National Inventory of Woodland and Trees

England

Regional Report for
South East

Forestry Commission

Forestry Commission

Inventory Report

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Regional Report for
South East

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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 South East Region was carried out by Graham Bull, Woodland Survey Officer, and Woodland GIS Officers Chris Brown, Robert Beck and Esther Whitton. Data processing and analysis were carried out by Woodland Data Officers Justin Gilbert and Shona Mackintosh.

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 South East Region 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 With the statistics becoming increasingly out of date the Forestry Commission decided to undertake a new survey: the *National Inventory of Woodland and Trees*.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 South East Region, 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 in South East Region 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:

- 2.0 ha – <100 ha : every fifth wood
- 100 ha – <500 ha : two woods in five
- 500 ha 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 had 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 South East Region was stratified into coastal and inland 1 km x 1 km squares. A random sample of the 1 km^2 plots was 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^2 was then divided into 16 parts, and two of these were selected at random for field data collection. Data was collected on Small Woods (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 South East Region is 270 084 hectares. This represents 14% of the land area (Table 1).

- Broadleaved woodland is the dominant forest type representing 55.2% of all woodland. Conifer woodland represents 13.1%, Mixed woodland 15.6% and Open Space within woodlands 8.5% (Table 2).

- The main conifer is pine covering 29 921 hectares or 57% of all conifer species. The main broadleaved species is oak covering 46 377 hectares or 27% of all broadleaved species (Table 3).

- 35 668 hectares or 14% of woodland over 2 hectares is owned by or leased to the Forestry Commission, and 224 531 hectares or 86% of woodland is in Other ownerships (Table 6).

- There are 11 887 woods over 2 hectares within South East Region with a mean wood area of 22.2 hectares (Table 7a). There are a total of 22 991 woods from 0.1 – <2.0 hectares with a mean wood area of 0.4 hectares (Table 14).

- There are 10.6 million live trees and 453.7 thousand dead trees outside woodland in South East Region (Tables 17 and 18).

- Woodland land cover increased by over 18 500 hectares from 13.1% to 14.1% of the land area between 1980 and 1996 (Table 23).

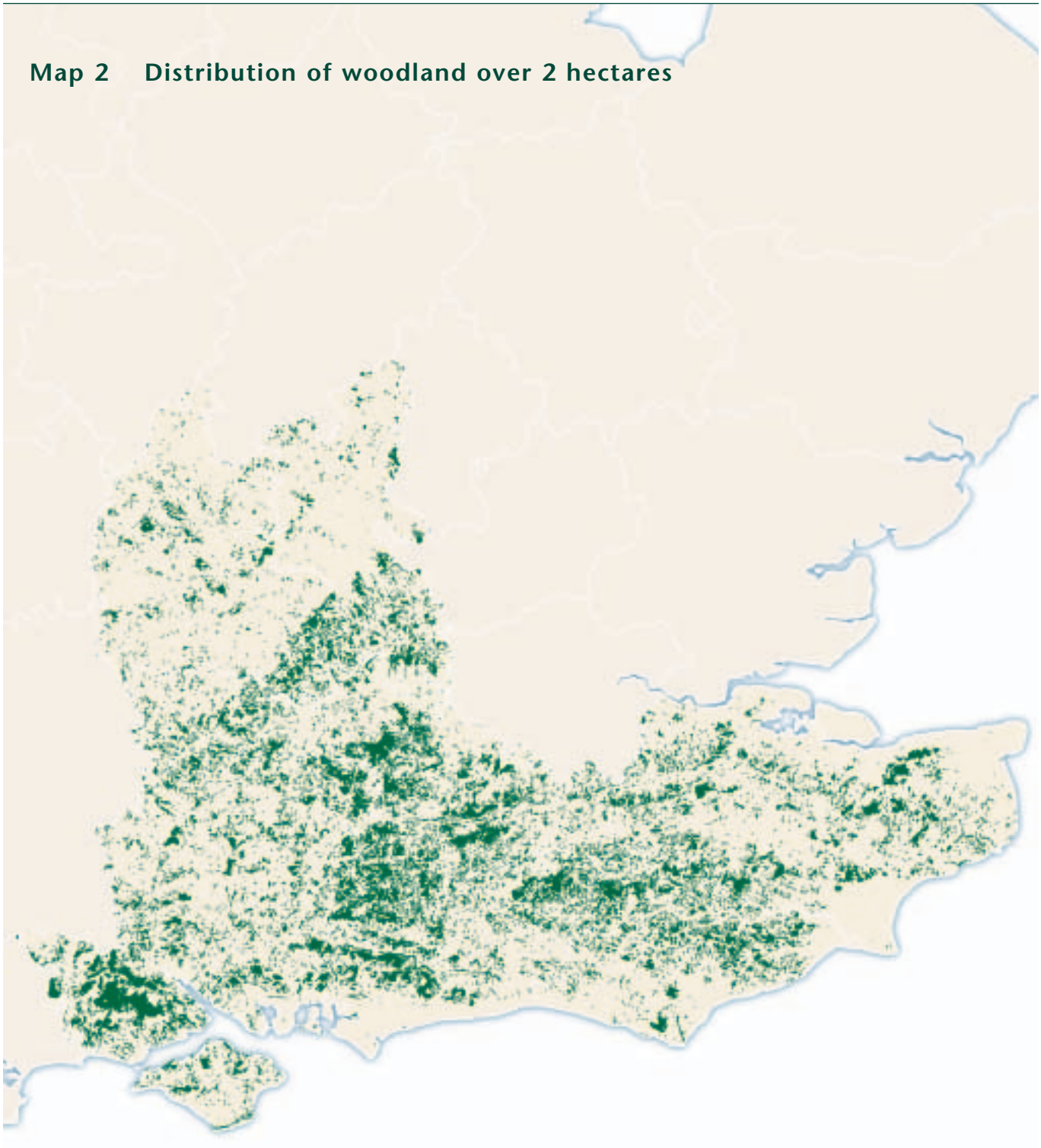
- The area of Broadleaves increased by 26% between 1980 and 1996, with the relative proportion of Broadleaves to Conifers increasing from 70% to 77% (Table 24).

INVENTORY REPORTS

In addition to the Inventory Reports for England and the English Regions, further information is available by county (as shown on the map opposite for South East Region). Country and county reports for Wales, and country and region reports for Scotland are also available.

0 15 30 45 60 Kilometres

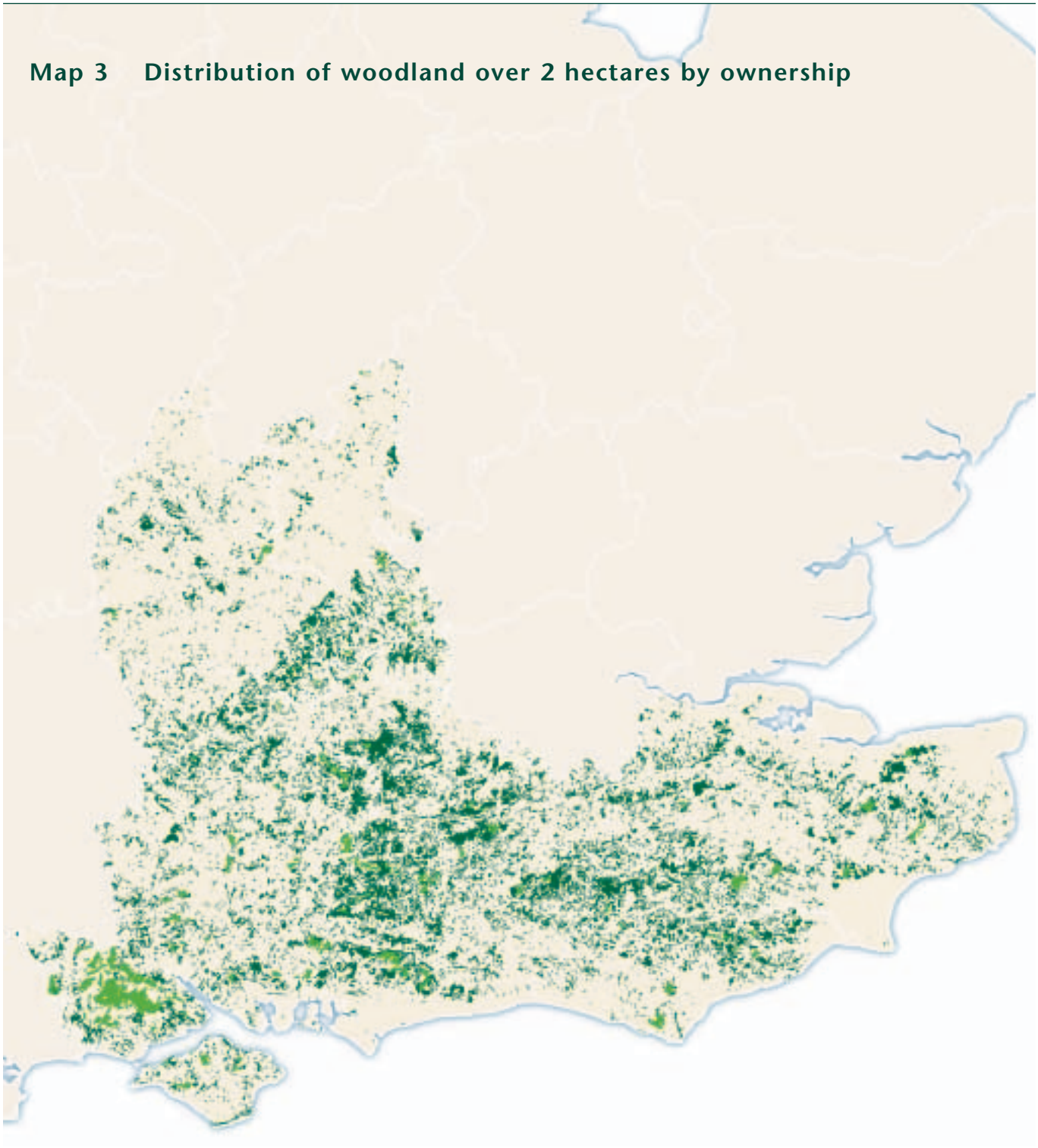
Map 2 Distribution of woodland over 2 hectares



0 15 30 45 60 Kilometres

Reference Date 31 March 1996

Map 3 Distribution of woodland over 2 hectares by ownership



Forestry Commission woodland
Other woodland

0 15 30 45 60 Kilometres

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

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 South East Region.

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)	% Woodland area
2.00 and over	260 198	96.3
0.25 – < 2.00	8 860	3.3
0.10 – < 0.25	1 026	0.4
Total area of woodland	**270 084**	**100.0**
% Woodland land cover	**14.1**	

1. Area of South East Region, including inland water, 1 909 594 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	35 408	89	35 497	13.1
Broadleaved	141 427	7 620	149 047	55.2
Mixed	40 803	1 374	42 177	15.6
Coppiced	9 462	0	9 462	3.5
Copp-w-Standards	7 542	0	7 542	2.8
Windblow	268	0	268	0.1
Felled	3 154	0	3 154	1.2
Open Space	22 134	803	22 937	8.5
Total	**260 198**	**9 886**	**270 084**	**100.0**

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	29 653	268	29 921	57.0	13.2
Sitka spruce	275	0	275	0.5	0.1
Larch	5 254	71	5 325	10.1	2.3
Other conifers	14 631	339	14 970	28.5	6.6
Mixed conifers	1 779	241	2 020	3.8	0.9
Total conifers	**51 592**	**919**	**52 511**	**100.0**	**23.1**
Oak	44 326	2 051	46 377	26.6	20.4
Beech	23 425	642	24 067	13.8	10.6
Sycamore	5 937	357	6 294	3.6	2.8
Ash	26 624	979	27 603	15.8	12.2
Birch	25 469	0	25 469	14.6	11.2
Elm	432	89	521	0.3	0.2
Other broadleaves	26 190	1 477	27 667	15.9	12.2
Mixed broadleaves	13 909	2 570	16 479	9.4	7.3
Total broadleaves	**166 313**	**8 165**	**174 478**	**100.0**	**76.9**
Total all species†	**217 905**	**9 084**	**226 989**		**100.0**

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

† Excludes the 43 095 ha of Coppice, Felled and Open Space areas, which were included in Table 2.

1. The standard errors of the total area estimates for the most common species or species groups are as follows:

Conifers	3%
Broadleaves	2%
Pine	4%
Oak	3%
Ash	4%

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	271 300	2 192 200	8	115
Narrow Linear Features	119 000	8 020 900	67	420
Individual Trees	416 600	416 600	1	22
Total		**10 629 700**		**557**

1. Land area used to calculate tree density 1 909 594 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	17%
Narrow Linear Features	19%
Individual Trees	15%

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	684	103	5
Narrow Linear Features	119 000	12 330	646
Total		**12 433**	**651**

1. Land area used to calculate feature density 1 909 594 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	100%
Narrow Linear Features	14%

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

4. See Glossary for definitions of feature types.

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 the sample plots was reduced as the sampled woodlands increased in size, the general aim being to sample 1% of 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
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Graph:	Area of High Forest by principal species and ownership
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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	35 668	14
Other	224 531	86
Total area of woodland	**260 198**	**100**

1. Woodland area from aerial photographic interpretation map updated to 31 March 1996.

2. See Glossary for definitions of ownership types.

Woodland area by ownership

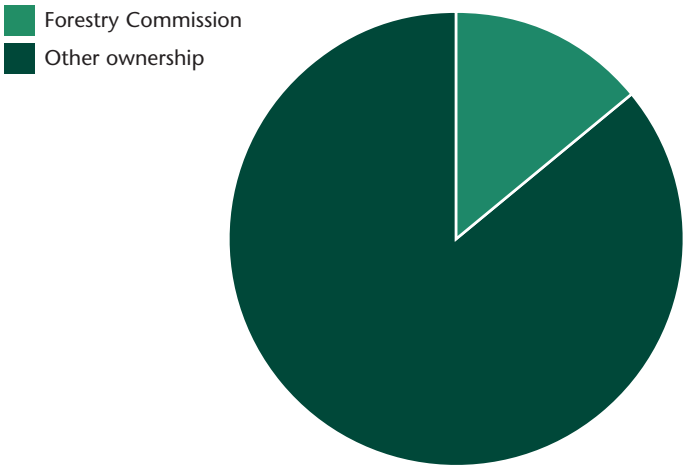


Table 7a Size class distribution of woodland

Size class (ha)	Number of woods	Total area (ha)	Percent of total area	Mean wood area (ha)
<10	8 528	37 446	14	4.4
10 – <20	1 560	21 938	8	14.1
20 – <50	1 064	33 197	13	31.2
50 – <100	366	25 353	10	69.3
<100	11 518	117 934	45	10.2
100 – <500	303	60 193	23	198.7
500 and >	66	85 476	32	1 295.1
All woods	**11 887**	**263 603**	**100**	**22.2**

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	161	637	0	4.0
	O	8 898	38 403	15	4.3
10 – <20	FC	25	393	0	15.7
	O	1 599	22 516	9	14.1
20 – <50	FC	64	2 107	1	32.9
	O	1 071	33 387	13	31.2
50 – <100	FC	43	3 246	1	75.5
	O	373	25 891	10	69.4
<100	FC	293	6 383	2	21.8
	O	11 941	120 197	46	10.1
100 – <500	FC	64	13 993	5	218.6
	O	286	54 276	21	189.8
500 and >	FC	13	15 301	6	1177.0
	O	47	53 452	20	1137.3
Total	**FC**	**370**	**35 677**	**14**	**96.4**
	O	**12 274**	**227 926**	**86**	**18.6**

1. Tables 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 3 405 hectares more than that recorded in Tables 1 and 3. 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	11 408	32.0	24 000	10.7	35 408	13.6
Broadleaved	13 746	38.5	127 680	56.9	141 427	54.4
Mixed	6 562	18.4	34 241	15.3	40 803	15.7
Coppice	813	2.3	8 649	3.9	9 462	3.6
Copp-w-stds	38	0.1	7 504	3.3	7 542	2.9
Windblow	34	0.1	234	0.1	268	0.1
Felled	806	2.3	2 347	1.0	3 154	1.2
Open Space	2 261	6.3	19 873	8.9	22 134	8.5
Total	**35 668**	**100.0**	**224 531**	**100.0**	**260 198**	**100.0**

Area of woodland by forest type

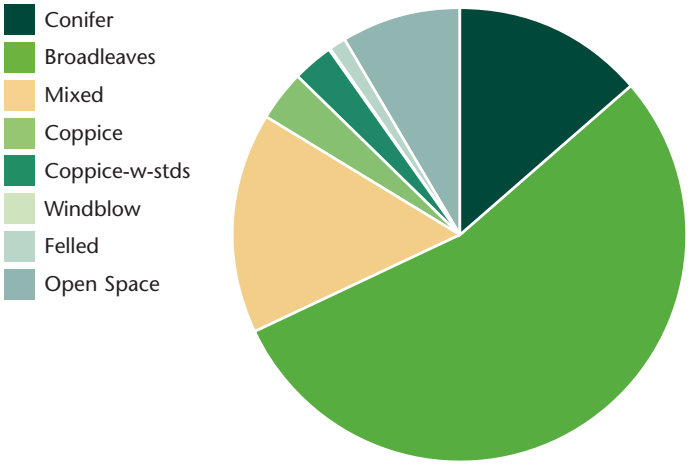


Table 9a Area of High Forest by principal species and ownership

Species	Forestry Commission			Other			All ownerships		
	area (ha)	cat* %	spp† %	area (ha)	cat* %	spp† %	area (ha)	cat* %	spp† %
Scots pine	5 307	38	17	18 146	48	10	23 453	45	11
Corsican pine	2 580	18	8	3 548	9	2	6 129	12	3
Lodgepole pine	9	0	0	62	0	0	71	0	0
Sitka spruce	19	0	0	256	1	0	275	1	0
Norway spruce	2 295	16	7	3 384	9	2	5 680	11	3
European larch	168	1	1	559	1	0	727	1	0
Japanese/hybrid larch	535	4	2	3 992	11	2	4 527	9	2
Douglas fir	1 558	11	5	2 279	6	1	3 837	7	2
Other conifers	1 395	10	4	3 719	10	2	5 114	10	2
Mixed conifers	136	1	0	1 644	4	1	1 779	3	1
Total conifers	**14 001**	**100**	**44**	**37 591**	**100**	**20**	**51 592**	**100**	**24**
Oak	5 084	29	16	39 242	26	21	44 326	27	20
Beech	6 406	36	20	17 019	11	9	23 425	14	11
Sycamore	36	0	0	5 901	4	3	5 937	4	3
Ash	1 174	7	4	25 450	17	14	26 624	16	12
Birch	3 273	18	10	22 196	15	12	25 469	15	12
Poplar	120	1	0	1 790	1	1	1 911	1	1
Sweet chestnut	569	3	2	4 464	3	2	5 032	3	2
Elm	0	0	0	432	0	0	432	0	0
Other broadleaves	746	4	2	18 501	12	10	19 247	12	9
Mixed broadleaves	339	2	1	13 570	9	7	13 909	8	6
Total broadleaves	**17 748**	**100**	**56**	**148 565**	**100**	**80**	**166 313**	**100**	**76**
Total – all species	**31 749**		**100**	**186 156**		**100**	**217 905**		**100**
Felled	**806**			**2 347**			**3 154**		
Total High Forest	**32 555**			**188 503**			**221 059**		

*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 22 134 hectares 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	3%
Broadleaves	1%
Scots pine	5%
Oak	2%
Ash	3%

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

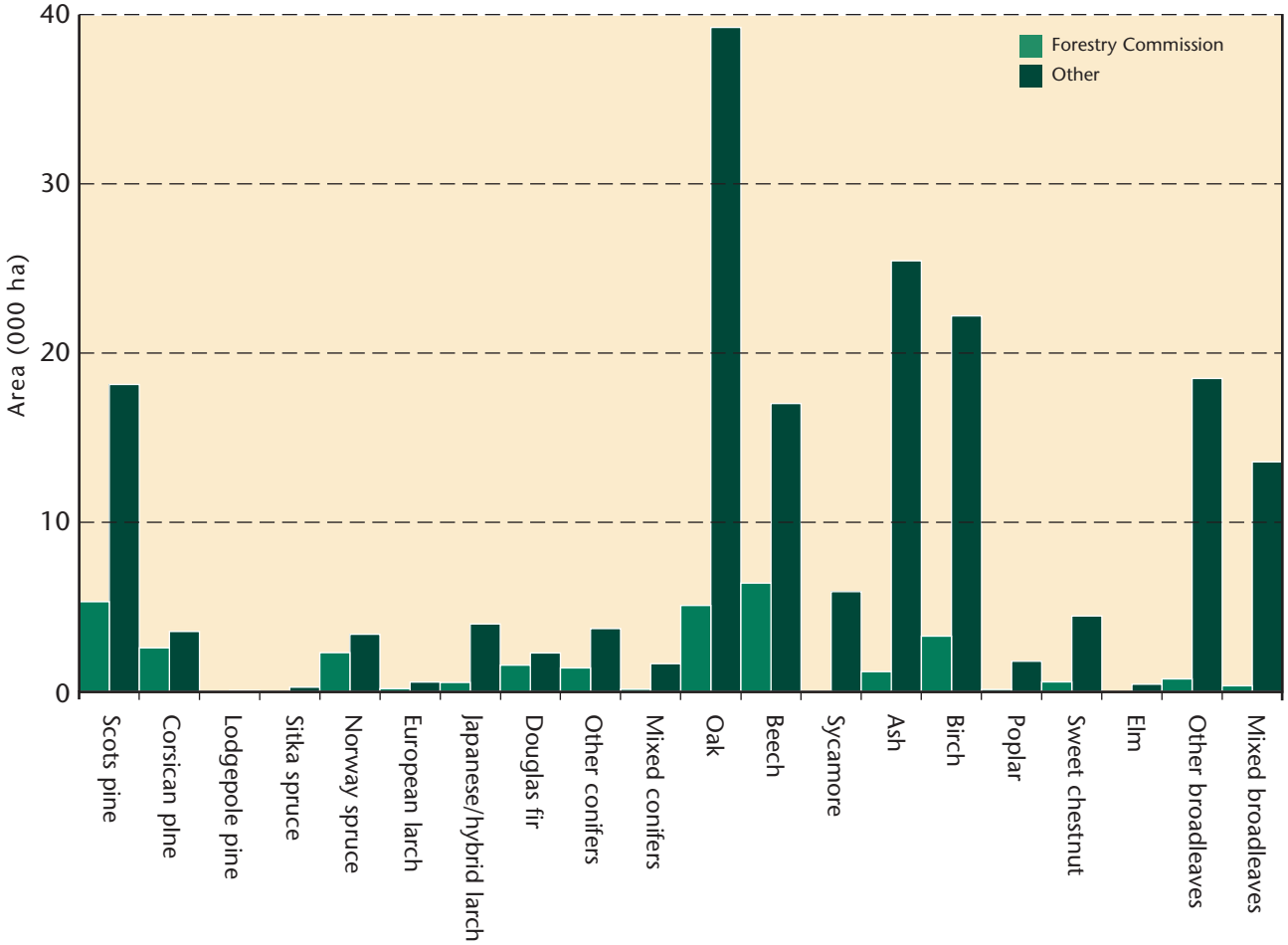


Table 9b Area of High Forest by principal species, ownership and category

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	5 303	5	5 307	17 904	242	18 146	23 206	247	23 453
Corsican pine	2 576	4	2 580	3 536	13	3 548	6 112	16	6 129
Lodgepole pine	9	0	9	62	0	62	71	0	71
Sitka spruce	14	5	19	239	18	256	253	22	275
Norway spruce	2 295	0	2 295	3 330	54	3 384	5 625	54	5 680
European larch	168	0	168	551	8	559	718	8	727
Japanese/hybrid larch	521	14	535	3 941	51	3 992	4 461	65	4 527
Douglas fir	1 558	0	1 558	2 279	0	2 279	3 837	0	3 837
Other conifers	1 372	23	1 395	3 285	434	3 719	4 657	457	5 114
Mixed conifers	131	5	136	1 568	76	1 644	1 699	80	1 779
Total conifers	**13 946**	**55**	**14 001**	**36 694**	**896**	**37 591**	**50 641**	**951**	**51 592**
Oak	4 641	443	5 084	35 102	4 140	39 242	39 743	4 583	44 326
Beech	5 988	418	6 406	16 176	844	17 019	22 164	1 261	23 425
Sycamore	36	0	36	5 321	581	5 901	5 357	581	5 937
Ash	1 116	58	1 174	23 659	1 791	25 450	24 775	1 849	26 624
Birch	2 408	865	3 273	18 556	3 640	22 196	20 964	4 505	25 469
Poplar	120	0	120	1 743	47	1 790	1 863	47	1 911
Sweet chestnut	251	318	569	3 252	1 212	4 464	3 503	1 530	5 032
Elm	0	0	0	317	115	432	317	115	432
Other broadleaves	364	382	746	10 632	7 869	18 501	10 996	8 251	19 247
Mixed broadleaves	246	93	339	10 165	3 405	13 570	10 411	3 499	13 909
Total broadleaves	**15 171**	**2 577**	**17 748**	**124 922**	**23 643**	**148 565**	**140 093**	**26 221**	**166 313**
Total – all species	**29 117**	**2 632**	**31 749**	**161 616**	**24 540**	**186 156**	**190 733**	**27 172**	**217 905**

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:

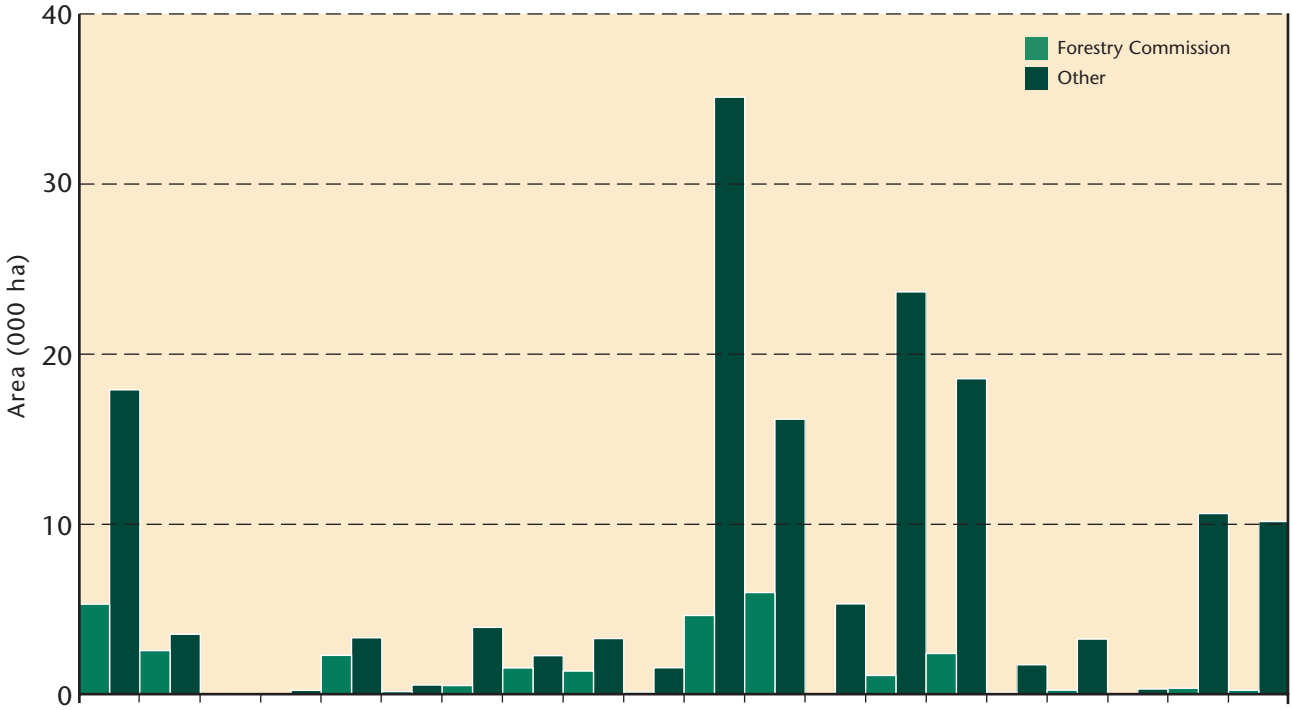
	Category 1*	Category 2*	Total High Forest
Conifers	3%	17%	3%
Broadleaves	1%	3%	1%
Scots pine	5%	30%	5%
Oak	3%	8%	2%
Ash	3%	11%	3%

*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

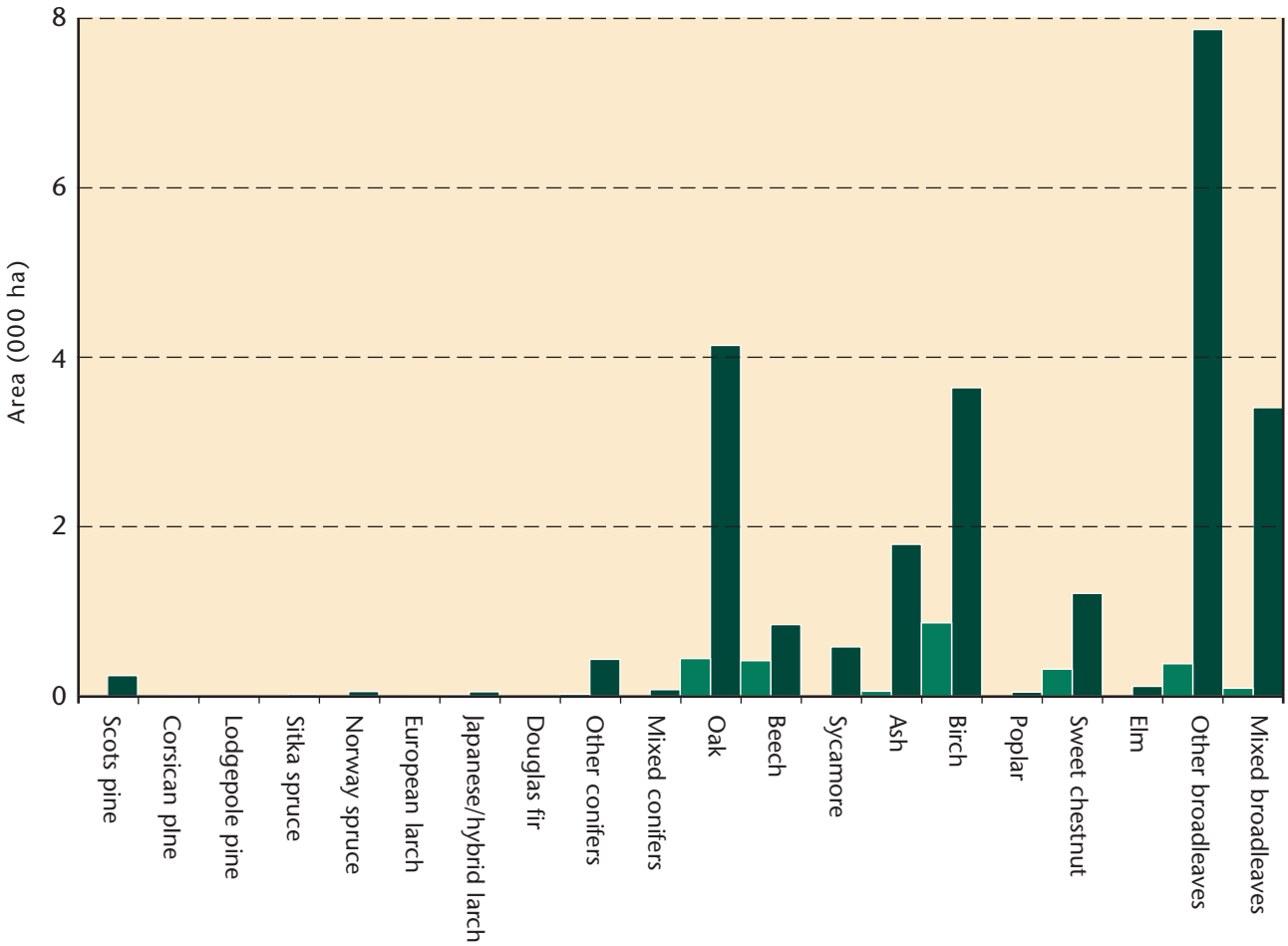
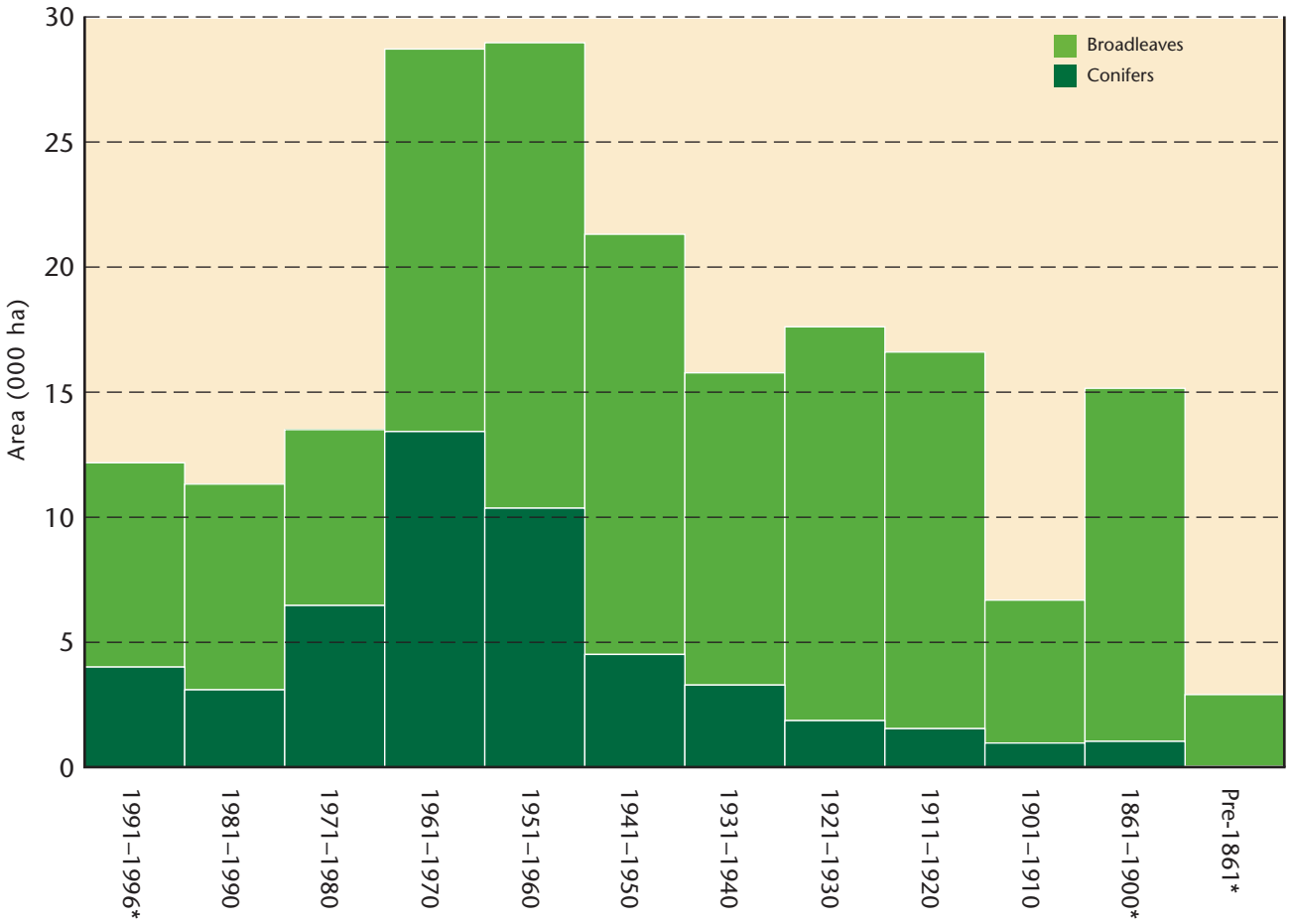


Table 10a High Forest Category 1 - Area by principal species and planting year class

Species	Planting year class*												Total (ha)
	1991 –1996	1981 –1990	1971 –1980	1961 –1970	1951 –1960	1941 –1950	1931 –1940	1921 –1930	1911 –1920	1901 –1910	1861 –1900	pre - 1861	
Scots pine	1 187	926	2 878	4 960	4 625	2 609	2 031	1 459	1 014	951	561	5	23 206
Corsican pine	1 298	811	1 321	1 676	446	179	157	69	131	0	25	0	6 112
Lodgepole pine	12	0	45	14	0	0	0	0	0	0	0	0	71
Sitka spruce	29	30	25	76	79	5	0	0	0	0	9	0	253
Norway spruce	193	486	844	2 232	1 278	433	136	0	24	0	0	0	5 625
European larch	49	70	117	202	172	21	43	28	5	0	9	0	718
Japanese/hybrid larch	673	157	472	1 046	1 286	418	309	26	74	0	0	0	4 461
Douglas fir	340	364	363	988	1 103	236	266	83	41	12	41	0	3 837
Other conifers	95	187	289	1 872	1 090	289	226	76	152	0	351	30	4 657
Mixed conifers	134	69	118	358	284	324	124	130	107	10	43	0	1 699
Total conifers	**4 010**	**3 100**	**6 472**	**13 425**	**10 362**	**4 515**	**3 291**	**1 870**	**1 548**	**973**	**1 040**	**36**	**50 641**
Oak	1 408	866	570	1 017	2 035	2 603	1 979	5 162	8 333	4 309	9 223	2 238	39 743
Beech	500	400	675	2 273	3 209	2 482	2 228	3 185	2 785	810	3 114	501	22 164
Sycamore	130	502	558	674	659	748	1 154	404	297	50	139	41	5 357
Ash	1 166	1 171	1 004	3 282	3 514	3 637	3 866	4 050	2 147	322	608	8	24 775
Birch	2 579	3 123	1 765	4 108	4 950	2 396	937	828	244	17	17	0	20 964
Poplar	95	229	213	448	313	474	19	66	0	0	8	0	1 863
Sweet chestnut	377	212	203	498	437	664	350	309	161	88	164	40	3 503
Elm	0	127	97	83	10	0	0	0	0	0	0	0	317
Other broadleaves	459	704	1 235	1 390	2 252	2 221	1 165	711	456	52	319	29	10 996
Mixed broadleaves	1 452	890	711	1 517	1 225	1 570	782	1 029	631	65	522	16	10 411
Total broadleaves	**8 166**	**8 225**	**7 030**	**15 291**	**18 606**	**16 797**	**12 481**	**15 742**	**15 055**	**5 713**	**14 115**	**2 873**	**140 093**
Total – all species	**12 176**	**11 324**	**13 502**	**28 716**	**28 968**	**21 311**	**15 773**	**17 613**	**16 603**	**6 685**	**15 154**	**2 908**	**190 733**

*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



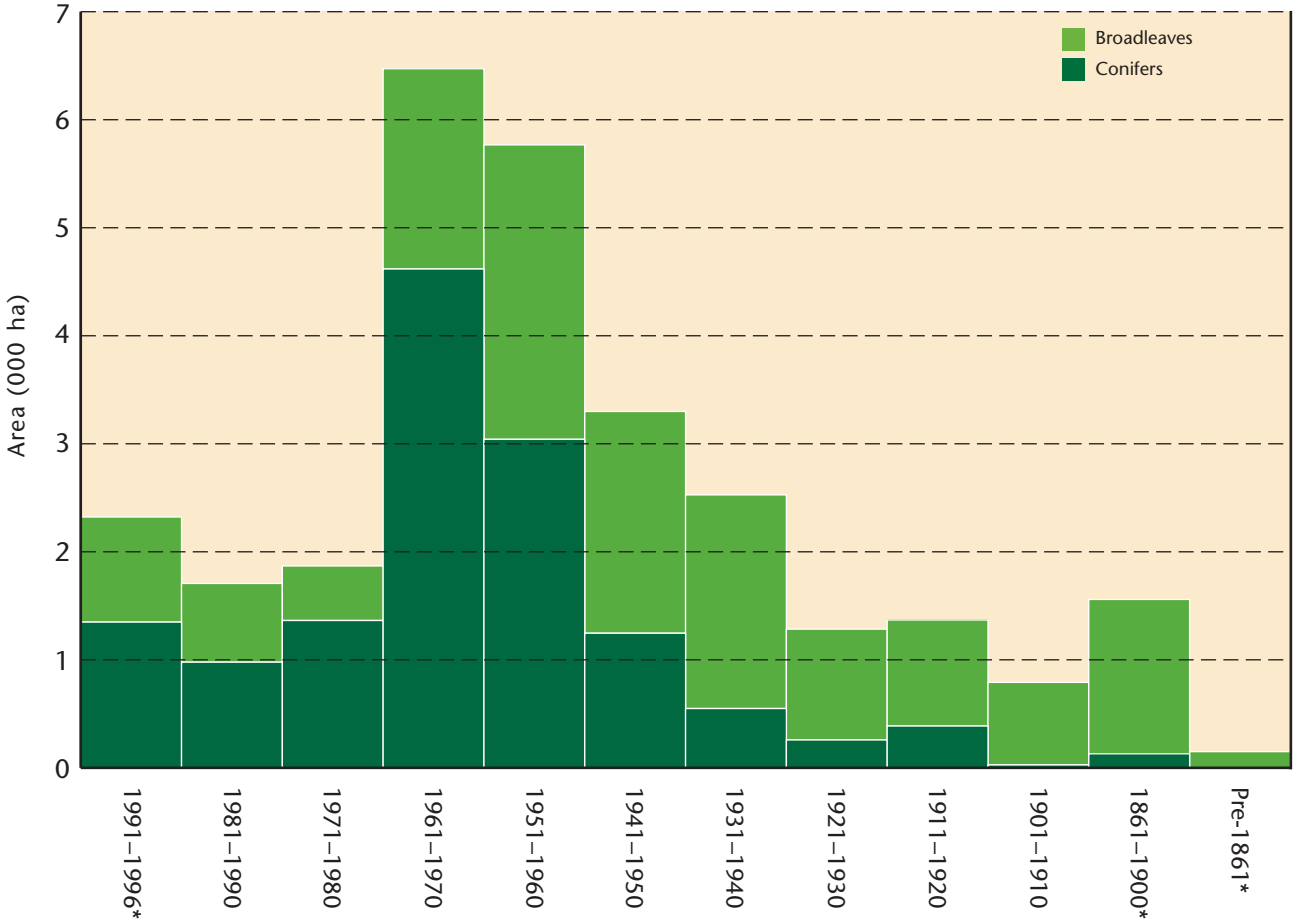
*Most of the planting year classes cover 10 years, 1991–1996 is 6 years, and the classes prior to 1901 are 40 years or more.

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

Species	Planting year class*												Total (ha)
	1991 –1996	1981 –1990	1971 –1980	1961 –1970	1951 –1960	1941 –1950	1931 –1940	1921 –1930	1911 –1920	1901 –1910	1861 –1900	pre - 1861	
Scots pine	407	262	456	1 403	1 335	642	271	152	314	27	33	0	5 303
Corsican pine	622	461	470	589	283	43	28	5	66	0	9	0	2 576
Lodgepole pine	0	0	0	9	0	0	0	0	0	0	0	0	9
Sitka spruce	5	0	0	0	0	0	0	0	0	0	9	0	14
Norway spruce	84	42	261	1 225	329	283	70	0	2	0	0	0	2 295
European larch	0	0	0	61	71	0	4	23	0	0	9	0	168
Japanese/hybrid larch	81	9	0	270	106	24	31	0	0	0	0	0	521
Douglas fir	150	174	121	208	504	190	114	78	0	0	19	0	1 558
Other conifers	0	30	44	761	406	47	31	0	5	0	50	0	1 372
Mixed conifers	0	0	12	92	8	19	0	0	0	0	0	0	131
Total conifers	**1 349**	**978**	**1 364**	**4 618**	**3 041**	**1 246**	**549**	**258**	**387**	**27**	**130**	**0**	**13 946**
Oak	93	34	67	325	327	392	407	430	739	686	1013	128	4 641
Beech	93	14	64	803	1 517	1314	1 265	318	175	74	331	22	5 988
Sycamore	0	0	0	9	0	27	0	0	0	0	0	0	36
Ash	136	131	137	117	292	39	169	91	0	0	5	0	1 116
Birch	626	465	126	418	360	165	85	124	38	0	0	0	2 408
Poplar	0	0	0	9	71	40	0	0	0	0	0	0	120
Sweet chestnut	0	14	8	40	79	42	0	19	26	5	19	0	251
Elm	0	0	0	0	0	0	0	0	0	0	0	0	0
Other broadleaves	0	20	85	60	35	18	36	45	5	0	62	0	364
Mixed broadleaves	25	51	20	74	44	16	16	0	0	0	0	0	246
Total broadleaves	**973**	**729**	**505**	**1 854**	**2 726**	**2 053**	**1 978**	**1 026**	**982**	**764**	**1 429**	**150**	**15 171**
Total – all species	**2 322**	**1 707**	**1 869**	**6 472**	**5 766**	**3 299**	**2 527**	**1 284**	**1 370**	**791**	**1 559**	**150**	**29 117**

*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



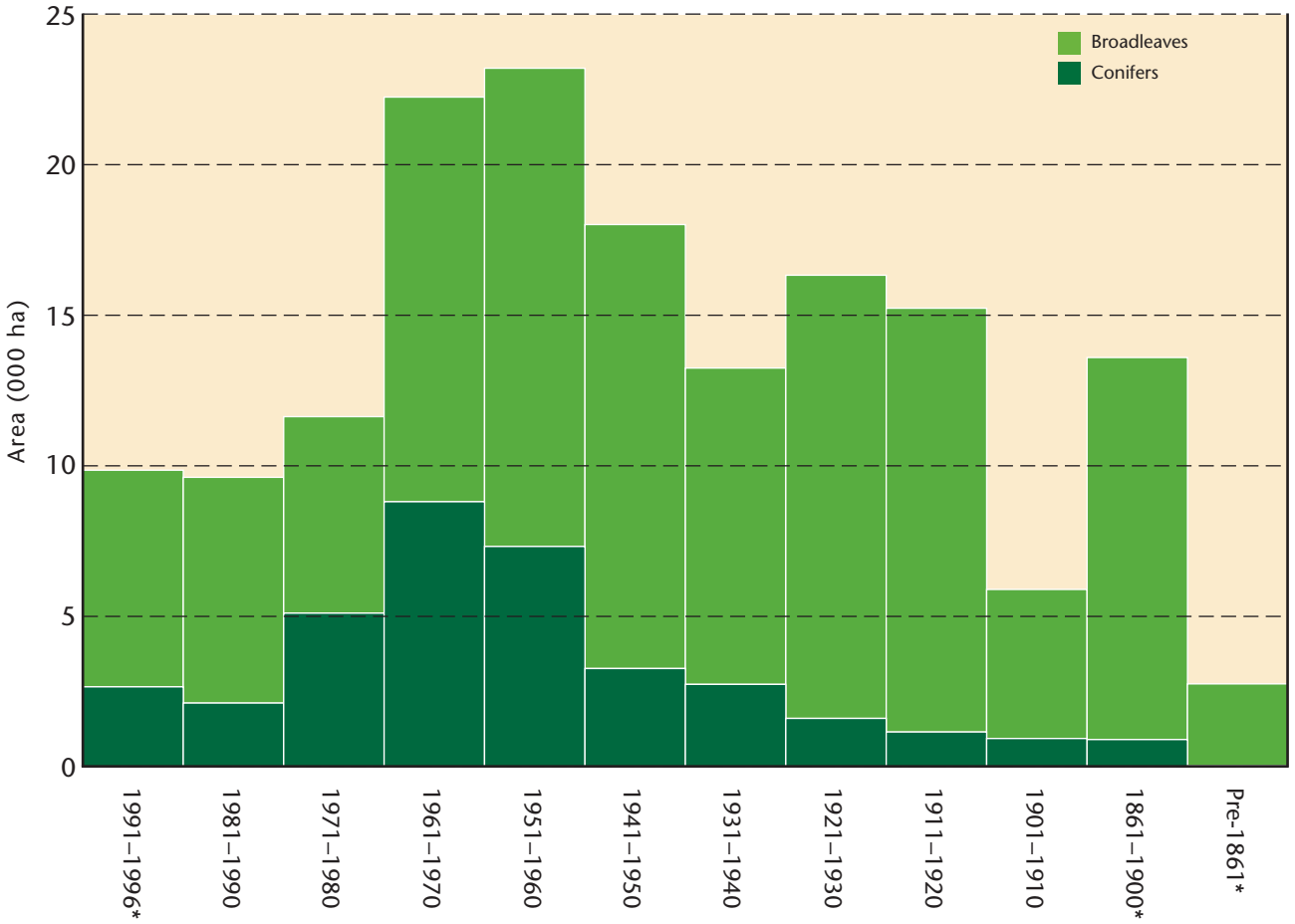
*Most of the planting year classes cover 10 years, 1991–1996 is 6 years, and the classes prior to 1901 are 40 years or more.

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

Species	Planting year class*												Total (ha)
	1991 –1996	1981 –1990	1971 –1980	1961 –1970	1951 –1960	1941 –1950	1931 –1940	1921 –1930	1911 –1920	1901 –1910	1861 –1900	pre - 1861	
Scots pine	780	664	2 422	3 556	3 290	1 968	1 760	1 307	700	924	528	5	17 904
Corsican pine	675	351	851	1 087	163	136	129	64	64	0	16	0	3 536
Lodgepole pine	12	0	45	5	0	0	0	0	0	0	0	0	62
Sitka spruce	24	30	25	76	79	5	0	0	0	0	0	0	239
Norway spruce	109	444	583	1 007	949	151	66	0	22	0	0	0	3 330
European larch	49	70	117	142	101	21	39	5	5	0	0	0	551
Japanese/hybrid larch	593	148	472	776	1 180	394	278	26	74	0	0	0	3 941
Douglas fir	190	190	242	780	600	47	152	5	41	12	22	0	2 279
Other conifers	95	157	245	1 111	684	242	195	76	147	0	301	30	3 285
Mixed conifers	134	69	105	266	276	305	124	130	107	10	43	0	1 568
Total conifers	**2 661**	**2 122**	**5 108**	**8 807**	**7 322**	**3 269**	**2 743**	**1 613**	**1 161**	**945**	**910**	**36**	**36 694**
Oak	1 315	832	503	692	1 708	2 211	1 571	4 732	7 594	3 623	8 210	2 110	35 102
Beech	407	386	611	1 470	1 692	1 168	964	2 867	2 611	736	2783	480	16 176
Sycamore	130	502	558	666	659	721	1 154	404	297	50	139	41	5 321
Ash	1 030	1 040	867	3 165	3 222	3 598	3 698	3 959	2 147	322	603	8	23 659
Birch	1 952	2 658	1 640	3 690	4 590	2 231	852	704	206	17	17	0	18 556
Poplar	95	229	213	438	241	434	19	66	0	0	8	0	1 743
Sweet chestnut	377	197	196	459	358	622	350	290	135	83	145	40	3 252
Elm	0	127	97	83	10	0	0	0	0	0	0	0	317
Other broadleaves	459	684	1 150	1 332	2 217	2 204	1 129	666	451	52	257	29	10 632
Mixed broadleaves	1 427	840	691	1 443	1 180	1 554	767	1 029	631	65	522	16	10 165
Total broadleaves	**7 193**	**7 496**	**6 524**	**13 437**	**15 880**	**14 743**	**10 503**	**14 716**	**14 072**	**4 949**	**12 685**	**2 723**	**124 922**
Total – all species	**9 853**	**9 618**	**11 632**	**22 244**	**23 202**	**18 012**	**13 246**	**16 329**	**15 233**	**5 894**	**13 595**	**2 759**	**161 616**

*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



*Most of the planting year classes cover 10 years, 1991–1996 is 6 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	%
1991–1996	Birch	21	Mixed broadleaves	13	Oak	11
1981–1990	Birch	25	Other broadleaves	13	Mixed broadleaves	10
1971–1980	Scots pine	17	Birch	15	Other broadleaves	14
1961–1970	Scots pine	16	Birch	15	Ash	11
1951–1960	Birch	18	Scots pine	14	Ash	12
1941–1950	Ash	16	Other broadleaves	15	Birch	13
1931–1940	Ash	22	Other broadleaves	15	Oak	12
1921–1930	Oak	29	Ash	22	Beech	17
1911–1920	Oak	50	Beech	16	Ash	12
1901–1910	Oak	64	Beech	13	Scots pine	13
1861–1900	Oak	60	Beech	20	Ash	4
Pre-1861	Oak	68	Beech	17	Other conifers	8
All years	**Oak**	**20**	**Ash**	**12**	**Birch**	**12**

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

Ownership type by area

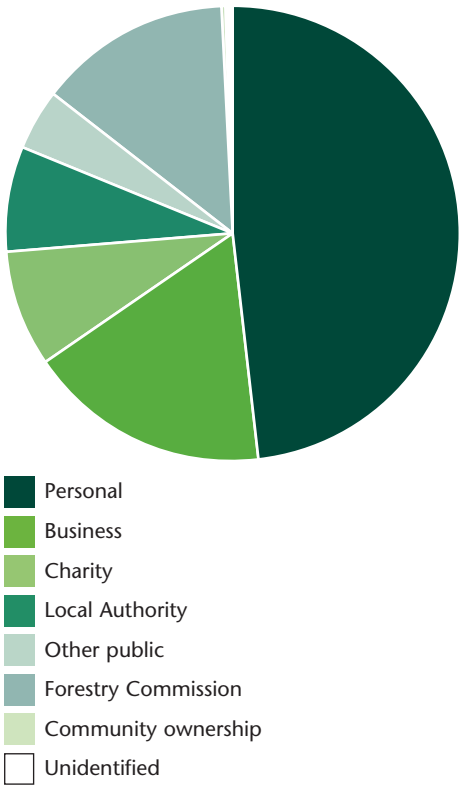


Table 12 Ownership type* by area and percentage

Ownership type	Area (ha)	%
Personal	125 381	48.2
Business	44 865	17.2
Forestry or timber business	0	0.0
Charity	21 526	8.3
Local Authority	19 445	7.5
Other public (not FC)	11 256	4.3
Forestry Commission	35 668	13.7
Community ownership or common land	722	0.3
Unidentified	1 336	0.5
Total	**260 198**	**100.0**

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

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

Survey method

The land area of South East Region was stratified into coastal and inland 1 km x 1 km squares. A random sample of the 1 km^2 plots was 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^2 was then divided into 16 parts, and two of these were selected at random for field data collection. Data was collected on Small Woods (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.

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

Table 13 Summary of information from the Survey of Small Woodland and Trees

Feature type	Number of features	Total	Unit
Small Woods	22 307	9 681	Area (ha)
Wide Linear Features	684	205	Area (ha)
Wide Linear Features	684	103	Length (km)
Narrow Linear Features	119 000	12 330	Length (km)
Narrow Linear Features	119 000	8 020 900	Number of live trees
Groups	271 300	2 192 200	Number of live trees
Individual Trees	416 600	416 600	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	1 026	8 655	9 681	22 307	0.43
Wide Linear Features	0	205	205	684	0.30
Total	**1 026**	**8 860**	**9 886**	**22 991**	**0.43**

1. The standard errors of the total area estimates for these feature types are:

   Small Woods 25%
   Wide Linear Features 100%

2. See Glossary for definitions of feature types.

Table 15 Woodland area by forest type, woodland size and feature type

Forest type	Woodland size class (ha)						Total area (ha)
	0.1 – <0.25		0.25 – <2.0		0.1 – <2.0		
	SW*	WLF†	SW	WLF	SW	WLF	SW + WLF
Conifer	89	0	0	0	89	0	89
Broadleaved	812	0	6 603	205	7 415	205	7 620
Mixed	125	0	1 249	0	1 374	0	1 374
Coppiced	0	0	0	0	0	0	0
Copp-w-stds	0	0	0	0	0	0	0
Windblow	0	0	0	0	0	0	0
Felled	0	0	0	0	0	0	0
Open Space	0	0	803	0	803	0	803
Total	**1 026**	**0**	**8 655**	**205**	**9 681**	**205**	**9 886**

*SW - Small Woods, †WLF - Wide Linear Features.

1. See Glossary for definitions of forest type and feature type.

Table 16 Woodland area by species and feature type

Species	Feature type		Total area (ha)	Percent of total area	
	Small Wood	Wide Linear Feature		Category	Species
Pine	268	0	268	29.5	3.0
Spruce	0	0	0	0.0	0.0
Larch	71	0	71	7.8	0.8
Cypress	54	0	54	5.9	0.6
Other conifers	285	0	285	31.4	3.1
Mixed conifers	241	0	241	26.5	2.7
Total conifers	**919**	**0**	**909**	**100.0**	**10.0**
Oak	2 017	34	2 051	25.1	22.6
Beech	642	0	642	7.9	7.1
Sycamore	357	0	357	4.4	3.9
Ash	911	68	979	12.0	10.8
Birch	0	0	0	0.0	0.0
Poplar	143	0	143	1.8	1.6
Sweet chestnut	0	0	0	0.0	0.0
Horse chestnut	0	0	0	0.0	0.0
Alder	357	0	357	4.4	3.9
Lime	0	0	0	0.0	0.0
Elm	89	0	89	1.1	1.0
Willow	0	0	0	0.0	0.0
Other broadleaves	874	103	977	12.0	10.8
Mixed broadleaves	2 569	0	2 569	31.5	28.3
Total broadleaves	**7 959**	**205**	**8 164**	**100.0**	**89.9**
Total – all species	**8 878**	**205**	**9 083**		**100.0**

1. Percentages:

   Category: species percentage of conifer or broadleaved
   Species: percentage of all species

2. The standard errors of the total area estimates for the most common species/groups are:

Pine	100%
Oak	40%
Ash	52%
Other broadleaves	58%

3. See Glossary for definitions of feature types.

Table 17 Numbers of live trees outside woodland by species and feature type (000s trees)

Species	Feature type					Percent of total trees	
	Boundary Trees	Middle Trees	Groups	Narrow Linear Features	Total live trees	Category	Species
Pine	11.7	29.3	207.2	200.5	448.7	68.3	4.2
Spruce	0.0	0.0	0.0	4.6	4.6	0.7	0.0
Larch	0.0	0.0	0.0	4.5	4.5	0.7	0.0
Cypress	2.4	0.0	3.2	146.8	152.4	23.2	1.4
Other conifers	4.1	10.7	10.7	21.7	47.2	7.2	0.4
Total conifers	**18.2**	**40.0**	**221.0**	**378.1**	**657.4**	**100.0**	**6.2**
Oak	108.5	36.3	305.3	1 051.4	1 501.5	15.1	14.1
Beech	10.3	5.1	44.8	216.7	276.9	2.8	2.6
Sycamore	8.1	2.5	42.5	509.5	562.6	5.6	5.3
Ash	58.2	7.4	258.3	797.7	1 121.6	11.2	10.6
Birch	0.8	14.5	262.9	203.8	482.0	4.8	4.5
Poplar	6.5	1.6	45.7	135.1	188.9	1.9	1.8
Sweet chestnut	0.8	0.8	7.1	33.3	42.0	0.4	0.4
Horse chestnut	4.0	2.4	9.9	91.7	108.0	1.1	1.0
Alder	0.8	0.0	59.6	224.7	285.1	2.9	2.7
Lime	0.0	3.8	26.3	0.7	30.8	0.3	0.3
Elm	4.1	0.0	136.6	767.8	908.5	9.1	8.5
Willow	3.3	6.4	193.6	130.5	333.8	3.3	3.1
Other broadleaves	55.2	17.0	578.7	3 479.9	4 130.8	41.4	38.9
Total broadleaves	**260.6**	**97.8**	**1 971.2**	**7 642.8**	**9 972.5**	**100.0**	**93.8**
Total – all species	**278.9**	**137.7**	**2 192.2**	**8 020.9**	**10 629.9**		**100.0**

1. Percentages:

   Category: species percentage of conifer or broadleaved
   Species: percentage of all species

2. The standard errors of the total tree number estimates for these feature types are:

Individual Trees	15%
Groups	17%
Narrow Linear Features	19%

3. See Glossary for definitions of feature types.

Table 18 Numbers of dead trees outside woodland by species and feature type (000s of trees)

Species	Feature type					Percent of total trees	
	Boundary Trees	Middle Trees	Groups	Narrow Linear Features	Total dead trees	Category	Species
Pine	0.0	2.5	9.1	8.2	19.8	100.0	4.4
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
Total conifers	**0.0**	**2.5**	**9.1**	**8.2**	**19.8**	**100.0**	**4.4**
Oak	1.1	1.9	13.2	6.7	22.9	5.3	5.0
Beech	0.0	0.0	0.8	0.7	1.5	0.3	0.3
Sycamore	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ash	0.0	0.0	0.8	9.3	10.1	2.3	2.2
Birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Poplar	0.0	0.0	0.0	0.7	0.7	0.2	0.2
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	3.4	3.4	0.8	0.7
Lime	0.0	0.8	0.0	0.0	0.8	0.2	0.2
Elm	0.0	0.0	14.9	340.0	354.9	81.8	78.2
Willow	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other broadleaves	0.8	0.0	13.0	25.7	39.5	9.1	8.7
Total broadleaves	**1.9**	**2.7**	**42.7**	**386.6**	**433.8**	**100.0**	**95.6**
Total – all species	**1.9**	**5.2**	**51.8**	**394.8**	**453.7**		**100.0**

1. See Glossary for definitions of feature types.

Table 19 Numbers of live Individual Trees by species and height band (000s trees)

Species	Height band (m)				Total live trees
	2–5	5–15	15–20	>20	
Pine	7.4	25.4	6.5	1.7	41.0
Spruce	0.0	0.0	0.0	0.0	0.0
Larch	0.0	0.0	0.0	0.0	0.0
Cypress	0.0	2.4	0.0	0.0	2.4
Other Conifers	2.5	4.1	5.7	2.5	14.8
Total conifers	**9.9**	**31.9**	**12.2**	**4.2**	**58.2**
Oak	11.5	71.6	52.0	9.7	144.8
Beech	4.8	4.1	3.3	3.3	15.5
Sycamore	2.5	7.3	0.0	0.8	10.6
Ash	11.4	33.5	20.6	0.0	65.5
Birch	8.1	6.4	0.8	0.0	15.3
Poplar	0.0	4.7	0.0	3.3	8.0
Sweet chestnut	0.8	0.8	0.0	0.0	1.6
Horse chestnut	3.2	1.6	1.6	0.0	6.4
Alder	0.0	0.8	0.0	0.0	0.8
Lime	0.8	0.0	3.0	0.0	3.8
Elm	1.7	2.5	0.0	0.0	4.2
Willow	3.2	4.1	2.5	0.0	9.8
Other broadleaves	43.8	26.8	1.7	0.0	72.3
Total broadleaves	**91.8**	**164.2**	**85.5**	**17.1**	**358.6**
Total – all species	**101.6**	**196.1**	**97.6**	**21.4**	**416.6**

Table 20 Numbers of live trees in Groups by species and height band (000s trees)

Species	Height band (m)				Total live trees
	2–5	5–15	15–20	>20	
Pine	25.4	113.0	68.8	0.0	207.2
Spruce	0.0	0.0	0.0	0.0	0.0
Larch	0.0	0.0	0.0	0.0	0.0
Cypress	3.2	0.0	0.0	0.0	3.2
Other conifers	0.0	2.4	3.3	5.0	10.7
Total conifers	**28.6**	**115.4**	**72.1**	**5.0**	**221.1**
Oak	80.6	167.2	51.8	5.6	305.2
Beech	12.7	8.0	6.3	17.7	44.7
Sycamore	1.7	31.9	8.0	0.8	42.4
Ash	102.2	109.2	38.9	7.9	258.2
Birch	137.4	125.5	0.0	0.0	262.9
Poplar	0.0	29.5	9.0	7.2	45.7
Sweet chestnut	5.6	0.0	1.5	0.0	7.1
Horse chestnut	0.0	6.6	3.3	0.0	9.9
Alder	7.8	51.0	0.8	0.0	59.6
Lime	22.5	3.8	0.0	0.0	26.3
Elm	58.1	78.5	0.0	0.0	136.6
Willow	133.9	56.4	3.3	0.0	193.6
Other broadleaves	433.5	140.2	4.9	0.0	578.6
Total broadleaves	**996.0**	**807.8**	**127.8**	**39.2**	**1 970.8**
Total – all species	**1 024.6**	**923.2**	**199.9**	**44.2**	**2 192.2**

Table 21 Numbers of live trees in Narrow Linear Features by species and height band (000s trees)

Species	Height band (m)				Total live trees
	2–5	5–15	15–20	>20	
Pine	70.6	108.6	21.4	0.0	200.6
Spruce	4.6	0.0	0.0	0.0	4.6
Larch	0.0	4.5	0.0	0.0	4.5
Cypress	45.2	66.1	17.8	17.8	146.9
Other conifers	4.1	15.7	1.9	0.0	21.7
Total conifers	**124.5**	**194.9**	**41.1**	**17.8**	**378.3**
Oak	247.9	564.5	236.9	2.1	1 051.4
Beech	57.8	62.2	18.9	77.8	216.7
Sycamore	406.3	89.7	13.5	0.0	509.5
Ash	177.7	480.9	139.1	0.0	797.7
Birch	115.7	80.8	7.2	0.0	203.7
Poplar	0.0	111.0	3.6	20.5	135.1
Sweet chestnut	7.1	10.9	15.2	0.0	33.2
Horse chestnut	0.0	10.7	80.9	0.0	91.6
Alder	0.0	224.0	0.7	0.0	224.7
Lime	0.7	0.0	0.0	0.0	0.7
Elm	755.2	12.6	0.0	0.0	767.8
Willow	94.1	35.7	0.7	0.0	130.5
Other broadleaves	3 106.8	359.3	13.8	0.0	3 479.9
Total broadleaves	**4 969.3**	**2 042.3**	**530.5**	**100.4**	**7 642.5**
Total – all species	**5 093.8**	**2 237.2**	**571.6**	**118.2**	**8 020.9**

Table 22 Number of Groups by group size

Number of trees per Group*	Number of Groups (000s)
2	28
3–5	90
6–10	62
11–20	49
21–50	33
51–100	10
>100	0
Total	**271**

*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 1996 Inventory were undertaken using very different sampling methods. Inventory practice and technology have moved on since the 1980 Census; this has lead to changes in sampling methodology, scope and woodland definitions. For example, the Main Woodland Survey used the digital woodland map, created from aerial photographs 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 23:	Comparison of woodland area between 1980 Census and 1996 Inventory
Table 24:	Comparison of High Forest area by species between 1980 Census and 1996 Inventory
Chart:	Comparison of High Forest area by species between 1980 Census and 1996 Inventory
Table 25:	Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1996 Inventory
Chart:	Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1996 Inventory
Table 26:	Comparison of numbers of live trees outside woodland between 1980 Census and 1996 Inventory
Table 27:	Comparison of density of non-woodland features between 1980 Census and 1996 Inventory

Woodland Cover

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

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

Table 23 Comparison of woodland area between 1980 Census and 1996 Inventory

Woodland size (ha)	1980 Census woodland area		1996 Inventory woodland area		Change (%)
	(ha)	(%)	(ha)	(%)	(%)
2.0 or more	232 538	92.8	260 198	96.7	12
0.25 – <2.0	17 974	7.2	8 860	3.3	-51
Total	**250 512**		**269 058**		**7**
% Woodland land cover	**13.1**		**14.1**		

1. Differences in sampling methodology may account for some of the apparent differences.

2. The above figures from the 1996 Inventory exclude woodland between 0.1 and <0.25 hectares, thereby matching the scope of the 1980 Census. These 1996 figures will therefore not match those in the previous sections of the report.

3. Land area used to calculate woodland cover percent (1996), 1 909 594 hectares, was based on the 1991 Census of Population digital boundaries.

4. Land area used to calculate woodland cover percent (1980), 1 910 196 hectares, (Ordnance Survey data)

Table 24 Comparison of High Forest area by species between 1980 Census and 1996 Inventory

Species	1980 Census woodland area (ha)	1996 Inventory woodland area (ha)	Change (%)
Scots pine	19 935	23 721	19
Corsican pine	7 267	6 129	-16
Lodgepole pine	191	71	-63
Sitka spruce	617	275	-55
Norway spuce	7 039	5 680	-19
European larch	3 744	727	-81
Japanese/hybrid larch	5 569	4 598	-17
Douglas fir	4 829	3 837	-21
Other conifers	6 197	5 453	-12
Mixed conifers	3 739	1 868	-50
Total conifers	**59 127**	**52 359**	**-11**
Oak	41 963	46 145	10
Beech	26 186	24 067	-8
Sycamore	3 457	6 294	82
Ash	15 341	27 549	80
Birch	20 668	25 469	23
Poplar	3 076	2 000	-35
Sweet chestnut	3 710	5 032	36
Elm	74	521	603
Other broadleaves	12 974	20 465	58
Mixed broadleaves	10 731	16 059	50
Total broadleaves	**138 181**	**173 601**	**26**
Total – all species	**197 308**	**225 960**	**15**
Felled	**4 551**	**3 154**	**-31**
Total High Forest	**201 859**	**229 114**	**14**

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 8.5% (Table 2). To obtain meaningful comparisons between the two datasets the 1980 Census data have therefore been reduced by 8.5%.

3. The above figures from the 1996 Inventory exclude woodland between 0.1 and <0.25 ha, thereby matching the scope of the 1980 Census. The 1996 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 1996 Inventory

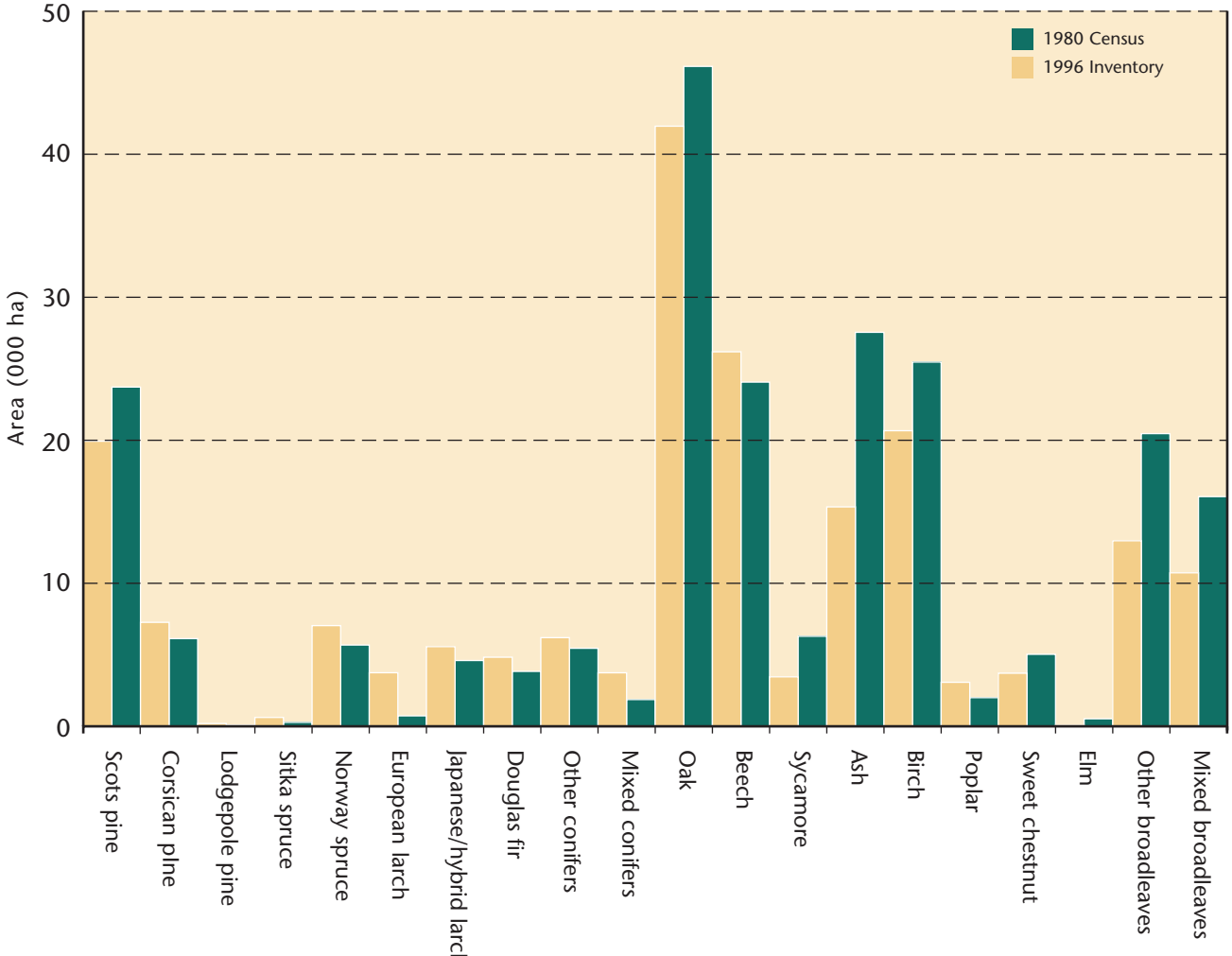


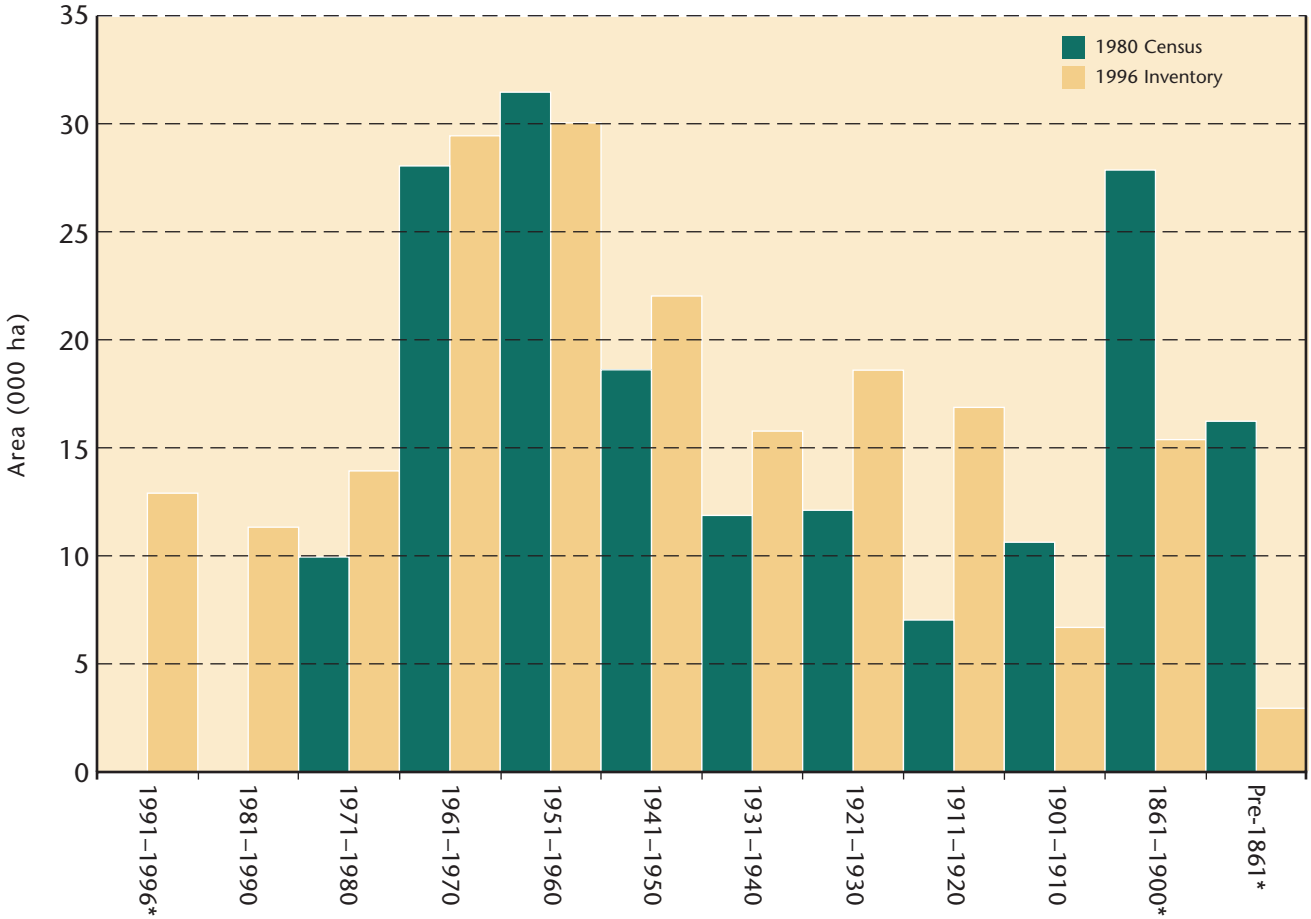
Table 25 Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1996 Inventory

Planting year class	1980 Census woodland area (ha)	1996 Inventory woodland area (ha)	Change (%)
1991–1996	-	12 899	-*
1981–1990	-	11 325	-*
1971–1980	9 944	13 930	40
1961–1970	28 047	29 443	5
1951–1960	31 460	30 039	-5
1941–1950	18 610	22 026	18
1931–1940	11 870	15 772	33
1921–1930	12 108	18 593	54
1911–1920	7 027	16 871	140
1901–1910	10 628	6 686	-37
1861–1900	27 856	15 378	-45
Pre-1861	16 228	2 943	-82
Total: all years	**173 779**	**195 905**	**13**

*These classes cover the period since the 1980 Census therefore no comparison can be made.

1. The definition of the 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 1996 Inventory



*Most of the planting year classes cover 10 years, 1991–1996 is 6 years, and the classes prior to 1901 are 40 years or more.

Table 26 Comparison of numbers of live trees outside woodland between 1980 Census and 1996 Inventory (000s trees)

Feature type	1980 Census	1996 Inventory	Change (%)
Boundary	764	267	-65
Middle	1 043	134	-87
Total Individual Trees	**1 807**	**401**	**-78**
Groups	4 414	1 694	-62
Linear Features	5 517	5 272	-4
Total	**11 738**	**7 368**	**-37**

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 1996 Inventory figures have been adjusted accordingly. The 1996 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 1996 Inventory, the two surveys are not directly comparable - 1980 used 7cm diameter at breast height and 1996 used 2 m height as minimum criteria for inclusion.
4. See Glossary for definitions of feature types.

Table 27 Comparison of density of non-woodland features between 1980 Census and 1996 Inventory

Feature type	1980 Census	1996 Inventory	Change (%)
Individual Trees (per km^2)	94.6	21.0	-78
Groups (per km^2)	36.0	12.8	-64
Linear Features (m per km^2)	1 025.6	643.8	-37

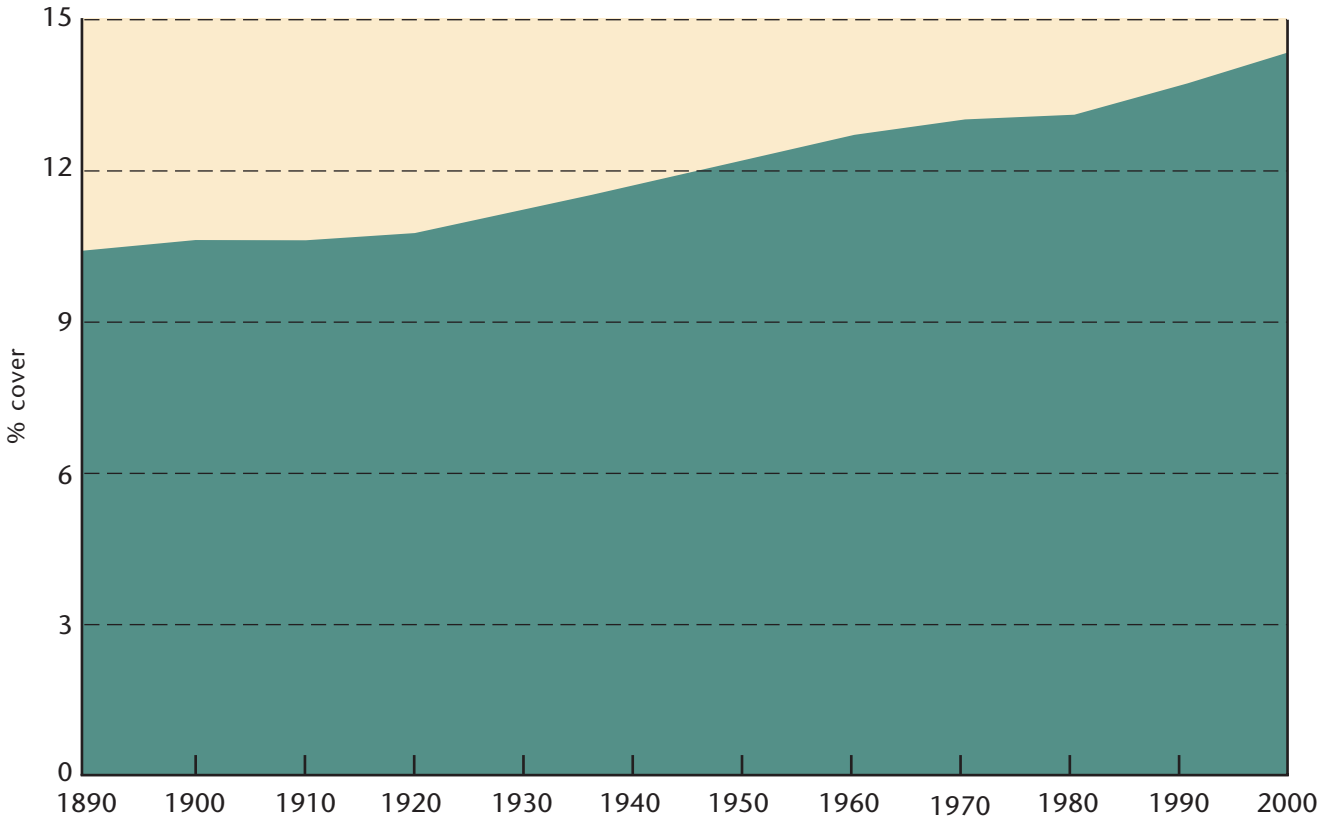
1. The Survey of Small Woodland and Trees did not record information referring to tree features (i.e. Individual trees, Groups and Narrow Linear features) within developed land.
2. In the 1980 Census hazel, hawthorn, blackthorn and goat willow were excluded; the 1996 Inventory figures have been adjusted accordingly. The 1996 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 1996 Inventory, the two surveys are not directly comparable - 1980 used 7 cm diameter at breast height and 1996 used 2 m height as minimum criteria for inclusion.
4. See Glossary for definitions of feature types.

WOODLAND COVER

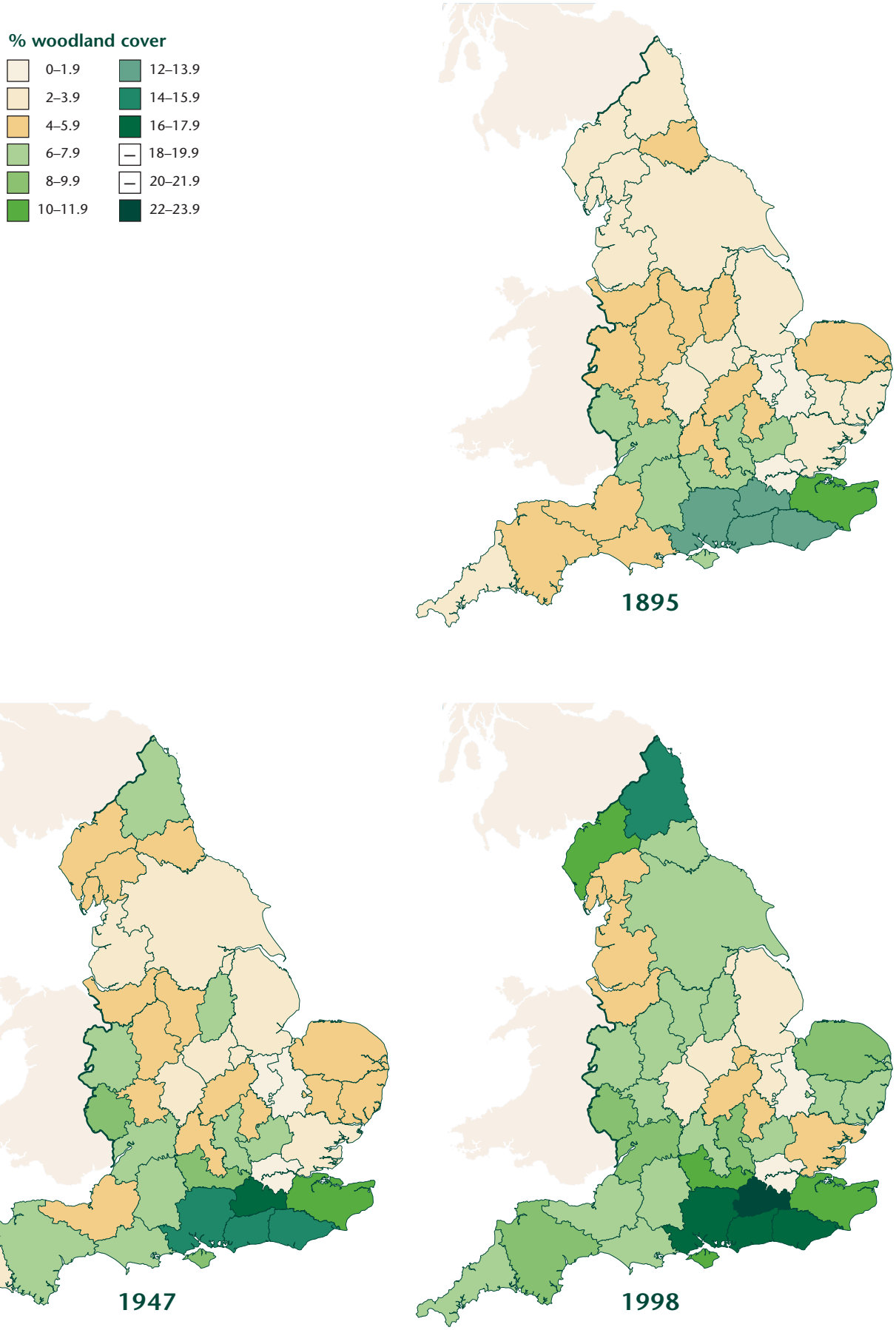
Woodland area data is available from Ministry of Agriculture surveys since 1871, and from Forestry Commission national woodland inventories since 1924. The following chart and maps show the changes in woodland area through time.

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

Change in woodland cover through time (1890–2000)



Map 5 Woodland cover by county through time (1895–1998)



APPENDICES

The following tables summarise the results of the Main Woodland Survey and the Survey of Small Woodland and Trees by county in South East Region. Full reports of the results are available separately.

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

APPENDIX 1

Summary of woodland area by county and woodland size

County*	Woodland size (ha)†		Total area (ha)	Woodland cover (%)
	2.0 or more	0.1 – <2.0		
Berkshire	17 627	681	18 308	14.5
Buckinghamshire	16 892	681	17 573	9.4
East Sussex	28 799	1 125	29 924	16.7
Hampshire	65 015	1 924	66 939	17.7
Isle of Wight	4 490	59	4 549	12.0
Kent	37 121	2 366	39 487	10.6
Oxfordshire	16 873	1 362	18 235	7.0
Surrey	36 794	770	37 564	22.4
West Sussex	36 589	918	37 507	18.9
Total	**260 198**	**9 886**	**270 084**	**14.1**

*Areas of counties used to derive woodland cover % based on digital boundaries used in 1991 Census of Population.

†Area of woodland blocks of 2.0 ha and over derived from the Main Woodland Survey. Area of woodland blocks 0.1– < 2.0 ha derived from the Survey of Small Woodland and Trees.

APPENDIX 2

Summary of woodland area by county and forest type

County	Forest type								Total
	Conifer	Broad-leaved	Mixed	Coppice	Coppice -w-stds	Wind-blow	Felled	Open Space	
Berkshire	3 097	8 596	3 331	157	113	0	106	2 906	18 308
Buckinghamshire	1 781	11 329	3 543	0	0	0	27	892	17 572
East Sussex	3 829	18 181	3 560	1 783	956	0	696	918	29 924
Hampshire	11 141	37 220	9 829	10	1 529	0	574	6 635	66 939
Isle of Wight	495	2 990	639	0	8	0	0	418	4 549
Kent	3 236	19 321	4 732	5 997	3 411	181	556	2 054	39 487
Oxfordshire	1 161	10 766	2 937	0	0	0	85	3 286	18 235
Surrey	5 677	19 962	8 315	218	699	78	374	2 241	37 564
West Sussex	5 080	20 678	5 291	1 297	826	10	736	3 586	37 507
Total	**35 497**	**149 047**	**42 177**	**9 462**	**7 542**	**268**	**3 154**	**22 937**	**270 084**

1. See Glossary for definitions of forest types.

APPENDIX 3

Summary of live trees outside woodland by county and feature type (000s trees and features)

County*	Total number	Feature type			Total live trees	Tree density (per km²)
		Groups	Narrow Linear Feature	Individual Trees		
Berkshire	Features	8.6	11.6	15.8		
	Live Trees	100.9	1 249.5	15.8	1 366.2	1085
Buckinghamshire	Features	10.0	5.8	59.2		
	Live Trees	131.8	128.0	59.2	319.0	170
East Sussex	Features	19.9	7.1	36.7		
	Live Trees	116.5	774.8	36.7	928.0	517
Hampshire	Features	90.0	32.6	92.6		
	Live Trees	551.8	1 936.3	92.6	2 580.7	683
Isle of Wight	Features	7.6	2.2	11.8		
	Live Trees	69.7	103.4	11.8	184.9	486
Kent	Features	62.7	28.1	83.3		
	Live Trees	409.3	1 479.5	83.3	1 972.1	528
Oxfordshire	Features	31.7	9.1	46.7		
	Live Trees	314.4	1 092.8	46.7	1 453.9	558
Surrey	Features	10.9	11.4	24.3		
	Live Trees	48.6	619.0	24.3	691.9	413
West Sussex	Features	29.8	11.1	46.2		
	Live Trees	449.2	637.6	46.2	1 133.0	570
Total	**Features**	**271.3**	**119.0**	**416.6**		
	Live Trees	**2 192.2**	**8 020.9**	**416.6**	**7 350.9**	**385**

*Areas of counties used to derive tree density per km² based on digital boundaries used in 1991 Census of Population.

1. See Glossary for definitions of feature types

APPENDIX 4

Summary of number and length of Linear Features by county

County*	Total number of features (000s)	Total length of features (km)	Density (m per km^2)
Berkshire	12	868	689
Buckinghamshire	6	640	341
East Sussex	7	885	493
Hampshire	33	3 901	1 032
Isle of Wight	2	602	1 585
Kent	29	2 488	666
Oxfordshire	9	1 304	500
Surrey	11	946	564
West Sussex	11	799	402
Total	**120**	**12 433**	**651**

*Areas of counties used to derive length per km^2 based on digital boundaries used in 1991 Census of Population.

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 with 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 50 m 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 50 m, 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 1 m 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 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 0.1 ha.

- **Individual Tree**

  A tree with a crown that 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 a boundary).

  - Middle Tree (an Individual Tree not on a boundary).

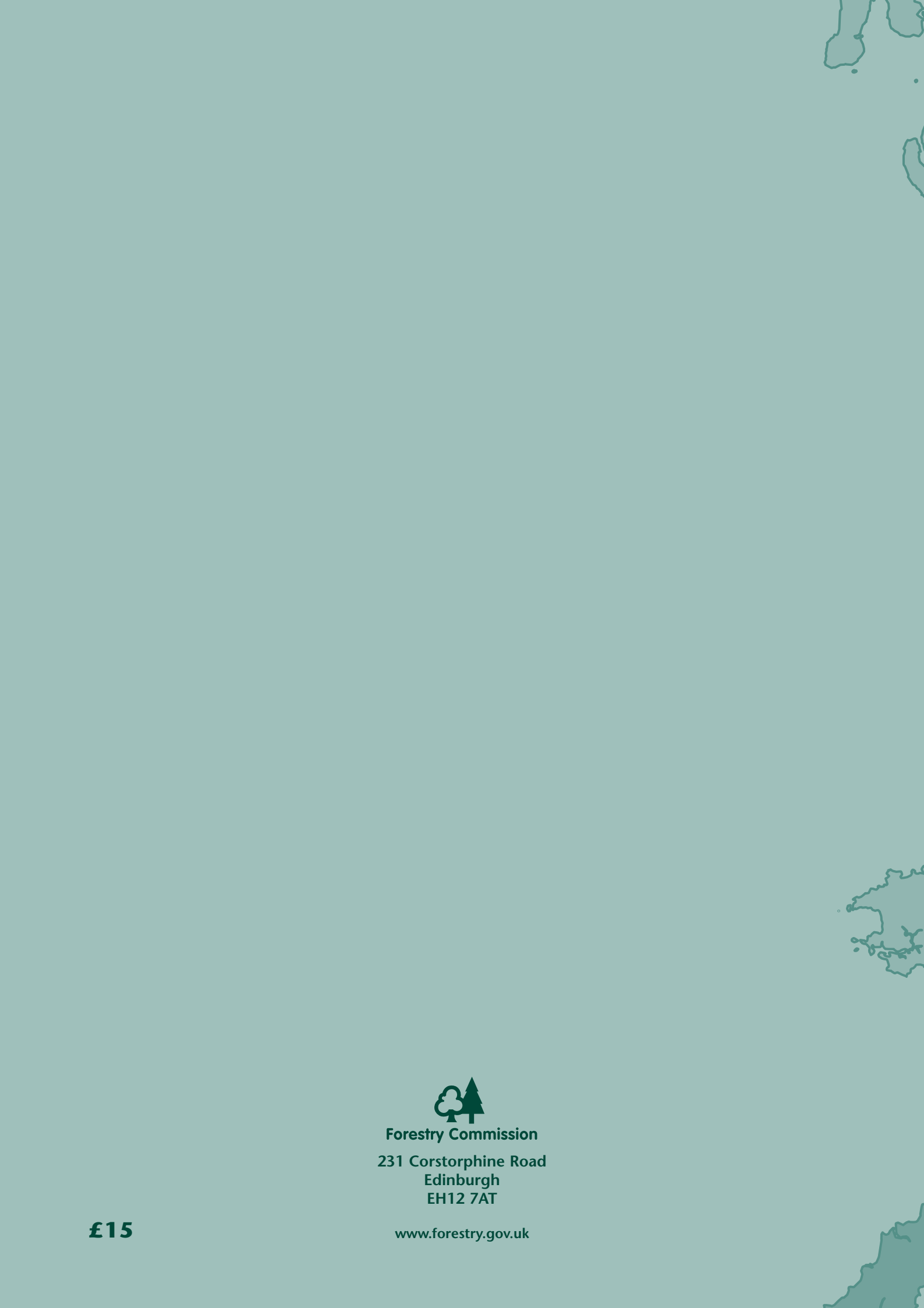
- **Linear Feature**

  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 50 m wide or as narrow as a single line of trees. Two types of Linear Feature are recognised:

  - Narrow Linear Features (with a width of 16 m or less).

  - Wide Linear Features (with a width greater than 16 m).

NOTES



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