



NATIONAL INVENTORY OF WOODLAND AND TREES



ENGLAND

Regional Report for EAST OF ENGLAND



Forestry Commission





Forestry Commission

Inventory Report

NATIONAL INVENTORY OF WOODLAND AND TREES



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**Regional Report for
EAST OF ENGLAND**

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Enquiries regarding this report should be directed to:

Head of Woodland Surveys
Forest Research
Forestry Commission
231 Corstorphine Road
Edinburgh
EH12 7AT

Telephone: 0131 314 6122
Email: woodland.surveys@forestry.gsi.gov.uk

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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 East of England 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 East of England 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 With the statistics becoming increasingly out of date the Forestry Commission decided to undertake a new survey: the *National Inventory of Woodland and Trees*.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 East of England 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 East of England 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 East of England Region was stratified into coastal and inland 1 km x 1 km squares. A random sample of the 1 km² 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 km² 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 East of England Region is 139 112 hectares. This represents 7.3% of the land area (Table 1).
- Broadleaved woodland is the dominant forest type representing 60.1% of all woodland. Conifer woodland represents 22.1%, Mixed woodland 11.1% and Open Space within woodlands 5.0% (Table 2).
- The main conifer is pine covering 30 068 hectares or 79% of all conifer species. The main broadleaved species is oak covering 23 509 hectares or 26% of all broadleaved species species (Table 3).
- 25 702 hectares or 23% of woodland over 2 hectares is owned by or leased to the Forestry Commission, and 87 392 hectares or 77% of woodland is in Other ownerships (Table 6).
- There are 7 767 woods over 2 hectares within East of England Region with a mean wood area of 14.6 hectares (Table 7a). There are a total of 45 004 woods from 0.1 – <2.0 hectares with a mean wood area of 0.6 hectares (Table 14).
- There are 13.6 million live trees and 313.2 thousand dead trees outside woodland in East of England Region (Tables 17 and 18).
- Woodland land cover increased by over 26 000 hectares from 5.8% to 7.2% of the land area between 1980 and 1998 (Table 23).
- The area of Broadleaves increased by 52% between 1980 and 1998, with the relative proportion of Broadleaves to Conifers increasing from 59% to 71% (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 East of England Region). Country and county reports for Wales, and country and region reports for Scotland are also available.

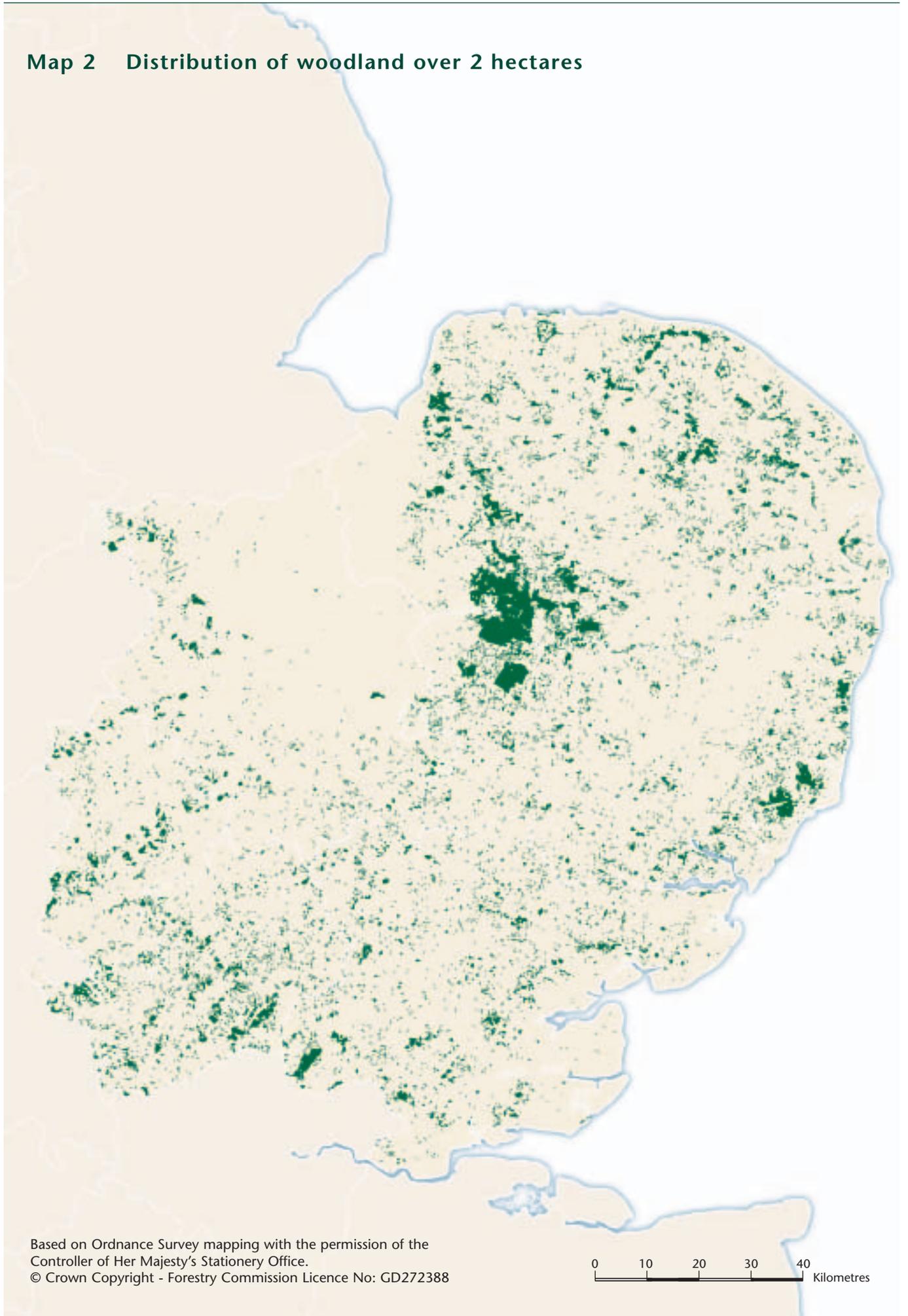
Map 1 Regional and county boundaries



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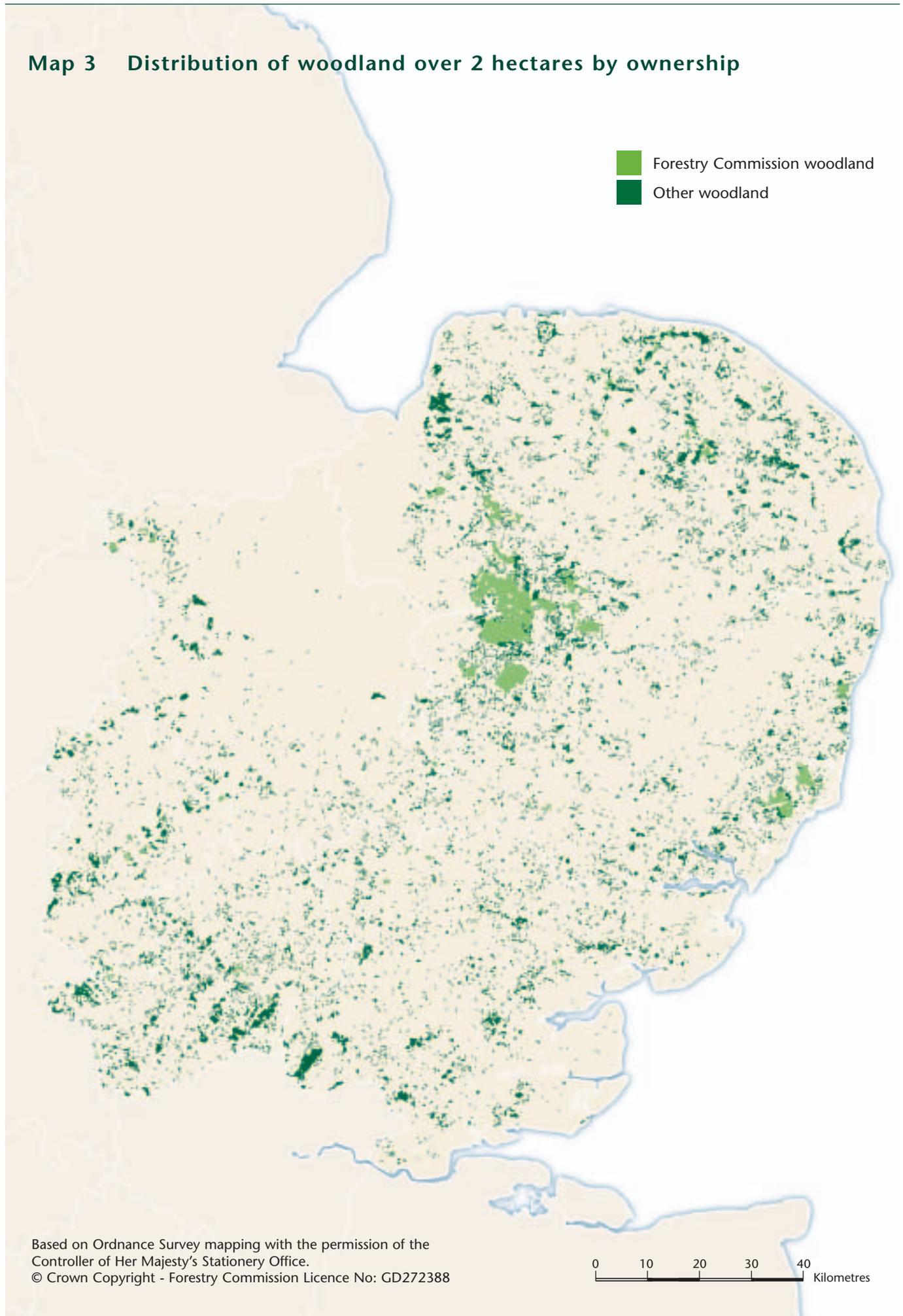
0 10 20 30 40
Kilometres

Map 2 Distribution of woodland over 2 hectares



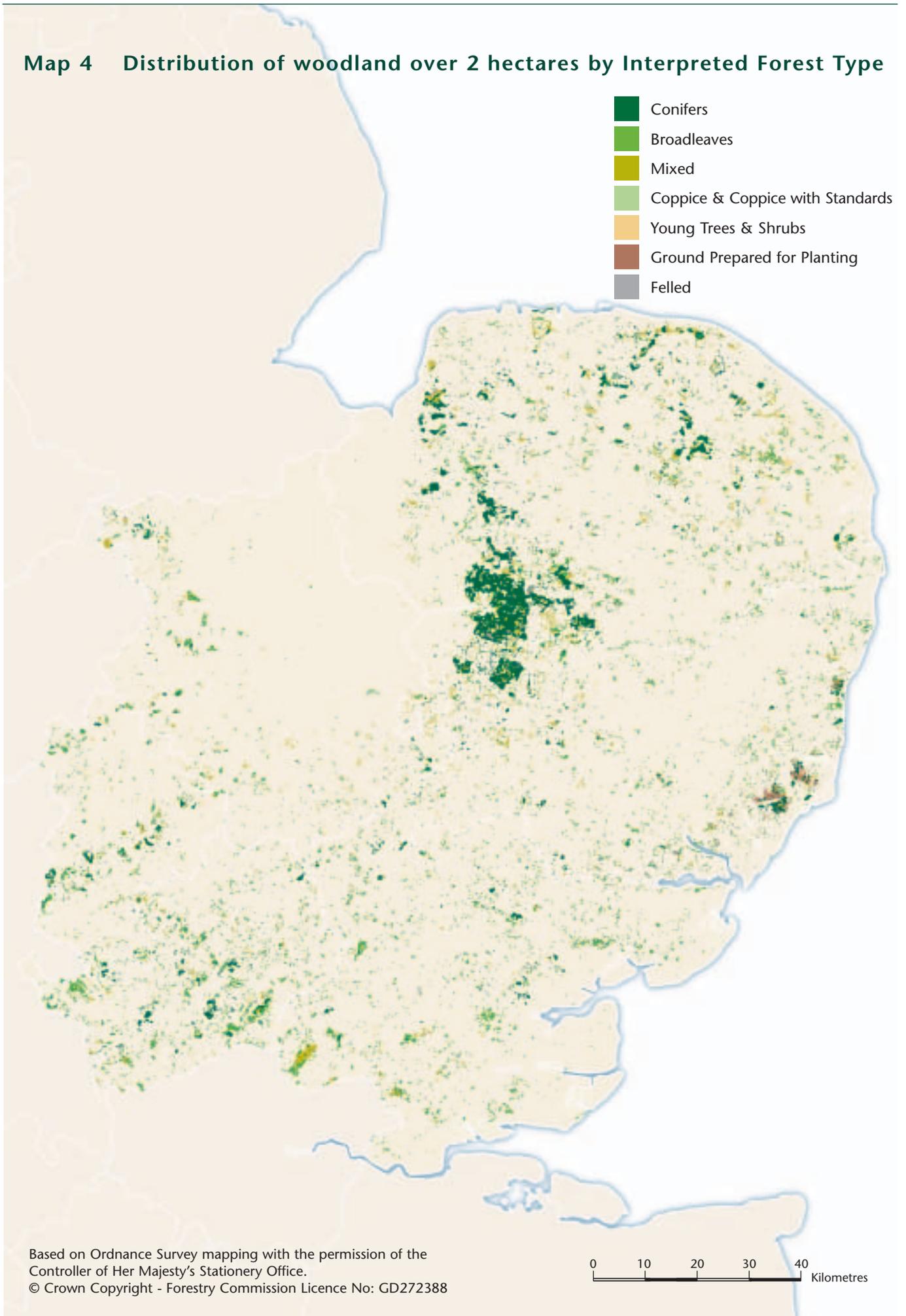
Map 3 Distribution of woodland over 2 hectares by ownership

- Forestry Commission woodland
- Other woodland



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

- Conifers
- Broadleaves
- Mixed
- Coppice & Coppice with Standards
- Young Trees & Shrubs
- Ground Prepared for Planting
- Felled



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0 10 20 30 40 Kilometres

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 East of England 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	113 094	81.3
0.25 – < 2.00	24 030	17.3
0.10 – < 0.25	1 989	1.4
Total area of woodland	139 112	100.0
% Woodland land cover	7.3	

1. Area of East of England Region, including inland water, 1 911 865 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	28 013	2 686	30 699	22.1
Broadleaved	62 924	20 639	83 564	60.1
Mixed	13 397	2 017	15 414	11.1
Coppiced	107	0	107	0.1
Copp-w-Standards	805	531	1 336	1.0
Windblow	0	0	0	0.0
Felled	1 043	0	1 043	0.7
Open Space	6 806	145	6 951	5.0
Total	113 094	26 018	139 112	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	28 150	1 918	30 068	79.2	23.2
Sitka spruce	16	0	16	0.0	0.0
Larch	2 296	357	2 653	7.0	2.0
Other conifers	3 605	1 273	4 878	12.9	3.8
Mixed conifers	288	39	327	0.9	0.3
Total conifers	34 355	3 587	37 942	100.0	29.3
Oak	19 231	4 278	23 509	25.6	18.1
Beech	4 946	425	5 371	5.9	4.1
Sycamore	6 185	870	7 055	7.7	5.4
Ash	12 136	3 050	15 186	16.6	11.7
Birch	6 761	53	6 814	7.4	5.3
Elm	966	421	1 387	1.5	1.1
Other broadleaves	17 577	7 778	25 355	27.6	19.6
Mixed broadleaves	2 177	4 879	7 056	7.7	5.4
Total broadleaves	69 979	21 754	91 733	100.0	70.7
Total all species†	104 334	25 341	129 675		100.0

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

** Species - species/group percentage of all species.

† Excludes the 9 437 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	4%
Broadleaves	5%
Pine	5%
Oak	6%
Other broadleaves	10%

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	503 400	3 885 400	8	203
Narrow Linear Features	168 000	8 757 400	52	458
Individual Trees	924 400	924 400	1	48
Total		13 567 200		710

1. Land area used to calculate tree density 1 911 865 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	14%
Narrow Linear Features	17%
Individual Trees	9%
3. Where the standard errors of these summary measures are 10% or less, the confidence intervals will be approximately symmetrical; the true value is expected to be within +/- one standard error for about 68% (or about two-thirds) of all cases, and within +/- two standard errors for about 95% of all cases. Where percentage standard errors are larger, e.g. for less common species or more variable species composition, the confidence intervals will be less symmetrical (and wider).
4. See Glossary for definitions of feature types.

Table 5 Lengths of Linear Features

Feature type	Total number of features	Total length of features (km)	Density of features (m per sq km)
Wide Linear Features	4 667	1 126	59
Narrow Linear Features	168 000	13 199	690
Total		14 325	749

1. Land area used to calculate feature density 1 911 865 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	59%
Narrow Linear Features	13%
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
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	25 702	23
Other	87 392	77
Total area of woodland	113 094	100

1. Woodland area from aerial photographic interpretation map updated to 31 March 1998.
2. See Glossary for definitions of ownership types.

Woodland area by ownership

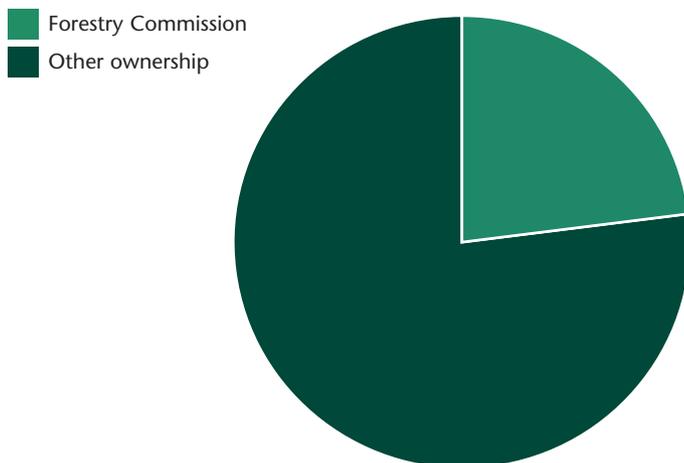


Table 7a Size class distribution of woodland

Size class (ha)	Number of woods	Total area (ha)	Percent of total area	Mean wood area (ha)
<10	5 906	25 903	23	4.3
10 – <20	950	13 355	12	14.1
20 – <50	589	17 881	16	30.4
50 – <100	196	13 433	12	68.5
<100	7 641	70 572	62	9.2
100 – <500	114	20 716	18	181.7
500 and >	12	22 460	20	1 871.7
All woods	7 767	113 748	100	14.6

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	23	85	0	3.7
	O	6 026	25 818	23	4.3
10 – <20	FC	8	124	0	15.5
	O	942	13 231	12	14.0
20 – <50	FC	19	618	1	32.5
	O	570	17 264	15	30.3
50 – <100	FC	31	2 041	2	65.8
	O	165	11 392	10	69.0
<100	FC	81	2 867	3	35.4
	O	7 703	67 705	60	8.8
100 – <500	FC	23	4 251	4	184.8
	O	91	16 466	14	180.9
500 and >	FC	8	18 730	16	2 341.2
	O	4	3 730	3	932.5
Total	FC	112	25 847	23	230.8
	O	7 798	87 901	77	11.3

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 654 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	18 156	70.6	9 857	11.3	28 013	24.8
Broadleaved	3 505	13.6	59 418	68.0	62 924	55.6
Mixed	2 232	8.7	11 165	12.8	13 397	11.8
Coppice	0	0.0	107	0.1	107	0.1
Copp-w-stds	0	0.0	805	0.9	805	0.7
Windblow	0	0.0	0	0.0	0	0.0
Felled	866	3.4	177	0.2	1 043	0.9
Open Space	943	3.7	5 863	6.7	6 806	6.0
Total	25 702	100.0	87 392	100.0	113 095	100.0

Area of woodland by forest type

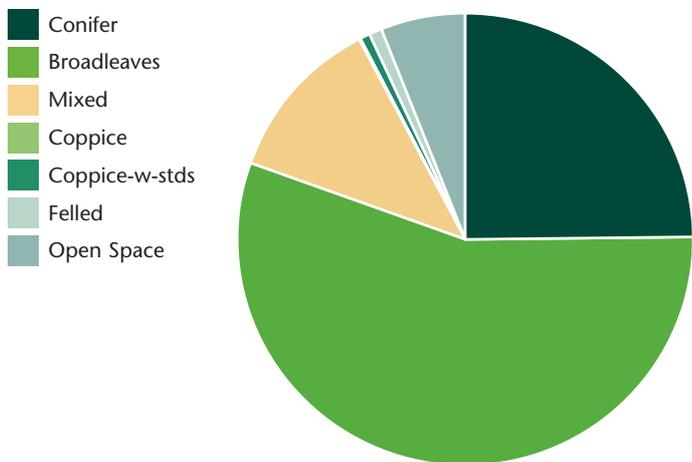


Table 9a Area of High Forest by principal species and ownership

Species	Forestry Commission			Other			All ownerships		
	area (ha)	cat* %	spp† %	area (ha)	cat* %	spp† %	area (ha)	cat* %	spp† %
Scots pine	4 412	23	18	6 362	43	8	10 774	31	10
Corsican pine	13 836	71	58	3 471	23	4	17 307	50	16
Lodgepole pine	61	0	0	8	0	0	69	0	0
Sitka spruce	0	0	0	16	0	0	16	0	0
Norway spruce	86	0	0	1 317	9	2	1 403	4	1
European larch	84	0	0	824	6	1	908	3	1
Japanese/hybrid larch	164	1	1	1 224	8	2	1 388	4	1
Douglas fir	368	2	2	647	4	1	1 015	3	1
Other conifers	427	2	2	759	5	1	1 187	3	1
Mixed conifers	25	0	0	263	2	0	288	1	0
Total conifers	19 463	100	81	14 891	100	19	34 355	100	33
Oak	1 192	27	5	18 039	28	22	19 231	27	18
Beech	1 022	23	4	3 924	6	5	4 946	7	5
Sycamore	213	5	1	5 971	9	7	6 185	9	6
Ash	281	6	1	11 855	18	15	12 136	17	12
Birch	929	21	4	5 832	9	7	6 761	10	6
Poplar	321	7	1	1 856	3	2	2 177	3	2
Sweet chestnut	45	1	0	1 976	3	2	2 021	3	2
Elm	16	0	0	950	1	1	966	1	1
Other broadleaves	291	7	1	13 088	20	16	13 379	19	13
Mixed broadleaves	120	3	1	2 057	3	3	2 177	3	2
Total broadleaves	4 430	100	19	65 549	100	81	69 979	100	67
Total – all species	23 893		100	80 440		100	104 334		100
Felled	866			177			1 043		
Total High Forest	24 759			80 617			105 377		

*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 6 806 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	2%
Corsican pine	5%
Oak	3%
Other broadleaves	5%
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

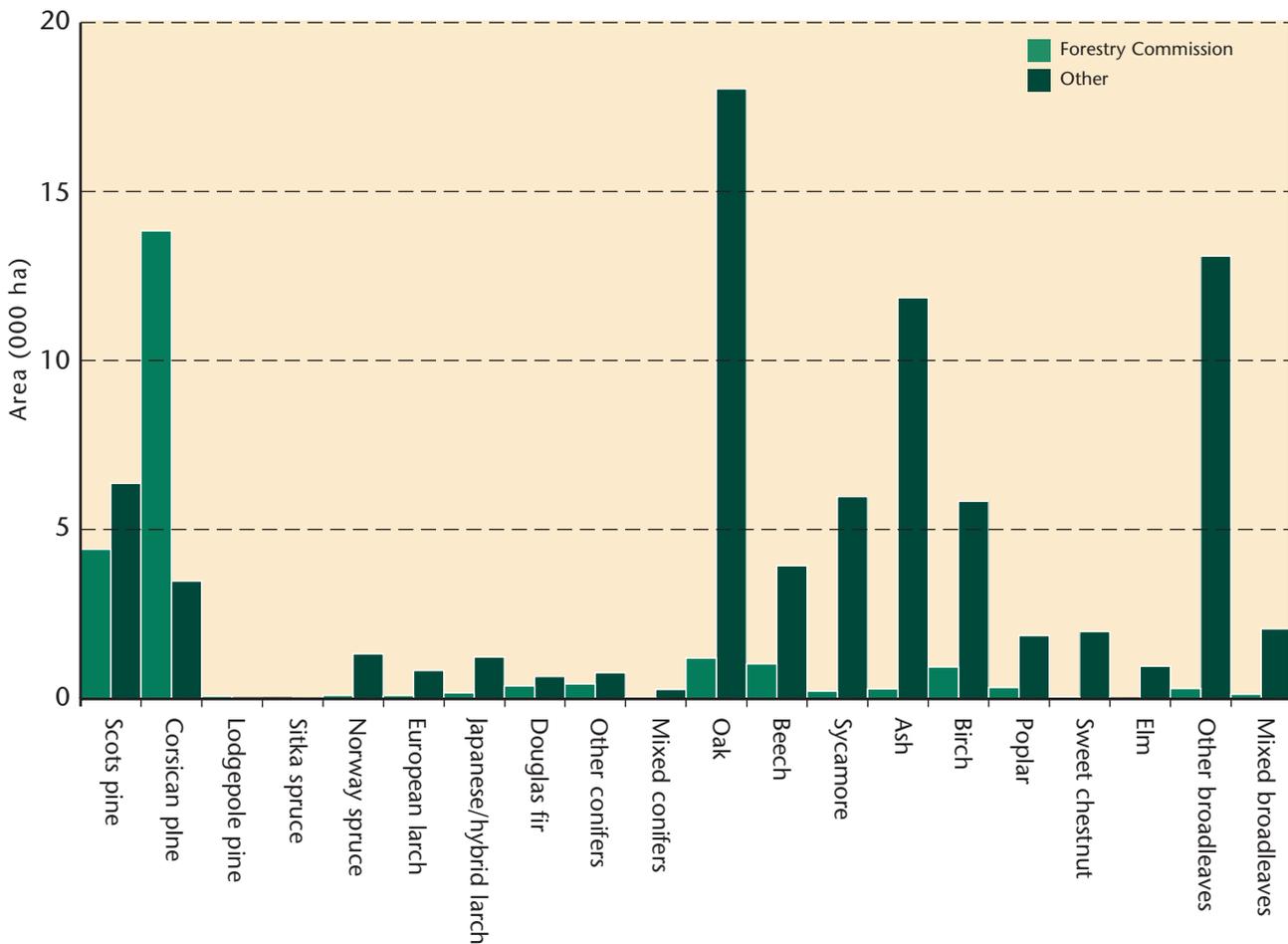


Table 9b Area of High Forest by principal species, ownership and category

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	4 349	63	4 412	5 962	400	6 362	10 311	463	10 774
Corsican pine	13 836	0	13 836	3 446	25	3 471	17 282	25	17 307
Lodgepole pine	61	0	61	8	0	8	69	0	69
Sitka spruce	0	0	0	16	0	16	16	0	16
Norway spruce	86	0	86	1 298	19	1 317	1 384	19	1 403
European larch	84	0	84	784	40	824	868	40	908
Japanese/hybrid larch	159	5	164	1 219	5	1 224	1 379	10	1 388
Douglas fir	368	0	368	643	4	647	1 011	4	1 015
Other conifers	410	17	427	628	131	759	1 038	148	1 187
Mixed conifers	25	0	25	215	48	263	240	48	288
Total conifers	19 378	85	19 463	14 220	672	14 891	33 598	757	34 355
Oak	1 010	182	1 192	16 229	1 811	18 039	17 239	1 993	19 231
Beech	833	189	1 022	3 493	431	3 924	4 325	620	4 946
Sycamore	196	17	213	5 257	714	5 971	5 453	732	6 185
Ash	179	101	281	10 581	1 274	11 855	10 761	1 376	12 136
Birch	788	141	929	4 935	897	5 832	5 723	1 038	6 761
Poplar	270	51	321	1 671	185	1 856	1 941	236	2 177
Sweet chestnut	41	4	45	1 708	268	1 976	1 748	272	2 021
Elm	16	0	16	672	278	950	688	278	966
Other broadleaves	136	155	291	7 538	5 550	13 088	7 674	5 705	13 379
Mixed broadleaves	105	14	120	1 792	266	2 057	1 897	280	2 177
Total broadleaves	3 575	855	4 430	53 874	11 675	65 549	57 448	12 531	69 979
Total – all species	22 953	941	23 893	68 093	12 347	80 440	91 046	13 288	104 334

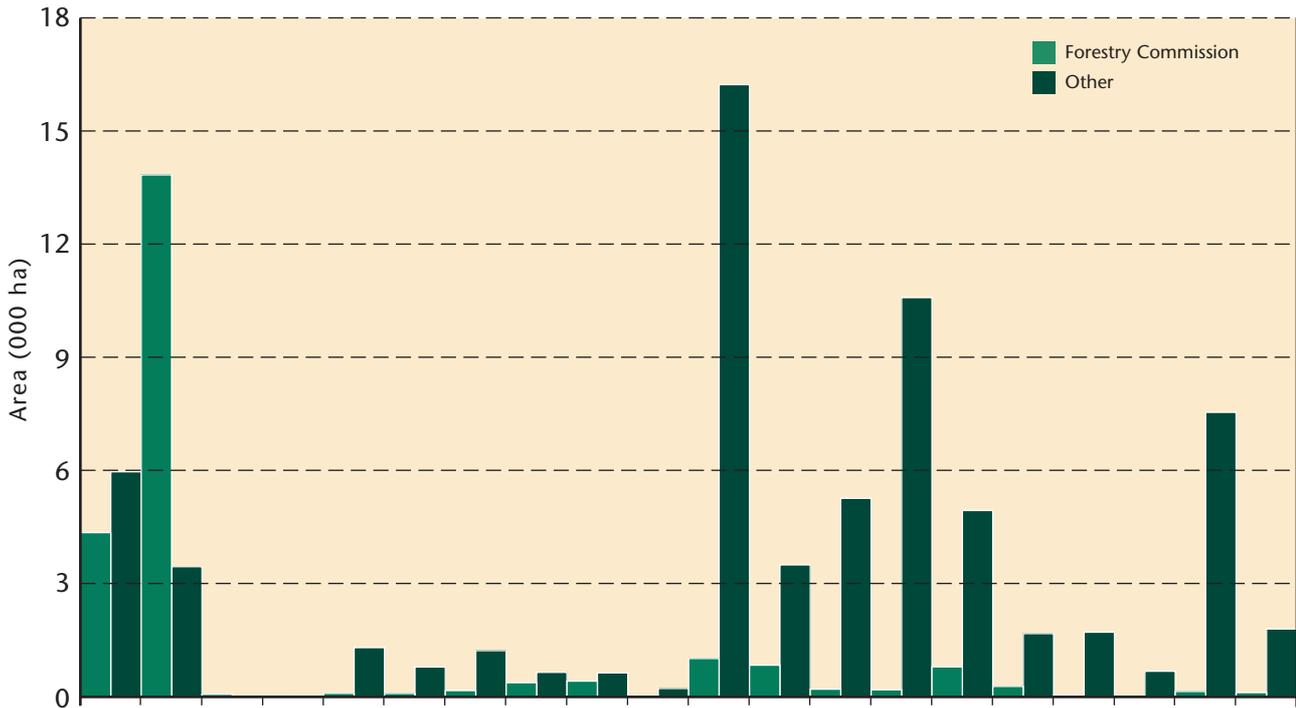
1. The standard errors of the All ownerships area estimates for the most common species or species groups (in all woodland types) are as follows:

	Category 1*	Category 2*	Total High Forest
Conifers	3%	16%	3%
Broadleaves	2%	4%	2%
Corsican pine	4%	85%	5%
Oak	4%	11%	3%
Other broadleaves	6%	8%	5%

*See Glossary for Category 1 and Category 2 descriptions.

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

High Forest Category 1 - Area by principal species and ownership



High Forest Category 2 - Area by principal species and ownership

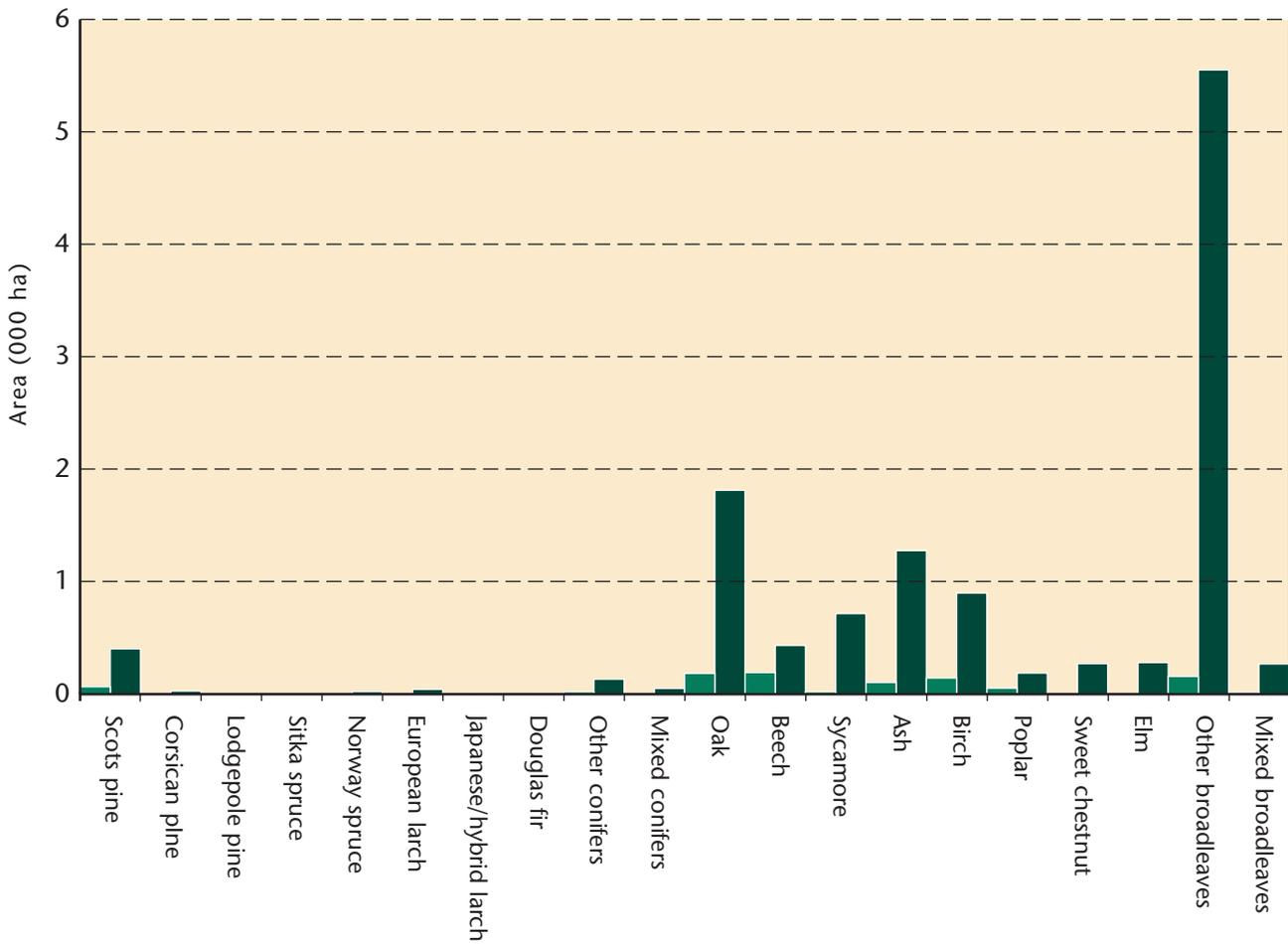
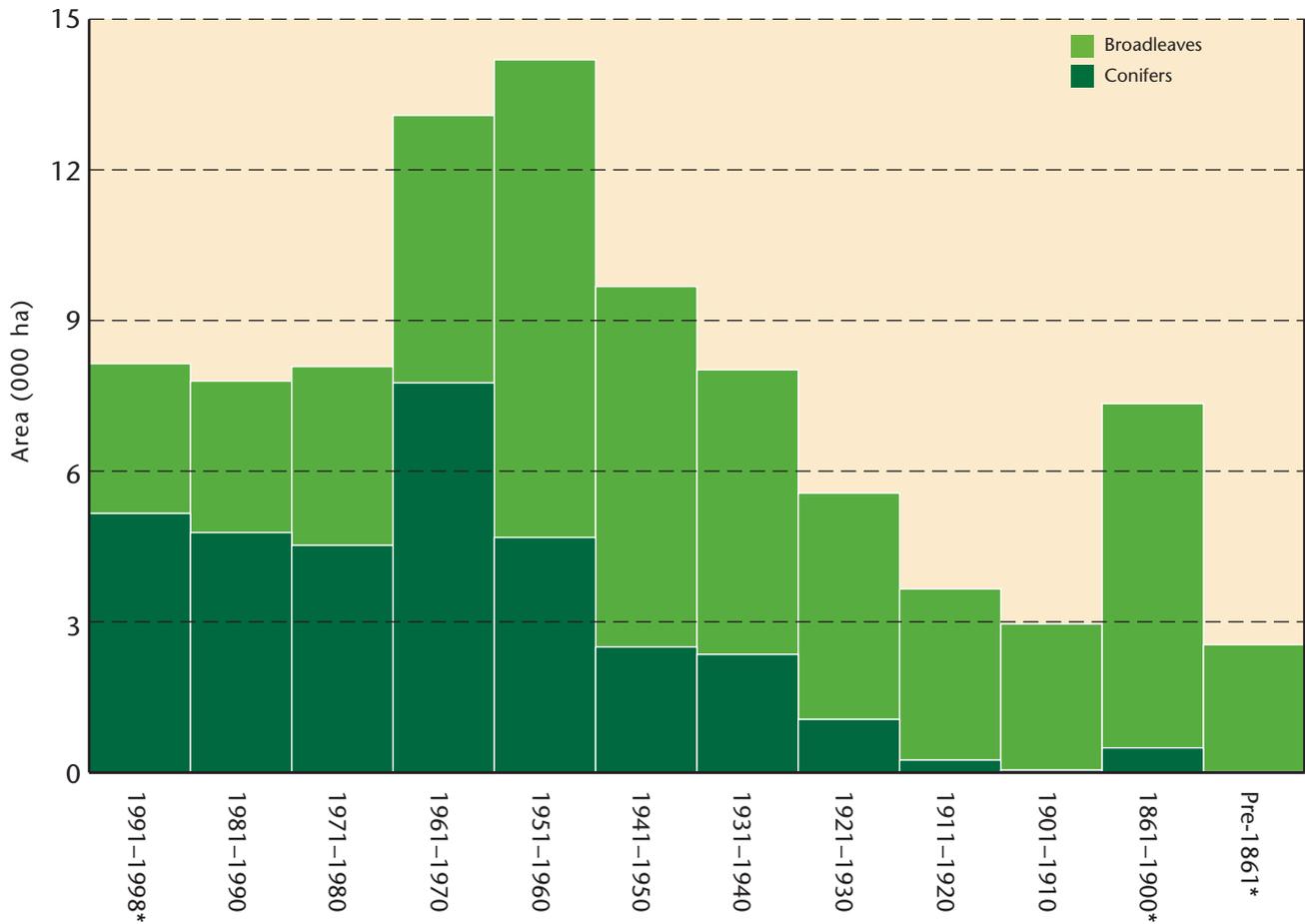


Table 10a High Forest Category 1 - Area by principal species and planting year class

Species	Planting year class*												Total (ha)
	1991 -1998	1981 -1990	1971 -1980	1961 -1970	1951 -1960	1941 -1950	1931 -1940	1921 -1930	1911 -1920	1901 -1910	1861 -1900	pre - 1861	
Scots pine	514	581	1 096	2 301	2 224	1 295	1 507	465	125	21	182	0	10 311
Corsican pine	4 604	3 757	2 814	3 386	1 344	636	372	221	42	4	101	0	17 282
Lodgepole pine	0	0	0	65	5	0	0	0	0	0	0	0	69
Sitka spruce	0	5	0	7	0	3	0	0	0	0	0	0	16
Norway spruce	0	98	369	512	271	23	62	17	10	0	21	0	1 384
European larch	10	64	0	190	229	87	78	149	42	8	10	0	868
Japanese/hybrid larch	0	117	59	586	276	210	82	36	4	0	8	0	1 379
Douglas fir	10	31	15	184	175	140	199	103	21	10	122	0	1 011
Other conifers	13	112	153	443	123	80	39	39	4	4	12	16	1 038
Mixed conifers	5	9	16	81	32	23	12	27	0	0	34	0	240
Total conifers	5 157	4 777	4 522	7 756	4 679	2 498	2 351	1 057	247	47	490	16	33 598
Oak	998	646	374	414	1 259	1 064	927	1 500	1 925	1 459	4 657	2 017	17 239
Beech	27	187	128	503	569	464	316	427	255	356	756	337	4 325
Sycamore	42	373	703	910	1 403	892	526	388	111	29	75	0	5 453
Ash	358	312	536	742	1 192	1 819	1 980	1 429	755	805	738	93	10 761
Birch	646	404	457	1 345	1 534	781	399	58	36	30	33	0	5 723
Poplar	78	135	145	272	773	346	67	5	70	0	51	0	1 941
Sweet chestnut	160	272	80	37	192	99	204	262	84	33	284	41	1 748
Elm	22	87	169	59	152	112	34	47	6	0	0	0	688
Other broadleaves	473	460	651	708	2 020	1 414	1 039	333	141	155	242	40	7 674
Mixed broadleaves	180	141	318	341	419	186	173	56	23	41	20	0	1 897
Total broadleaves	2 983	3 016	3 561	5 328	9 512	7 178	5 666	4 506	3 407	2 909	6 854	2 528	57 448
Total – all species	8 140	7 794	8 083	13 083	14 191	9 676	8 017	5 562	3 654	2 957	7 344	2 544	91 046

*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



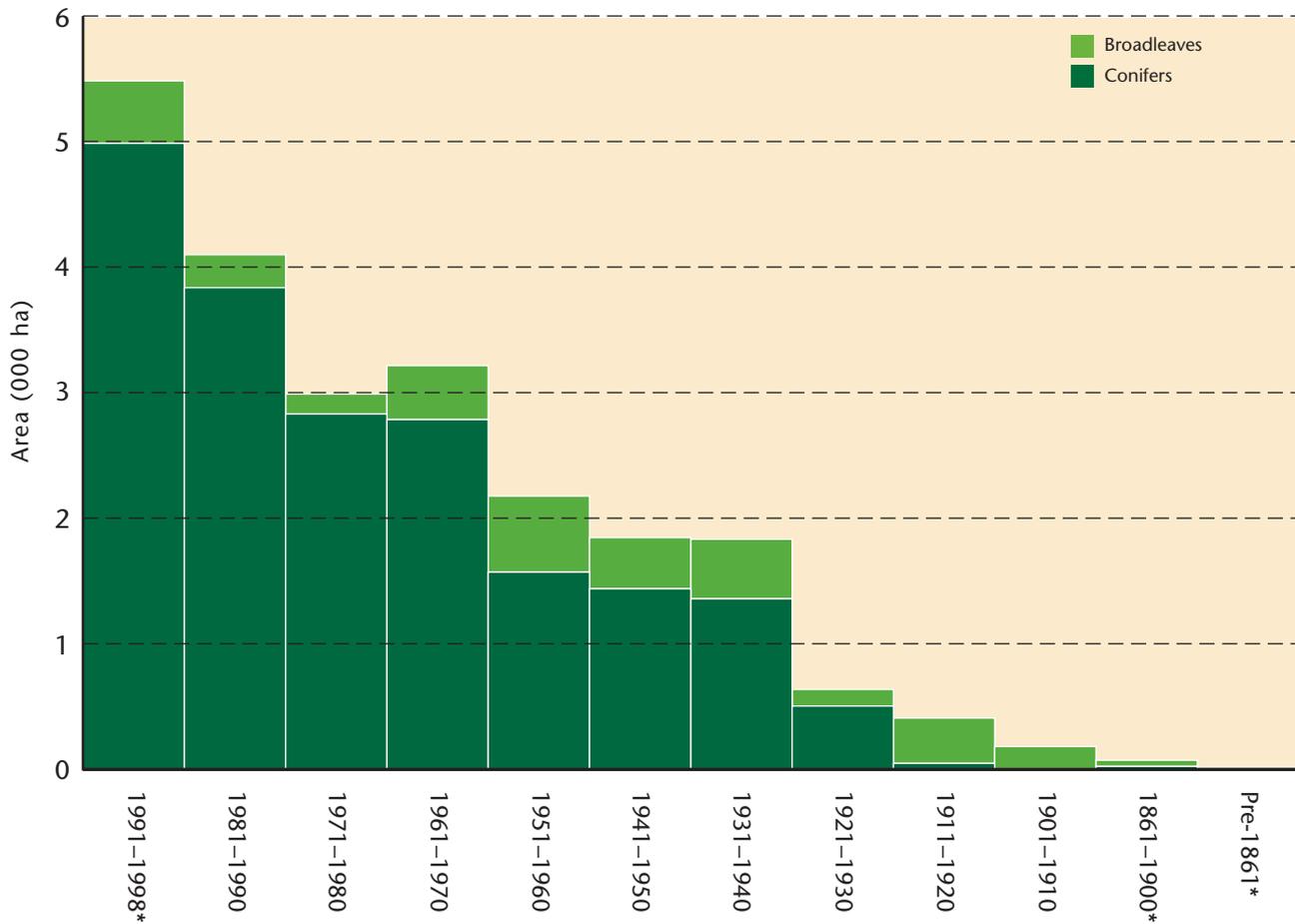
*Most of the planting year classes cover 10 years, 1991-1998 is 8 years, and the classes prior to 1901 are 40 years or more.

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

Species	Planting year class*												Total (ha)
	1991 -1998	1981 -1990	1971 -1980	1961 -1970	1951 -1960	1941 -1950	1931 -1940	1921 -1930	1911 -1920	1901 -1910	1861 -1900	pre - 1861	
Scots pine	466	478	442	380	527	784	985	260	26	0	0	0	4 349
Corsican pine	4 514	3 358	2 359	1 922	863	396	245	168	0	0	10	0	13 836
Lodgepole pine	0	0	0	61	0	0	0	0	0	0	0	0	61
Sitka spruce	0	0	0	0	0	0	0	0	0	0	0	0	0
Norway spruce	0	0	3	67	11	0	0	5	0	0	0	0	86
European larch	0	0	0	0	0	16	12	35	21	0	0	0	8
Japanese/hybrid larch	0	0	1	39	7	73	39	0	0	0	0	0	159
Douglas fir	0	0	2	65	81	94	77	34	0	0	13	0	368
Other conifers	0	0	21	235	79	74	0	2	0	0	0	0	410
Mixed conifers	5	0	1	16	2	0	0	0	0	0	0	0	25
Total conifers	4 986	3 836	2 830	2 785	1 570	1 438	1 358	504	47	0	23	0	19 378
Oak	109	53	10	37	157	188	101	101	198	13	28	17	1 010
Beech	0	4	5	187	182	68	102	27	89	168	0	0	833
Sycamore	0	52	4	13	46	4	73	4	0	0	0	0	196
Ash	0	0	5	31	56	17	70	0	0	0	0	0	179
Birch	302	129	91	95	60	32	77	0	0	0	0	0	788
Poplar	55	0	9	4	34	65	20	0	63	0	22	0	270
Sweet chestnut	3	21	0	0	0	5	0	0	11	0	0	0	41
Elm	0	0	0	0	9	8	0	0	0	0	0	0	16
Other broadleaves	23	0	9	35	37	0	32	0	0	0	0	0	136
Mixed broadleaves	4	3	26	27	25	20	0	0	0	0	0	0	105
Total broadleaves	497	262	159	430	606	407	474	132	361	181	49	17	3 575
Total – all species	5 483	4 098	2 989	3 215	2 175	1 846	1 832	636	408	181	73	17	22 953

*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



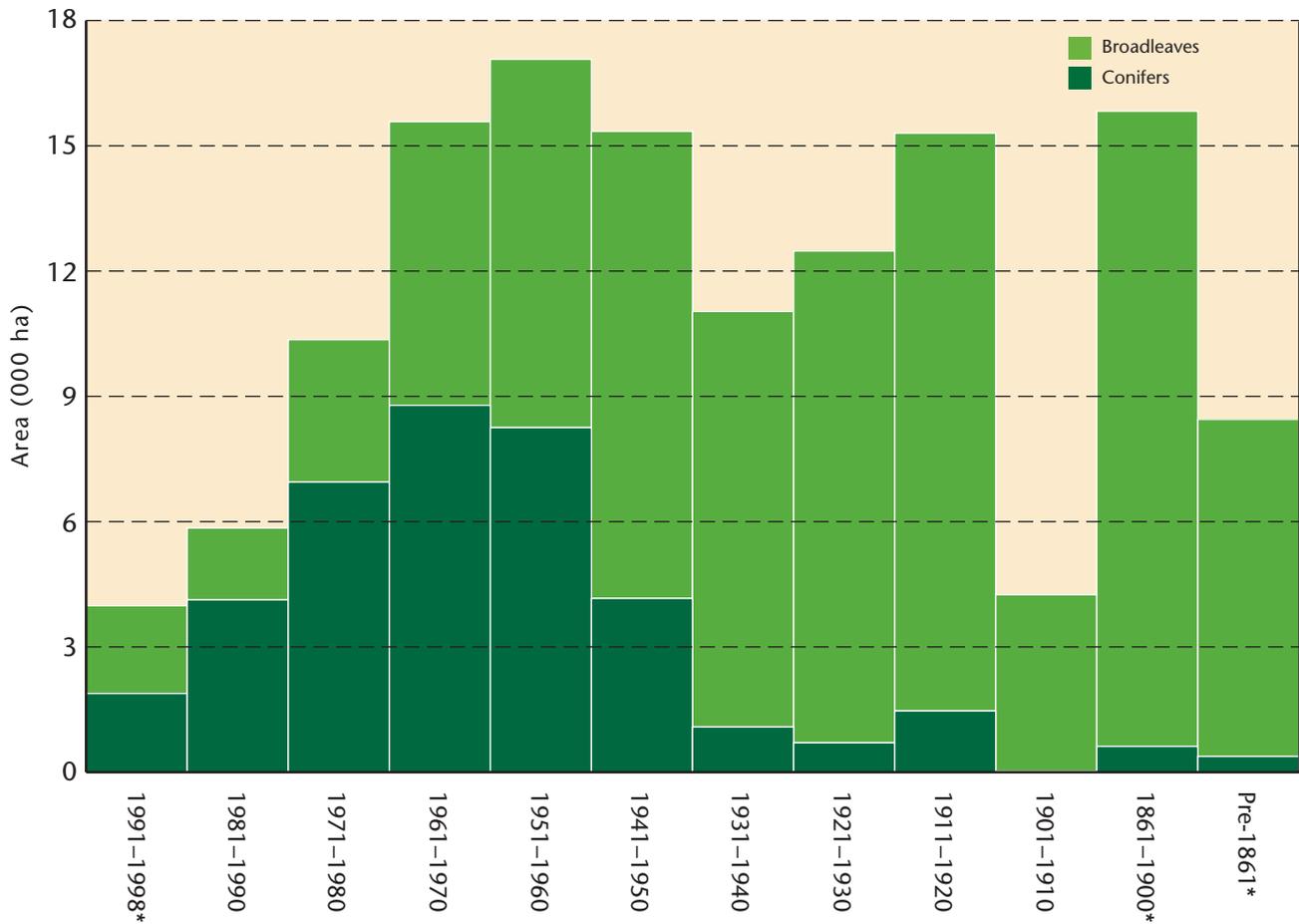
*Most of the planting year classes cover 10 years, 1991-1998 is 8 years, and the classes prior to 1901 are 40 years or more.

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

Species	Planting year class*												Total (ha)
	1991 -1998	1981 -1990	1971 -1980	1961 -1970	1951 -1960	1941 -1950	1931 -1940	1921 -1930	1911 -1920	1901 -1910	1861 -1900	pre - 1861	
Scots pine	48	104	654	1 920	1 697	510	522	205	99	21	182	0	5 962
Corsican pine	89	399	456	1 464	481	240	127	54	42	4	91	0	3 446
Lodgepole pine	0	0	0	4	5	0	0	0	0	0	0	0	8
Sitka spruce	0	5	0	7	0	3	0	0	0	0	0	0	16
Norway spruce	0	98	365	445	260	23	62	12	10	0	21	0	1 298
European larch	10	64	0	190	229	71	66	114	21	8	10	0	784
Japanese/hybrid larch	0	117	57	548	269	137	43	36	4	0	8	0	1 219
Douglas fir	10	31	12	119	93	46	122	68	21	10	109	0	643
Other conifers	13	112	132	208	44	6	39	37	4	4	12	16	628
Mixed conifers	0	9	15	65	30	23	12	27	0	0	34	0	215
Total conifers	171	941	1 692	4 971	3 109	1 060	993	553	200	47	467	16	14 220
Oak	889	593	364	376	1 102	876	826	1 400	1 727	1 446	4 629	2 000	16 229
Beech	27	183	122	316	387	396	214	400	166	188	756	337	3 493
Sycamore	42	321	699	897	1 357	887	453	384	111	29	75	0	5 257
Ash	358	312	531	710	1 136	1 802	1 911	1 429	755	805	738	93	10 581
Birch	344	275	366	1 249	1 474	749	322	58	36	30	33	0	4 935
Poplar	23	135	136	268	739	281	48	5	8	0	29	0	1 671
Sweet chestnut	156	251	80	37	192	94	204	262	73	33	284	41	1 708
Elm	22	87	169	59	143	104	34	47	6	0	0	0	672
Other broadleaves	450	460	642	673	1 983	1 414	1 007	333	141	155	242	40	7 538
Mixed broadleaves	175	138	292	314	394	166	173	56	23	41	20	0	1 792
Total broadleaves	2 485	2 754	3 403	4 898	8 906	6 771	5 193	4 374	3 046	2 729	6 805	2 511	53 874
Total – all species	2 657	3 696	5 094	9 868	12 015	7 831	6 185	4 927	3 246	2 776	7 272	2 527	55 046

*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

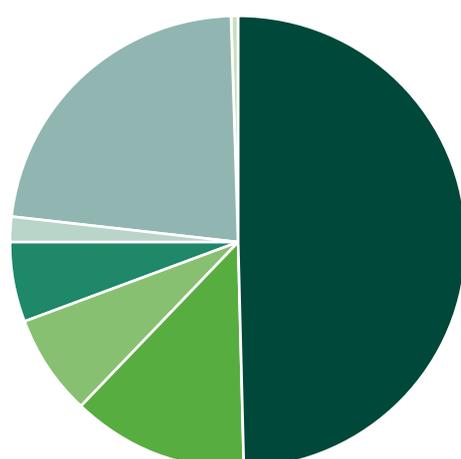


*Most of the planting year classes cover 10 years, 1991-1998 is 8 years, and the classes prior to 1901 are 40 years or more.

Table 11 High Forest: principal species by planting year class

Planting year class	First	%	Second	%	Third	%
1991–1998	Corsican pine	56	Oak	12	Birch	8
1981–1990	Corsican pine	46	Oak	8	Other broadleaves	8
1971–1980	Corsican pine	33	Scots pine	13	Other broadleaves	10
1961–1970	Corsican pine	24	Scots pine	17	Birch	10
1951–1960	Other broadleaves	21	Scots pine	14	Birch	11
1941–1950	Other broadleaves	20	Ash	18	Scots pine	12
1931–1940	Other broadleaves	22	Ash	21	Scots pine	15
1921–1930	Oak	25	Ash	23	Other broadleaves	10
1911–1920	Oak	50	Ash	20	Beech	7
1901–1910	Oak	49	Ash	27	Beech	11
1861–1900	Oak	58	Ash	11	Beech	10
Pre-1861	Oak	78	Beech	13	Ash	4
All years	Oak	18	Corsican pine	16	Other broadleaves	13

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

Ownership type by area


Personal
Business
Charity
Local Authority
Other public
Forestry Commission
Community ownership
Unidentified

Table 12 Ownership type* by area and percentage

Ownership type	Area (ha)	%
Personal	56 118	49.6
Business	14 162	12.5
Forestry or timber business	27	0.0
Charity	8 117	7.2
Local Authority	6 452	5.7
Other public (not FC)	1 991	1.8
Forestry Commission	25 702	22.7
Community ownership or common land	524	0.5
Unidentified	0	0.0
Total	113 094	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 East of England Region was stratified into coastal and inland 1 km x 1 km squares. A random sample of the 1 km² 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 km² 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.

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:	Woodland area by forest type, woodland size and feature type
Table 16:	Woodland area by species and feature type
Table 17:	Numbers of live trees outside woodland by species and feature type
Table 18:	Numbers of dead trees outside woodland by species and feature type
Table 19:	Numbers of live Individual Trees by species and height band
Table 20:	Numbers of live trees in Groups by species and height band
Table 21:	Numbers of live trees in Narrow Linear Features by species and height band
Table 22:	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 Woodland and Trees

Feature type	Number of features	Total	Unit
Small Woods	40 337	22 291	Area (ha)
Wide Linear Features	4 667	3 726	Area (ha)
Wide Linear Features	4 667	1 126	Length (km)
Narrow Linear Features	168 000	13 199	Length (km)
Narrow Linear Features	168 000	8 757 400	Number of live trees
Groups	503 400	3 885 400	Number of live trees
Individual Trees	924 400	924 400	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	1 911	20 381	22 291	40 337	0.55
Wide Linear Features	78	3 649	3 727	4 667	0.80
Total	1 989	24 029	26 018	45 004	0.58

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

Small Woods	21%
Wide Linear Features	67%

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) SW + WLF
	0.1 – <0.25		0.25 – <2.0		0.1 – <2.0		
	SW*	WLF†	SW	WLF	SW	WLF	
Conifer	212	78	2 123	273	2 335	351	2 686
Broadleaved	1 274	0	16 029	3 337	17 303	3 337	20 640
Mixed	425	0	1 592	0	2 017	0	2 017
Coppiced	0	0	0	0	0	0	0
Copp-w-stds	0	0	531	0	531	0	531
Windblow	0	0	0	0	0	0	0
Felled	0	0	0	0	0	0	0
Open Space	0	0	106	39	106	39	145
Total	1 911	78	20 381	3 649	22 291	3 726	26 018

*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	1 645	273	1 918	53.5	7.4
Spruce	955	0	955	26.6	3.7
Larch	318	39	357	10.0	1.4
Cypress	265	0	265	7.4	1.0
Other conifers	53	0	53	1.5	0.2
Mixed conifers	0	39	39	1.1	0.2
Total conifers	3 236	351	3 587	100.0	13.9
Oak	4 087	351	4 438	19.9	17.2
Beech	424	0	424	1.9	1.6
Sycamore	637	233	870	3.9	3.4
Ash	1 963	1 086	3 049	13.7	11.8
Birch	53	0	53	0.2	0.2
Poplar	743	155	898	4.0	3.5
Sweet chestnut	1 327	0	1 327	6.0	5.1
Horse chestnut	0	0	0	0.0	0.0
Alder	531	0	531	2.4	2.1
Lime	53	0	53	0.2	0.2
Elm	265	156	421	1.9	1.6
Willow	531	929	1 460	6.6	5.6
Other broadleaves	3 609	272	3 881	17.4	15.0
Mixed broadleaves	4 724	155	4 879	21.9	18.9
Total broadleaves	18 947	3 337	22 284	100.0	86.1
Total – all species	22 185	3 687	25 873		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 56%
 Oak 28%
 Other broadleaves 49%
 Mixed broadleaves 37%

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				Total live trees	Percent of total trees	
	Boundary Trees	Middle Trees	Groups	Narrow Linear Features		Category	Species
Pine	6.3	1.6	37.8	177.3	223.0	38.6	1.6
Spruce	3.2	0.0	12.2	9.5	24.9	4.3	0.2
Larch	0.9	1.6	2.5	2.3	7.3	1.3	0.1
Cypress	8.0	2.9	58.8	197.3	267.0	46.2	2.0
Other conifers	5.5	3.9	16.6	29.4	55.4	9.6	0.4
Total conifers	23.9	10.0	127.9	415.9	577.6	100.0	4.3
Oak	260.1	40.7	298.0	627.3	1 226.1	9.4	9.0
Beech	11.0	3.9	40.3	22.3	77.5	0.6	0.6
Sycamore	16.7	4.0	234.6	273.6	528.9	4.1	3.9
Ash	148.9	12.9	496.8	1 189.6	1 848.2	14.2	13.6
Birch	10.3	16.0	76.6	63.2	166.1	1.3	1.2
Poplar	12.8	4.0	157.7	171.6	346.1	2.7	2.6
Sweet chestnut	5.6	0.0	0.9	7.8	14.3	0.1	0.1
Horse chestnut	4.0	3.2	17.4	56.2	80.8	0.6	0.6
Alder	15.0	4.0	38.4	231.7	289.1	2.2	2.1
Lime	17.4	0.0	11.7	5.8	34.9	0.3	0.3
Elm	26.9	2.4	342.8	690.0	1 062.1	8.2	7.8
Willow	41.0	12.4	317.9	378.5	749.8	5.8	5.5
Other broadleaves	166.0	51.4	1 724.4	4 624.0	6 565.8	50.5	48.4
Total broadleaves	735.7	154.9	3 757.5	8 341.5	12 989.7	100.0	95.7
Total – all species	759.6	164.9	3 885.4	8 757.4	13 567.2		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 9%
 Groups 14%
 Narrow Linear Features 17%

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				Total dead trees	Percent of total trees	
	Boundary Trees	Middle Trees	Groups	Narrow Linear Features		Category	Species
Pine	0.0	0.0	0.0	17.9	17.9	88.6	5.7
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	2.3	2.3	11.4	0.7
Other conifers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total conifers	0.0	0.0	0.0	20.3	20.2	100.0	6.4
Oak	4.9	3.1	2.4	7.4	17.8	6.1	5.7
Beech	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sycamore	0.0	0.0	0.0	1.0	1.0	0.3	0.3
Ash	0.8	0.0	3.1	4.7	8.6	2.9	2.7
Birch	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Poplar	0.0	0.9	0.0	0.0	0.9	0.3	0.3
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	0.8	0.8	0.8	4.5	6.9	2.4	2.2
Lime	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elm	13.6	0.0	28.7	140.4	182.7	62.4	58.3
Willow	0.0	0.0	5.5	0.0	5.5	1.9	1.8
Other broadleaves	4.7	7.8	21.5	35.6	69.6	23.8	22.2
Total broadleaves	24.8	12.6	62.0	193.5	293.0	100.0	93.6
Total – all species	24.8	12.6	62.0	213.8	313.2		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	0.8	5.5	1.6	0.0	7.9
Spruce	0.0	3.2	0.0	0.0	3.2
Larch	1.6	0.9	0.0	0.0	2.5
Cypress	5.5	5.5	0.0	0.0	11.0
Other Conifers	5.5	3.1	0.0	0.8	9.4
Total conifers	13.4	18.2	1.6	0.8	34.0
Oak	60.9	118.9	98.7	22.3	300.8
Beech	1.6	6.3	4.7	2.3	14.9
Sycamore	5.6	11.1	3.3	0.8	20.8
Ash	32.6	88.1	34.0	7.1	161.8
Birch	15.0	11.4	0.0	0.0	26.4
Poplar	4.0	10.4	2.4	0.0	16.8
Sweet chestnut	3.9	1.6	0.0	0.0	5.5
Horse chestnut	3.3	3.9	0.0	0.0	7.2
Alder	8.7	10.2	0.0	0.0	18.9
Lime	2.3	11.1	0.8	3.1	17.3
Elm	20.7	8.6	0.0	0.0	29.3
Willow	18.1	24.9	8.8	1.7	53.5
Other broadleaves	145.7	71.7	0.0	0.0	217.4
Total broadleaves	322.4	378.2	152.7	37.3	890.6
Total – all species	335.8	396.3	154.2	38.2	924.4

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	14.2	18.9	4.8	0.0	37.9
Spruce	1.6	10.6	0.0	0.0	12.2
Larch	2.5	0.0	0.0	0.0	2.5
Cypress	16.8	38.6	3.3	0.0	58.7
Other conifers	7.0	8.8	0.0	0.8	16.6
Total conifers	42.1	76.9	8.1	0.8	127.9
Oak	49.9	171.4	63.3	13.4	298.0
Beech	7.9	26.1	5.5	0.8	40.3
Sycamore	100.0	115.5	15.2	3.9	234.6
Ash	129.5	304.2	57.6	5.5	496.8
Birch	19.8	56.8	0.0	0.0	76.6
Poplar	21.1	113.5	23.1	0.0	157.7
Sweet chestnut	0.9	0.0	0.0	0.0	0.9
Horse chestnut	1.7	11.8	3.9	0.0	17.4
Alder	11.7	25.1	1.6	0.0	38.4
Lime	2.3	7.8	0.8	0.8	11.7
Elm	173.1	164.2	5.5	0.0	342.8
Willow	162.8	146.3	0.8	8.1	318.0
Other broadleaves	1 191.8	529.4	2.4	0.8	1 724.4
Total broadleaves	1 872.5	1 672.1	179.7	33.3	3 757.6
Total – all species	1 914.6	1 749.0	187.8	34.1	3 885.4

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	2.0	171.1	4.1	0.0	177.2
Spruce	2.0	6.4	1.0	0.0	9.4
Larch	0.0	0.0	2.3	0.0	2.3
Cypress	29.7	167.6	0.0	0.0	197.3
Other conifers	7.2	18.4	3.9	0.0	29.5
Total conifers	40.9	363.5	11.3	0.0	415.7
Oak	153.4	305.0	145.3	23.6	627.3
Beech	0.0	12.9	8.4	1.0	22.3
Sycamore	32.4	192.2	44.2	4.7	273.5
Ash	218.9	834.9	123.2	12.6	1 189.6
Birch	10.8	40.4	11.9	0.0	63.1
Poplar	0.0	48.0	121.6	2.0	171.6
Sweet chestnut	0.0	7.8	0.0	0.0	7.8
Horse chestnut	3.4	42.6	10.2	0.0	56.2
Alder	16.2	185.3	30.1	0.0	231.6
Lime	2.0	3.7	0.0	0.0	5.7
Elm	320.9	367.1	1.0	1.0	690.0
Willow	112.4	252.3	12.1	1.7	378.5
Other broadleaves	2 875.5	1 711.8	36.8	0.0	4 624.1
Total broadleaves	3 745.9	4 004.0	544.8	46.6	8 341.3
Total – all species	3 786.8	4 367.5	556.1	46.6	8 757.4

Table 22 Number of Groups by group size

Number of trees per Group*	Number of Groups (000s)
2	71
3-5	151
6-10	123
11-20	86
21-50	62
51-100	6
>100	4
Total	503

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

COMPARISON OF RESULTS WITH THE 1980 CENSUS AND PREVIOUS SURVEYS

Survey method

The 1980 Census and 1998 Inventory were undertaken using very different sampling methods. Inventory practice and technology have moved on since the 1980 Census; this has led to changes in sampling methodology, scope and woodland definitions. For example, the Main Woodland Survey used the digital woodland map, created from aerial 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 1998 Inventory
Table 24:	Comparison of High Forest area by species between 1980 Census and 1998 Inventory
Chart:	Comparison of High Forest area by species between 1980 Census and 1998 Inventory
Table 25:	Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1998 Inventory
Chart:	Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1998 Inventory
Table 26:	Comparison of numbers of live trees outside woodland between 1980 Census and 1998 Inventory
Table 27:	Comparison of density of non-woodland features between 1980 Census and 1998 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 1998 Inventory

Woodland size (ha)	1980 Census woodland area		1998 Inventory woodland area		Change (%)
	(ha)	(%)	(ha)	(%)	(%)
2.0 or more	101 888	91.7	113 094	82.5	11
0.25 – <2.0	9 182	8.3	24 030	17.5	162
Total	111 070		137 124		23
% Woodland land cover	5.8		7.2		

1. Differences in sampling methodology may account for some of the apparent differences.
2. The above figures from the 1998 Inventory exclude woodland between 0.1 and <0.25 hectares, thereby matching the scope of the 1980 Census. These 1998 figures will therefore not match those in the previous sections of the report.
3. Land area used to calculate woodland cover percent (1998), 1 911 865 hectares, was based on the 1991 Census of Population digital boundaries.
4. Land area used to calculate woodland cover percent (1980), 1 911 464 hectares, (Ordnance Survey data)

Table 24 Comparison of High Forest area by species between 1980 Census and 1998 Inventory

Species	1980 Census woodland area (ha)	1998 Inventory woodland area (ha)	Change (%)
Scots pine	18 935	11 379	-40
Corsican pine	12 473	18 475	48
Lodgepole pine	105	69	-34
Sitka spruce	67	16	-76
Norway spruce	2 760	2 146	-22
European larch	1 976	947	-52
Japanese/hybrid larch	590	1 706	189
Douglas fir	1 179	1 015	-14
Other conifers	992	1 452	46
Mixed conifers	1 587	327	-79
Total conifers	40 664	37 532	-8
Oak	16 787	23 403	39
Beech	4 214	5 211	24
Sycamore	3 095	7 002	126
Ash	8 374	14 974	79
Birch	4 290	6 814	59
Poplar	3 363	2 969	-12
Sweet chestnut	1 777	3 295	85
Elm	1 114	1 334	20
Other broadleaves	10 688	18 575	74
Mixed broadleaves	5 740	6 578	15
Total broadleaves	59 443	90 155	52
Total – all species	100 107	127 687	28
Felled	2 938	1 043	-65
Total High Forest	103 046	128 730	25

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 5.0% (Table 2). To obtain meaningful comparisons between the two datasets the 1980 Census data have therefore been reduced by 5.0%.
3. The above figures from the 1998 Inventory exclude woodland between 0.1 and <0.25 ha, thereby matching the scope of the 1980 Census. The 1998 figures above will therefore not match those in the previous sections of the report.
4. The 1980 figures include scrub to enable comparison.

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

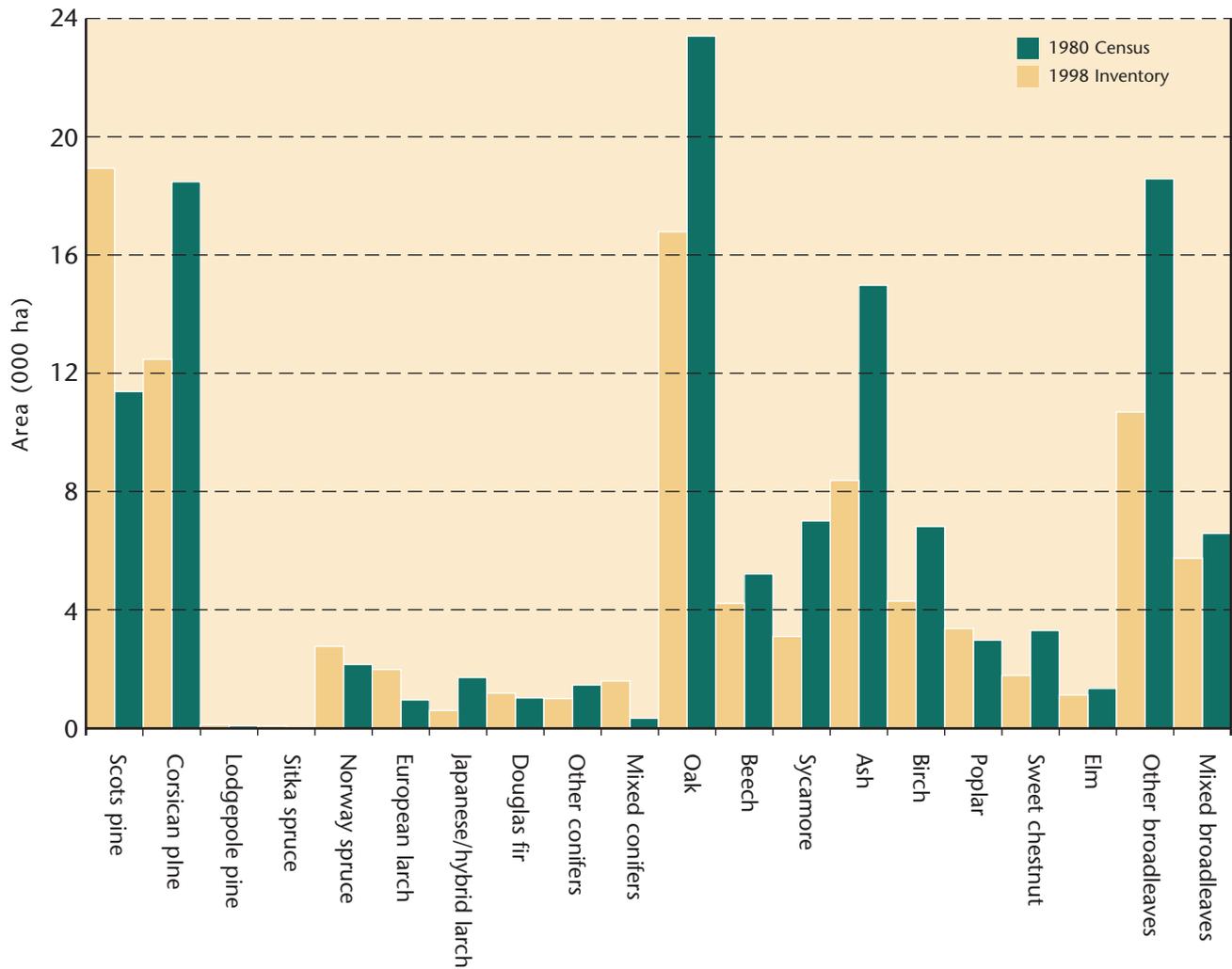


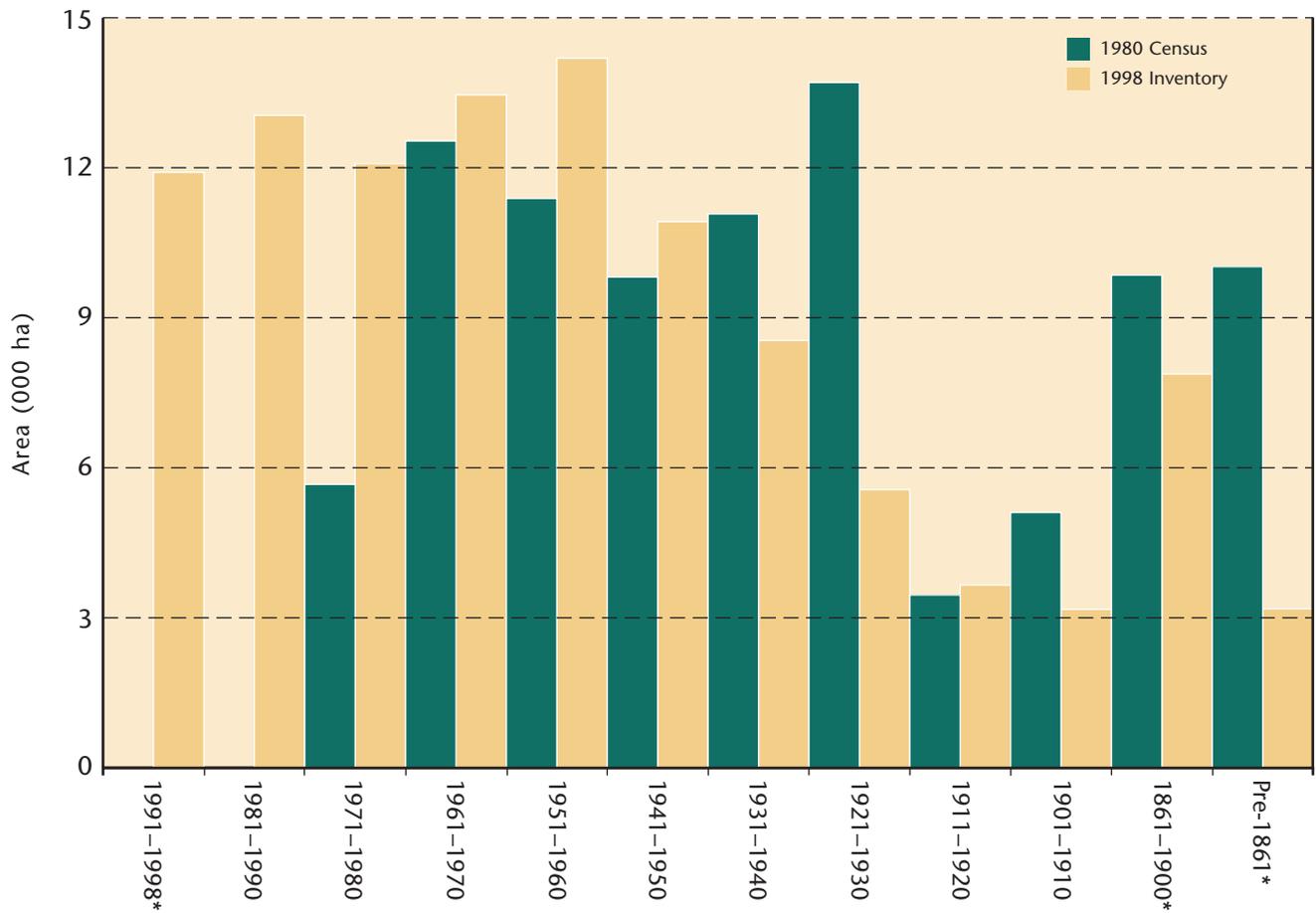
Table 25 Comparison of High Forest Category 1 area by planting year class between 1980 Census and 1998 Inventory

Planting year class	1980 Census woodland area (ha)	1998 Inventory woodland area (ha)	Change (%)
1991–1998	-	11 908	-*
1981–1990	-	13 047	-*
1971–1980	5 667	12 082	113
1961–1970	12 535	13 456	7
1951–1960	11 386	14 191	25
1941–1950	9 814	10 922	11
1931–1940	11 076	8 548	-23
1921–1930	13 704	5 563	-59
1911–1920	3 455	3 654	6
1901–1910	5 105	3 168	-38
1861–1900	9 851	7 875	-20
Pre-1861	10 022	3 181	-68
Total: all years	92 614	107 595	16

*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 1998 Inventory



*Most of the planting year classes cover 10 years, 1991-1998 is 7 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 1998 Inventory (000s trees)

Feature type	1980 Census	1998 Inventory	Change (%)
Boundary	636	724	14
Middle	1 450	142	-90
Total Individual Trees	2 086	866	-58
Groups	2 639	2 751	4
Linear Features	2 089	5 244	151
Total	6 814	8 861	30

1. The Survey of Small Woodland and Trees did not record information referring to tree features (i.e. Individual trees, Groups and Narrow Linear features) within developed land.
2. In the 1980 Census hazel, hawthorn, blackthorn and goat willow were excluded; the 1998 Inventory figures have been adjusted accordingly. The 1998 figures above will therefore not match those in the previous sections of the report.
3. Changes stated in this table are indicative only. Even with adjustments to the 1998 Inventory, the two surveys are not directly comparable - 1980 used 7cm diameter at breast height and 1998 used 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 1998 Inventory

Feature type	1980 Census	1998 Inventory	Change (%)
Individual Trees (per km ²)	109.1	45.3	-58
Groups (per km ²)	24.7	20.8	-16
Linear Features (m per km ²)	370.4	675.6	82

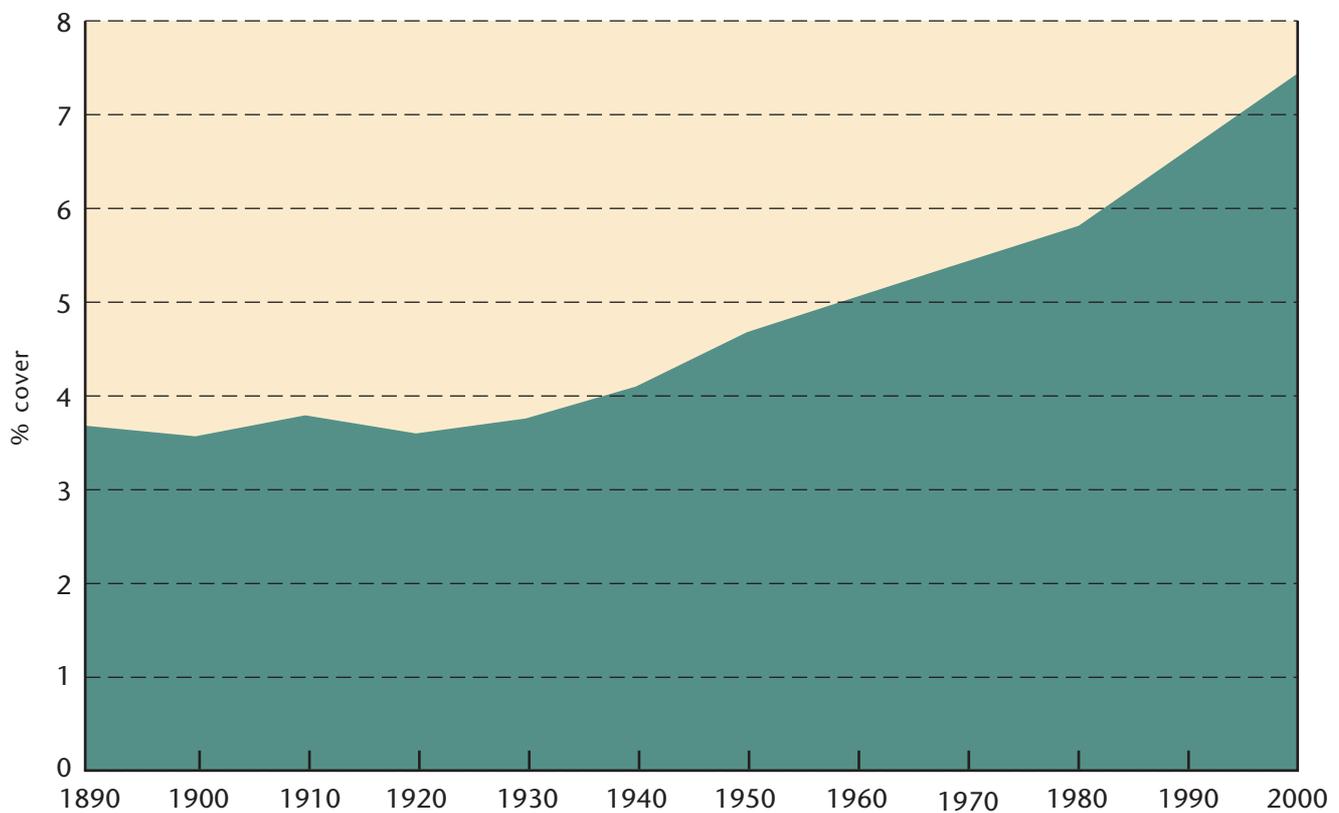
1. The Survey of Small Woodland and Trees did not record information referring to tree features (i.e. Individual trees, Groups and Narrow Linear features) within developed land.
2. In the 1980 Census hazel, hawthorn, blackthorn and goat willow were excluded; the 1998 Inventory figures have been adjusted accordingly. The 1998 figures above will therefore not match those in the previous sections of the report.
3. Changes stated in this table are indicative only. Even with adjustments to the 1998 Inventory, the two surveys are not directly comparable - 1980 used 7 cm diameter at breast height and 1998 used 2 m height as minimum criteria for inclusion.
4. See Glossary for definitions of feature types.

WOODLAND COVER

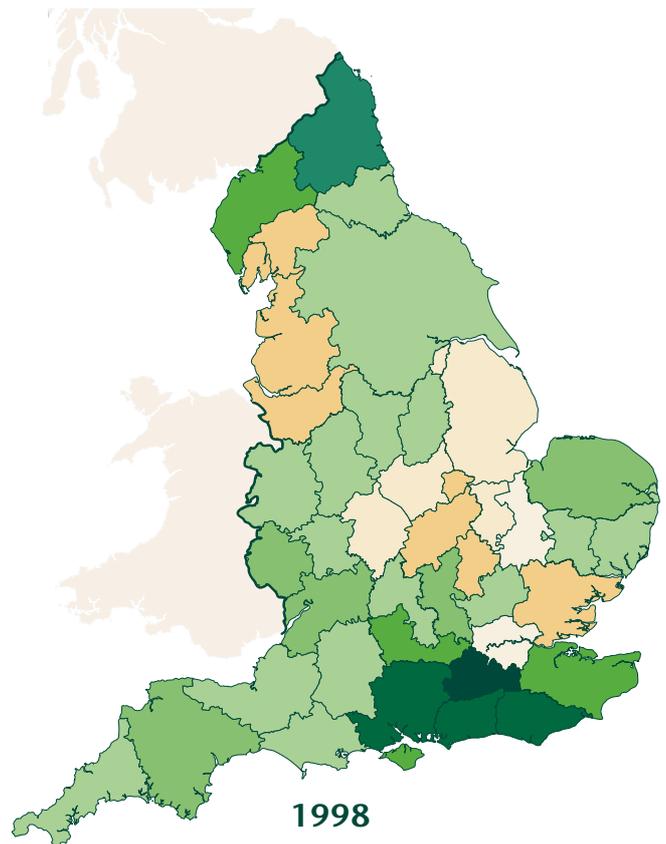
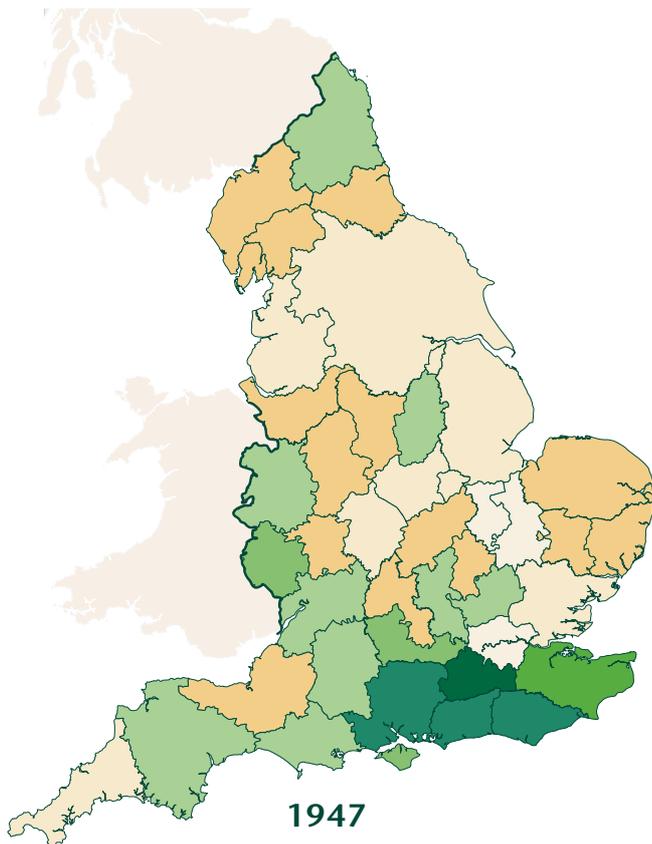
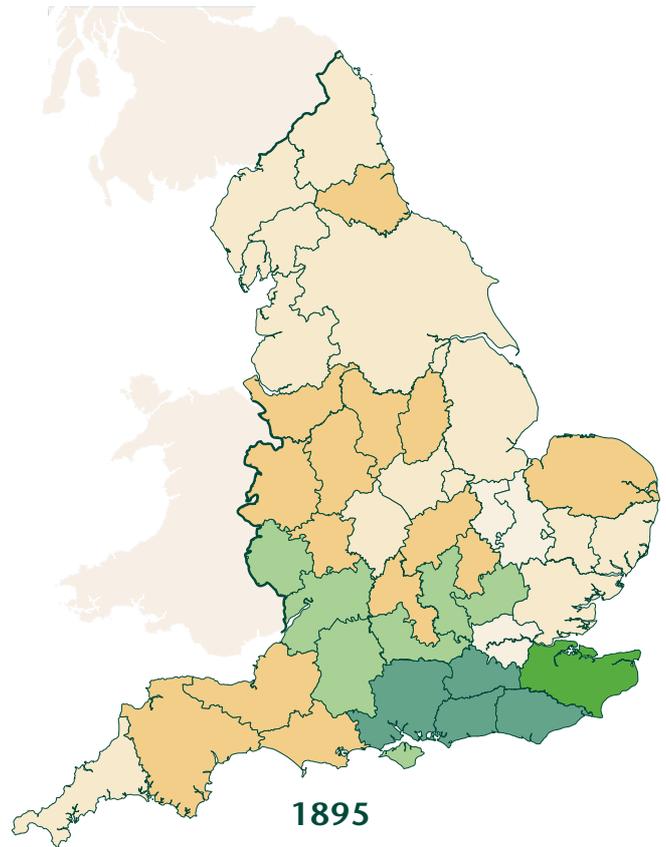
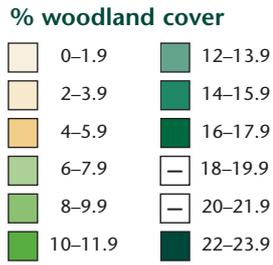
Woodland area data is available from Ministry of Agriculture surveys since 1871, and from Forestry Commission national woodland inventories since 1924. The following chart and maps show the changes in woodland area through time.

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 East of England Region. Full reports of the results are available separately.

- Appendix 1 Summary of woodland area by county and woodland size
- Appendix 2 Summary of woodland area by county and forest type
- Appendix 3 Summary of live trees outside woodland by county and feature type
- Appendix 4 Summary of number and length of Linear Features by county

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		
Bedfordshire	6 629	1 026	7 655	6.2
Cambridgeshire	6 720	5 605	12 325	3.6
Essex	15 421	4 034	19 455	5.3
Hertfordshire	12 836	2 667	15 503	9.5
Norfolk	44 157	8 583	52 740	9.8
Suffolk	27 332	4 103	31 435	8.3
Total	113 094	26 018	139 112	7.3

*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	
Bedfordshire	1 983	4 743	449	0	24	0	0	457	7 655
Cambridgeshire	737	10 023	1 327	0	78	0	39	121	12 325
Essex	1 245	15 574	1 523	88	441	0	0	583	19 455
Hertfordshire	2 094	11 126	1 454	12	148	0	57	612	15 503
Norfolk	14 328	26 631	7 136	0	503	0	754	3 387	52 740
Suffolk	10 313	15 466	3 526	6	141	0	192	1 792	31 435
Total	30 699	83 564	15 414	107	1 336	0	1 043	6 951	139 112

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 km ²)
		Groups	Narrow Linear Feature	Individual Trees		
Bedfordshire	Features	0.8	2.8	28.0		
	Live Trees	14.0	133.2	28.0	175.2	142
Cambridgeshire	Features	28.8	29.4	88.8		
	Live Trees	471.1	1 888.1	88.8	2 448.0	720
Essex	Features	39.0	20.4	77.1		
	Live Trees	284.9	1 141.1	77.1	1 503.1	409
Hertfordshire	Features	9.8	5.1	56.6		
	Live Trees	83.6	351.8	56.6	492.0	300
Norfolk	Features	193.8	42.9	370.3		
	Live Trees	1 561.6	1 951.1	370.3	3 883.0	723
Suffolk	Features	231.1	67.5	303.7		
	Live Trees	1 470.2	3 292.1	303.7	5 066.0	1334
Total	Features	503.4	168.0	924.4		
	Live Trees	3 885.4	8 757.4	924.4	13 567.2	710

*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)
Bedfordshire	2.8	246	199
Cambridgeshire	30.9	3 003	883
Essex	20.4	2 206	600
Hertfordshire	5.1	555	339
Norfolk	46.0	3 292	613
Suffolk	67.5	5 022	1 322
Total	172.8	14 325	749

*Areas of counties used to derive length per km² 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





Forestry Commission
231 Corstorphine Road
Edinburgh
EH12 7AT

£15

www.forestry.gov.uk