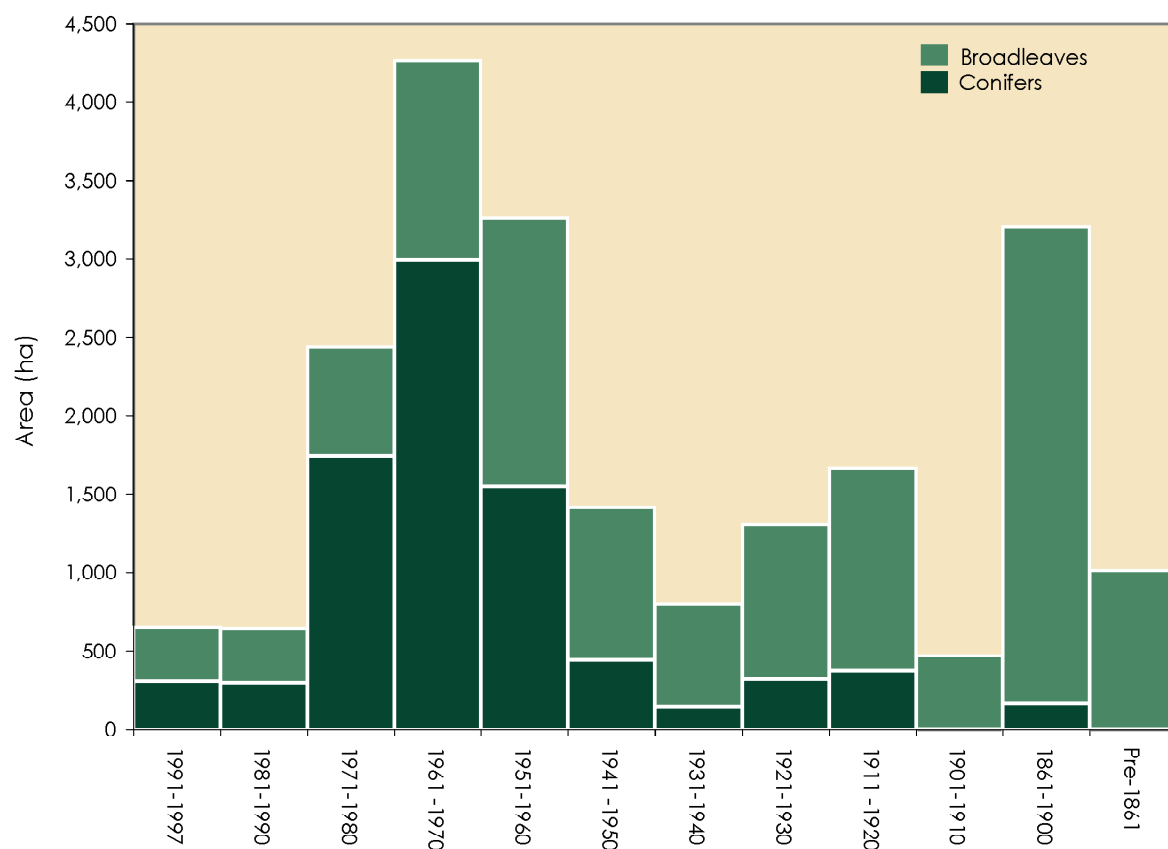


Table 10a High Forest Category 1 - Area by principal species and planting year class

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	9	194	200	142	31	69	51	14	0	10	0	720
Corsican pine	128	72	234	162	180	19	0	35	0	0	16	0	846
Lodgepole pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Sitka spruce	0	0	0	0	15	0	0	0	0	0	0	0	15
Norway spruce	84	64	189	1,009	391	107	31	0	4	0	21	0	1,899
European larch	10	0	33	116	100	154	12	73	0	0	0	0	497
Jap/Hybrid larch	42	21	400	228	394	36	3	42	230	0	40	0	1,437
Douglas fir	37	96	284	920	136	84	0	10	123	0	74	0	1,763
Other conifers	0	15	248	310	117	7	19	84	0	0	0	0	798
Mixed conifers	0	11	164	48	72	0	8	21	0	0	4	0	328
Total conifers	302	289	1,745	2,992	1,547	437	142	315	371	0	165	0	8,305
Oak	95	118	158	174	155	183	136	206	338	68	1,038	515	3,183
Beech	14	46	176	317	282	179	186	203	293	270	1,299	445	3,710
Sycamore	0	12	4	189	124	92	48	61	97	55	23	0	705
Ash	39	23	199	347	880	300	106	359	452	4	365	12	3,085
Birch	47	97	24	28	51	21	4	48	5	0	0	0	323
Poplar	0	0	38	161	8	41	29	0	4	0	0	0	280
Sweet chestnut	24	9	0	0	0	86	78	5	14	0	119	0	335
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Other broadleaves	0	23	17	24	148	41	0	85	20	0	80	15	453
Mixed broadleaves	129	27	76	38	68	31	68	22	66	74	111	24	735
Total broadleaves	347	354	692	1,277	1,715	974	656	989	1,289	471	3,035	1,011	12,809
Total - all species	649	642	2,437	4,269	3,262	1,411	798	1,305	1,660	471	3,200	1,011	21,114

*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

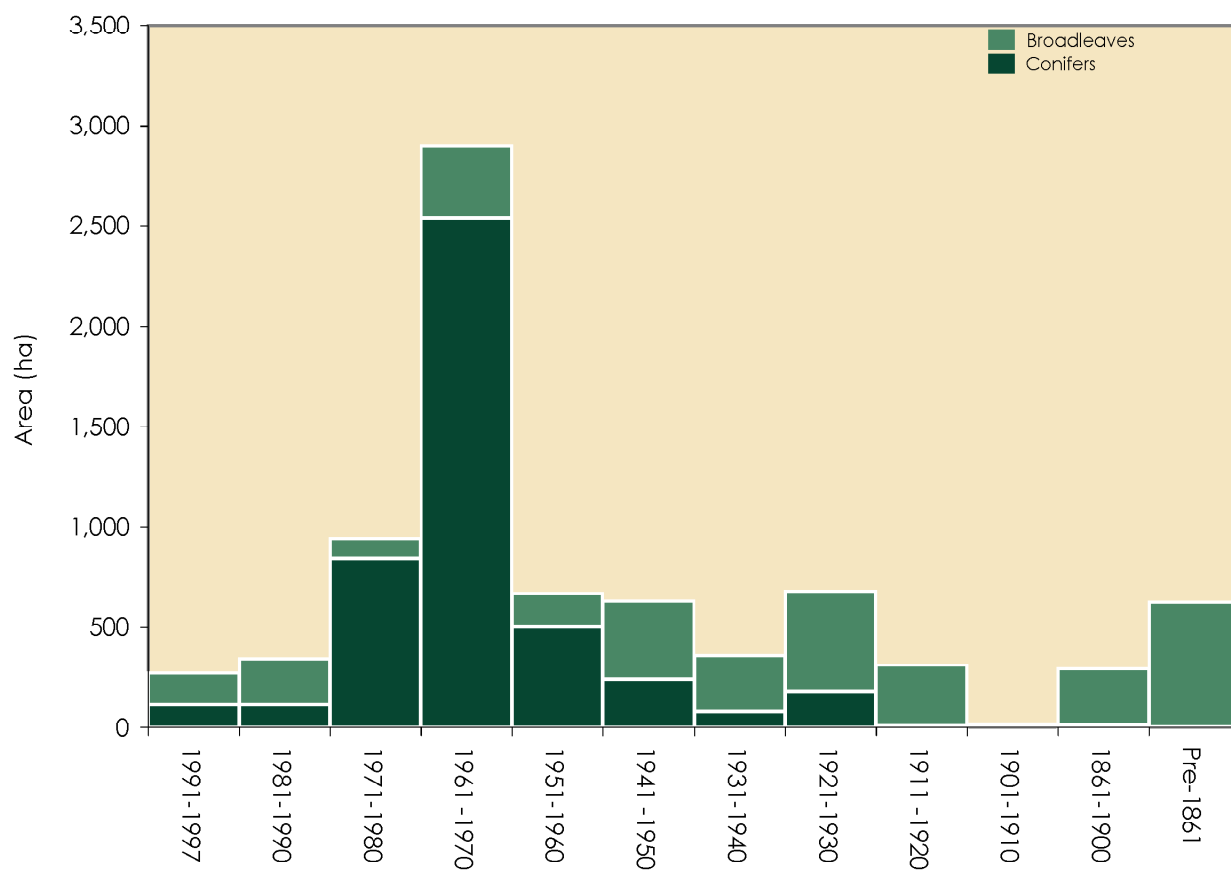


1. Most of the planting year classes cover 10 years, 1991-1997 is 7 years, and the classes prior to 1901 are 40 years or more.

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	5	49	181	105	29	50	51	0	0	10	0	480
Corsican pine	40	48	138	162	0	19	0	35	0	0	0	0	441
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	103	824	137	29	0	0	0	0	5	0	1,097
European larch	10	0	0	98	68	154	10	73	0	0	0	0	412
Jap/Hybrid larch	31	14	88	184	78	4	0	0	0	0	0	0	399
Douglas fir	33	48	284	867	52	0	0	10	5	0	0	0	1,299
Other conifers	0	0	181	196	64	7	19	10	0	0	0	0	475
Mixed conifers	0	0	0	29	0	0	0	0	0	0	0	0	29
Total conifers	114	115	843	2,538	505	240	79	179	5	0	14	0	4,632
Oak	86	81	47	20	81	167	108	179	220	19	143	450	1,600
Beech	0	42	23	180	10	39	67	100	78	0	5	152	694
Sycamore	0	0	0	66	0	0	0	0	0	0	0	0	66
Ash	0	0	5	46	14	49	0	67	0	0	95	0	276
Birch	47	97	24	28	10	0	0	48	5	0	0	0	258
Poplar	0	0	0	0	0	0	29	0	0	0	0	0	29
Sweet chestnut	24	5	0	0	0	86	78	5	0	0	10	0	207
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Other broadleaves	0	5	0	24	50	41	0	85	0	0	0	0	203
Mixed broadleaves	0	0	0	0	0	10	0	14	5	0	29	24	81
Total broadleaves	157	229	98	362	163	392	281	497	307	19	280	626	3,413
Total - all species	271	344	941	2,900	668	633	360	676	312	19	295	626	8,045

*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

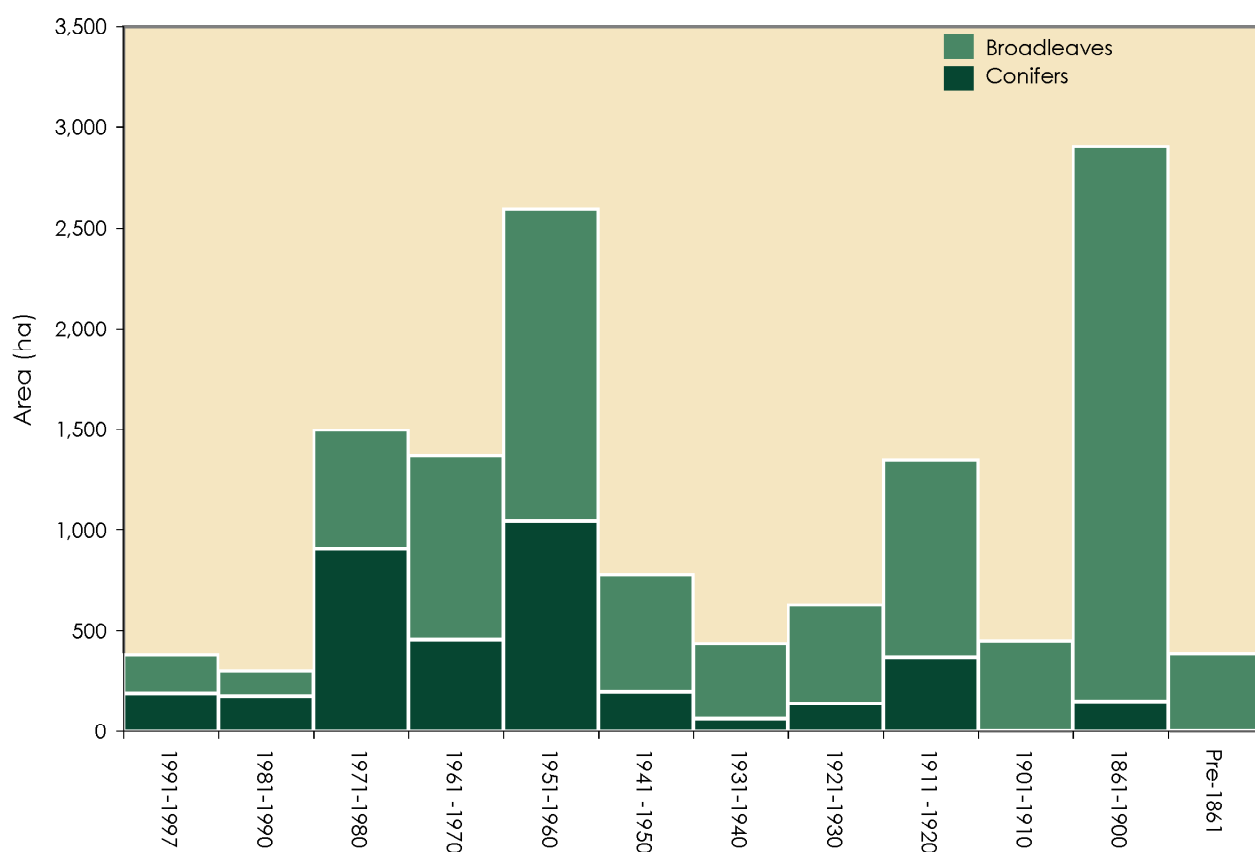
1. Most of the planting year classes cover 10 years, 1991-1997 is 7 years, and the classes prior to 1901 are 40 years or more.

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	4	145	19	37	2	18	0	14	0	0	0	240
Corsican pine	88	24	97	0	180	0	0	0	0	0	16	0	405
Lodgepole pine	0	0	0	0	0	0	0	0	0	0	0	0	0
Silka spruce	0	0	0	0	15	0	0	0	0	0	0	0	15
Norway spruce	84	64	86	185	254	78	31	0	4	0	16	0	803
European larch	0	0	33	18	31	0	2	0	0	0	0	0	84
Jap/Hybrid larch	11	7	312	45	316	32	3	42	230	0	40	0	1,038
Douglas fir	4	47	0	53	84	84	0	0	118	0	74	0	464
Other conifers	0	15	67	114	53	0	0	74	0	0	0	0	323
Mixed conifers	0	11	164	19	72	0	8	21	0	0	4	0	299
Total conifers	188	174	902	454	1,042	196	63	137	367	0	150	0	3,673
Oak	8	37	112	154	74	16	28	27	118	49	895	64	1,583
Beech	14	4	154	138	273	140	120	103	215	270	1,294	293	3,016
Sycamore	0	12	4	124	124	92	48	61	97	55	23	0	639
Ash	39	23	194	302	865	250	106	293	452	4	270	12	2,809
Birch	0	0	0	0	41	21	4	0	0	0	0	0	66
Poplar	0	0	38	161	8	41	0	0	4	0	0	0	252
Sweet chestnut	0	4	0	0	0	0	0	0	14	0	109	0	128
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Other broadleaves	0	18	17	0	98	0	0	0	20	0	80	15	250
Mixed broadleaves	129	27	76	38	68	22	68	8	61	74	83	0	654
Total broadleaves	190	125	594	915	1,551	581	375	492	982	452	2,755	384	9,397
Total - all species	378	298	1,497	1,369	2,593	778	437	629	1,349	452	2,905	384	13,069

*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	%
1991-99	Mixed broadleaves	20	Corsican pine	20	Oak	15
1981-90	Oak	18	Birch	15	Douglas fir	15
1971-80	Jap/Hybrid larch	16	Other conifers	10	Corsican pine	10
1961-70	Norway spruce	24	Douglas fir	22	Ash	8
1951-60	Ash	27	Jap/Hybrid larch	12	Norway spruce	12
1941-50	Ash	21	Oak	13	Beech	13
1931-40	Beech	23	Oak	17	Ash	13
1921-30	Ash	28	Oak	16	Beech	16
1911-20	Ash	27	Oak	20	Beech	18
1901-10	Beech	57	Mixed broadleaves	16	Oak	14
1861-1900	Beech	40	Oak	32	Ash	11
Pre 1861	Oak	51	Beech	44	Mixed broadleaves	2
All years	Ash	17	Beech	17	Oak	13

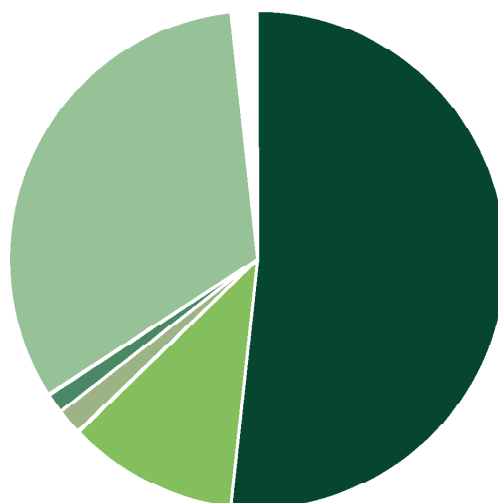
1. Principal species as a percentage of area in the planting year class.

Table 12 Ownership type* by area and percentage

Ownership type	Area (ha)	%
Personal	14,857	51.7
Business	3,201	11.1
Forestry or timber business	0	0.0
Charity	471	1.6
Local Authority	386	1.3
Other public (not FC)	0	0.0
Forestry Commission	9,376	32.6
Community ownership or common land	0	0.0
Unidentified	455	1.6
Total	28,746	100.0

* 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 km² 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 km² 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	1,201	720	Area (ha)
Wide Linear Features	952	286	Area (ha)
Wide Linear Features	952	95	Length (Km)
Narrow Linear Features	54,300	3,774	Length (Km)
Narrow Linear Features	54,300	2,183,300	Number of live trees
Groups	109,500	600,300	Number of live trees
Individual Trees	236,800	236,800	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	36	684	720	1,201	0.60
Wide Linear Features	0	286	286	952	0.30
Total	36	970	1,006	2,153	0.47

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	0.8	326.6	327.4	44.1	10.8
Spruce	0.0	0.0	4.2	26.7	30.9	4.2	1.0
Larch	0.0	0.0	33.1	174.2	207.3	27.9	6.9
Cypress	0.0	0.8	23.8	120.0	144.6	19.5	4.8
Other conifers	0.0	1.7	9.3	20.9	31.9	4.3	1.1
Total conifers	0.0	2.5	71.3	668.4	742.1	100.0	24.6
Oak	33.1	22.1	56.0	69.5	180.7	7.9	6.0
Beech	0.8	2.5	5.9	159.0	168.2	7.4	5.6
Sycamore	3.3	0.0	11.9	41.9	57.1	2.5	1.9
Ash	29.6	2.6	108.7	160.0	300.9	13.2	10.0
Birch	0.8	0.8	14.4	14.3	30.3	1.3	1.0
Poplar	0.0	0.0	1.7	0.0	1.7	0.1	0.1
Sweet chestnut	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Horse chestnut	18.7	1.7	0.8	0.0	21.2	0.9	0.7
Alder	0.8	2.5	7.6	20.0	30.9	1.4	1.0
Lime	0.8	0.8	2.5	27.6	31.7	1.4	1.0
Elm	1.7	0.0	52.6	266.6	320.9	14.1	10.6
Willow	1.1	2.2	20.4	25.7	49.4	2.2	1.6
Other broadleaves	65.5	42.4	246.2	730.3	1084.4	47.6	35.9
Total broadleaves	156.1	77.7	529.0	1514.9	2277.4	100.0	75.4
Total - all species	156.1	80.2	600.3	2183.3	3020.4		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	21%
Narrow Linear Features	34%
- 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	1.7	0.0	1.7	40.5	2.9
Cypress	0.0	0.0	2.5	0.0	2.5	59.5	4.2
Other conifers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total conifers	0.0	0.0	4.2	0.0	4.2	100.0	7.1
Oak	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Beech	0.8	0.0	0.0	0.0	0.8	1.5	1.4
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	6.8	0.0	14.4	28.6	49.8	90.5	84.1
Willow	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other broadleaves	0.4	0.4	1.7	1.9	4.4	8.0	7.4
Total broadleaves	8.0	0.4	16.1	30.5	55.0	100.0	92.9
Total - all species	8.0	0.4	20.3	30.5	59.2		100.0

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	326.5	1.0	0.0	0.0	327.5
Spruce	13.1	17.8	0.0	0.0	30.9
Larch	161.9	45.5	0.0	0.0	207.4
Cypress	102.1	42.5	0.0	0.0	144.6
Other conifers	13.7	18.3	0.0	0.0	32.0
Total conifers	617.3	125.1	0.0	0.0	742.4
Oak	49.6	69.8	60.5	0.8	180.7
Beech	142.4	20.2	4.8	1.0	168.4
Sycamore	28.5	15.6	13.1	0.0	57.2
Ash	76.4	159.9	62.0	2.7	301.0
Birch	7.3	23.1	0.0	0.0	30.4
Poplar	0.0	1.7	0.0	0.0	1.7
Sweet chestnut	0.0	0.0	0.0	0.0	0.0
Horse chestnut	21.2	0.0	0.0	0.0	21.2
Alder	3.7	27.3	0.0	0.0	31.0
Lime	0.0	13.8	9.5	8.6	31.9
Elm	55.0	266.0	0.0	0.0	321.0
Willow	11.4	36.2	1.9	0.0	49.5
Other broadleaves	703.3	368.0	12.3	0.8	1,084.4
Total broadleaves	1,098.8	1,001.6	164.1	13.9	2,278.4
Total - all species	1,716.0	1,126.5	164.1	13.9	3,020.4

Table 18 Number of Groups by group size

Number of trees per Group*	Number of Groups (000's)
2	15
3-5	43
6-10	26
11-20	15
21-50	8
51-100	2
>100	0
Total	109

*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	24,902	94.4	28,746	96.7	15
0.25 - <2.0	1,470	5.6	970	3.3	-34
Total	26,372		29,716		13
% Woodland land cover	10.0		11.2		

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), 265,327 ha, was based on the 1991 Census of Population digital boundaries.
4. Land area used to calculate woodland cover percent (1980), 264,263 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	960	749	-22
Corsican pine	619	866	40
Lodgepole pine	12	0	-100
Sitka spruce	125	15	-88
Norway spruce	2,292	1,911	-17
European larch	1,391	501	-64
Jap/Hybrid larch	1,854	1,447	-22
Douglas fir	1,914	1,768	-8
Other conifers	769	861	12
Mixed conifers	444	339	-24
Total conifers	10,379	8,457	-19
Oak	3,052	3,379	11
Beech	2,832	4,262	51
Sycamore	521	1,000	92
Ash	1,925	4,331	125
Birch	537	534	0
Poplar	267	280	5
Sweet chestnut	171	378	122
Elm	45	24	-46
Other broadleaves	1,780	1,263	-29
Mixed broadleaves	1,180	1,255	6
Total broadleaves	12,308	16,706	36
Total all species	22,686	25,163	11
Felled	512	75	-85
Total High Forest	23,198	25,238	9

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 10.7% (Table 2). To obtain meaningful comparisons between the two datasets the 1980 Census data have therefore been reduced by 10.7%.
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

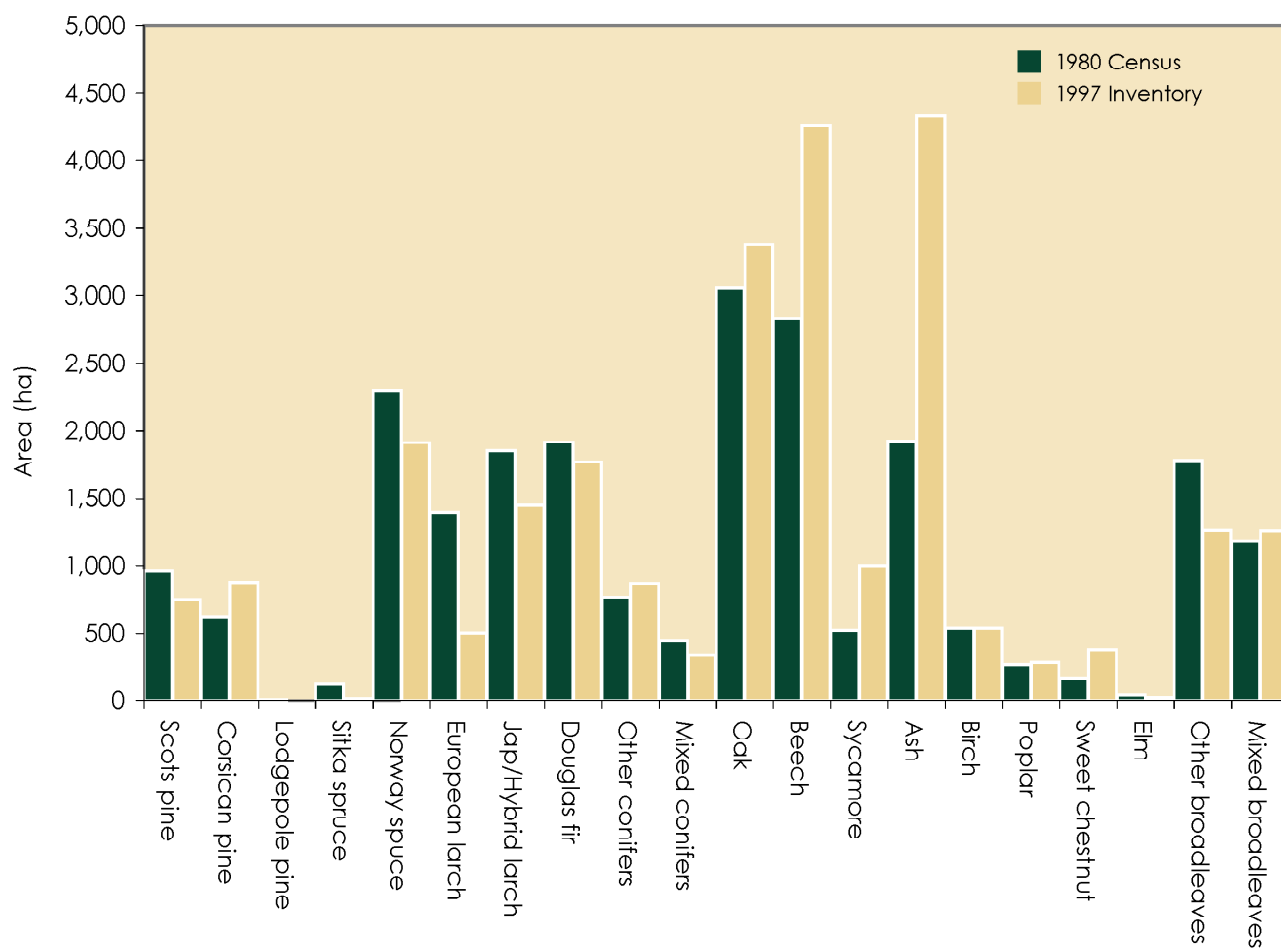


Table 21 Comparison of High Forest Category 1 area by planting year class
between 1980 Census and 1997 Inventory

Planting year class	1980 Census woodland area (ha)	1997 Inventory woodland area (ha)	Change (%)
1991-1997	0	925	see note
1981-1990	0	643	see note
1971-1980	1,909	2,467	29
1961-1970	4,825	4,269	-12
1951-1960	2,538	3,298	30
1941-1950	2,850	1,411	-50
1931-1940	1,859	798	-57
1921-1930	1,514	1,304	-14
1911-1920	1,083	1,970	82
1901-1910	1,048	471	-55
1861-1900	2,440	3,284	35
Pre 1861	1,458	1,011	-31
Total all years	21,525	21,851	2

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.

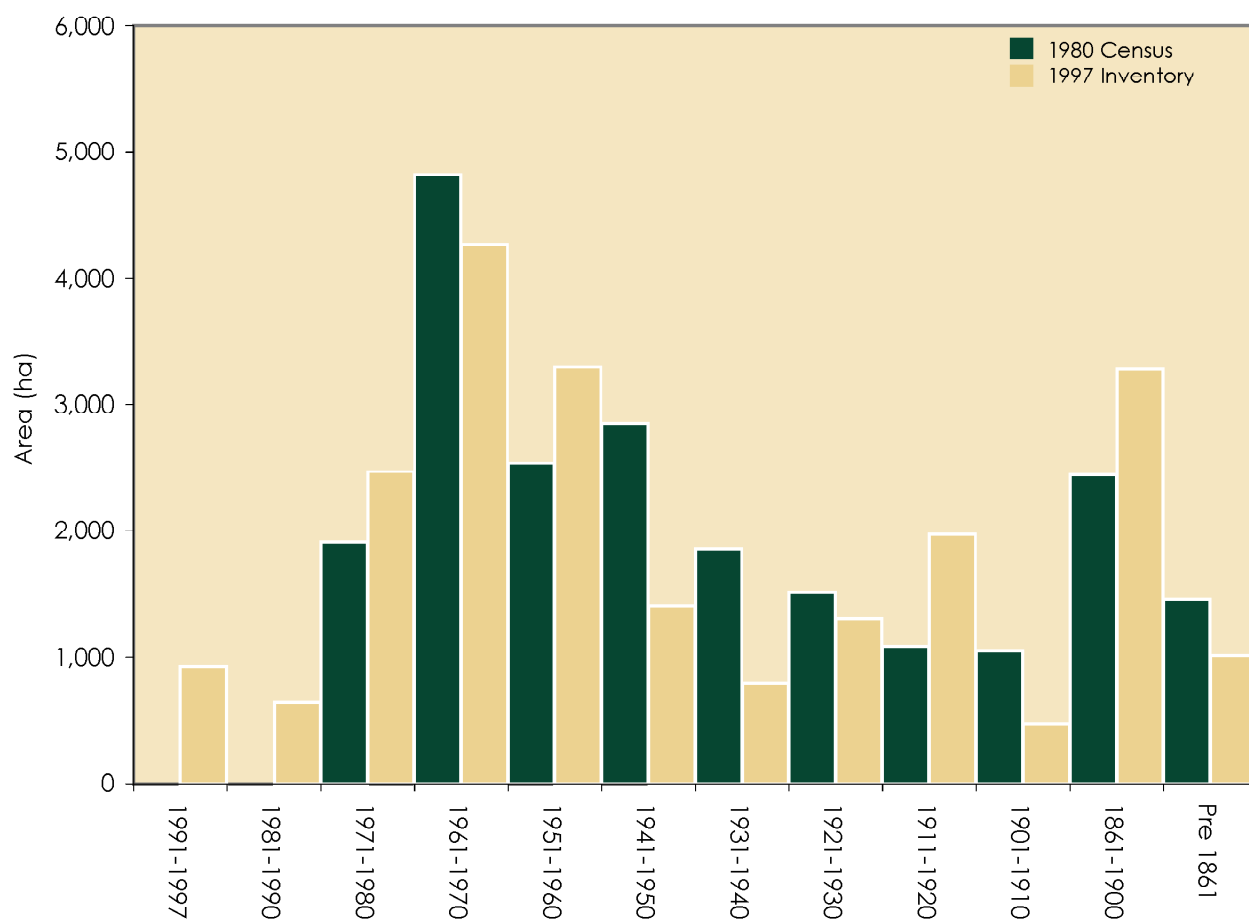
Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1997 Inventory

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	136	139	2
Middle Tree	79	65	-18
Total Individual Trees	215	204	-5
Groups	460	418	-9
Linear Features	340	1,747	415
Total	1,014	2,369	134

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)	81.3	76.8	-6
Groups (per sq km)	50.3	30.1	-40
Linear Features (m per sq km)	722.8	1,383.4	91

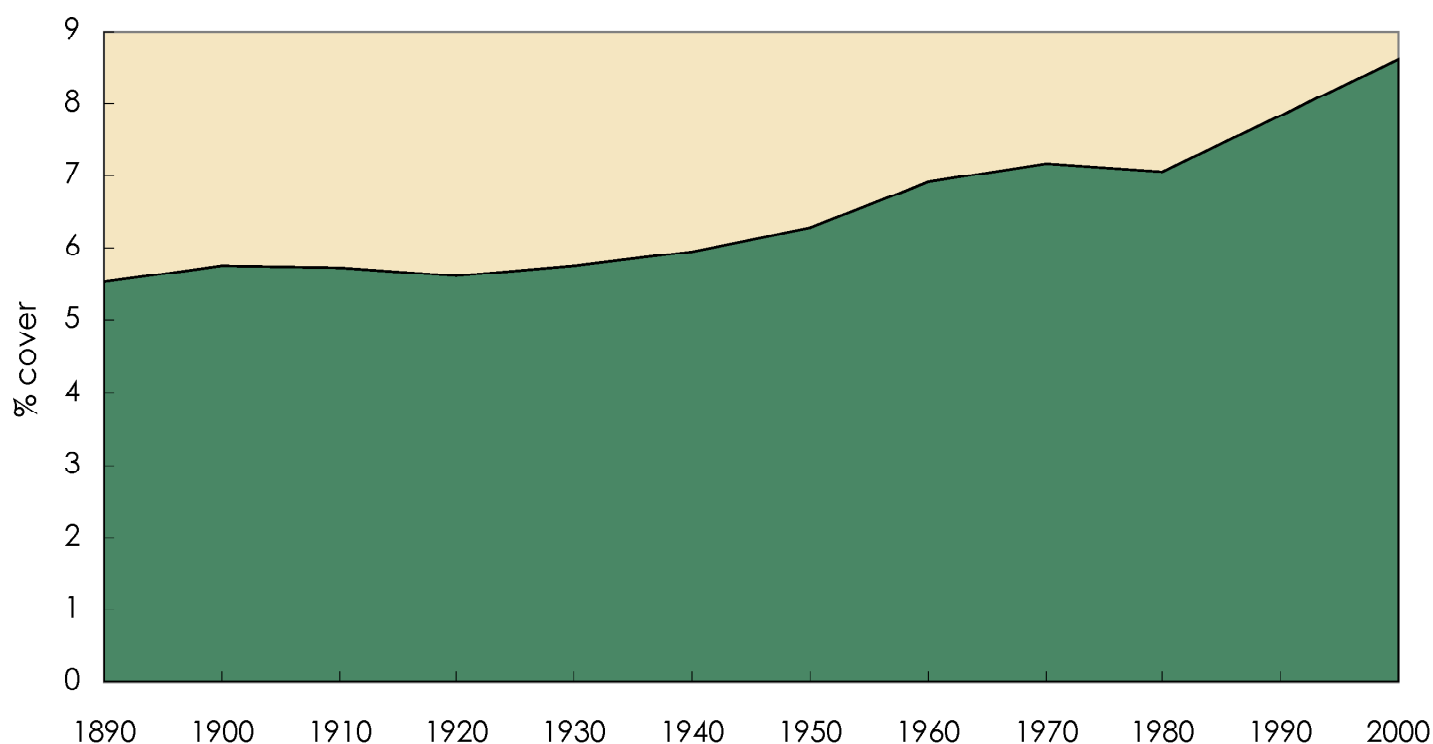
1. The Survey of Small Woodland and Trees did not record information referring to tree features (I.e. Individual trees, Groups and Narrow Linear Features) within developed land.
2. In the 1980 Census hazel, hawthorn, blackthorn and goat willow were excluded, the 1997 Inventory figures have been adjusted 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.

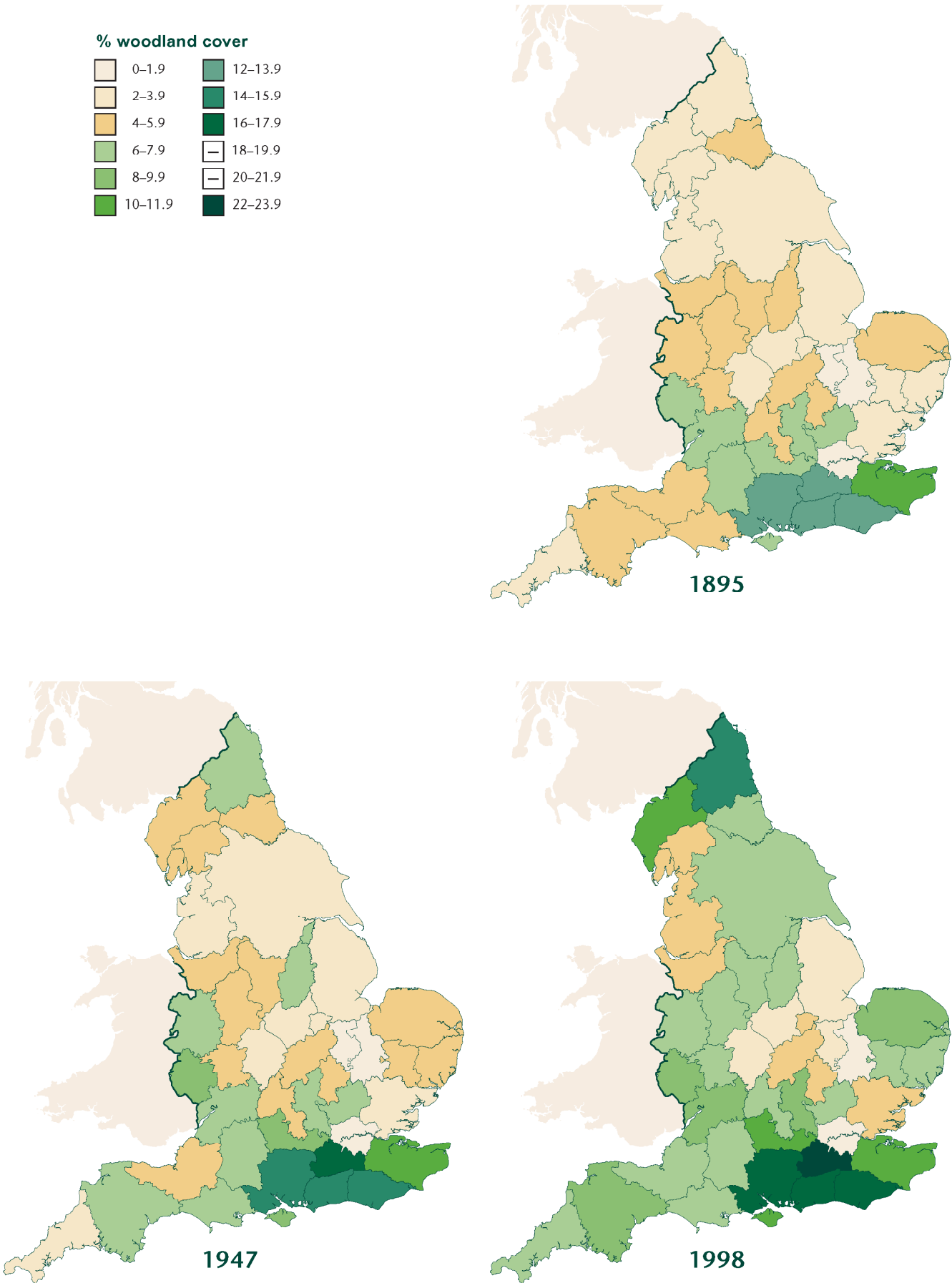
The maps use the old County structure data of England, as reported on in 1895 and 1947. The data from these counties could not be re-worked for different geographic areas. In contrast, the digital woodland map, which forms the basis of the current inventory, can be analysed for any geographic area.

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



1. Following local government reorganisation the boundaries of the county of the report have changed significantly since 1890 and therefore data from a wider geographic area have been used.

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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