

## **A. Woodland**

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**A6. Area of sustainably managed woodland**

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***Woodland – Summary***

The contribution that woodlands make to our quality of life depends on their total area and their characteristics, which in turn are influenced by the way in which they are managed. The country forestry strategies aim to increase woodland cover with appropriate species in appropriate locations and encourage management practices that will provide the benefits we seek from our woodlands.

The trend in total area over time (A1) is determined by woodland creation (A2) and woodland loss (A3). Information about loss of woodland is a serious gap in our present knowledge. The variety and proportions of tree species in our woodlands (A4) and the number and size of individual woodlands (A5) provide a picture of the overall character of our woodlands at a UK and country level.

The area of sustainably managed woodland (A6) and the management practices applied in our woodlands (A7) tell us about the quality of forest management and the benefits provided by our woodlands.

## A1. Woodland area

**Relevance** Woodlands contribute to many sustainable development goals. They have the potential to enhance our landscape and are habitats for wildlife. They are places for leisure and recreation and are an economic resource for timber production, tourism, and local development and regeneration. An expansion of the area of woodland can increase the extent of these multiple benefits.

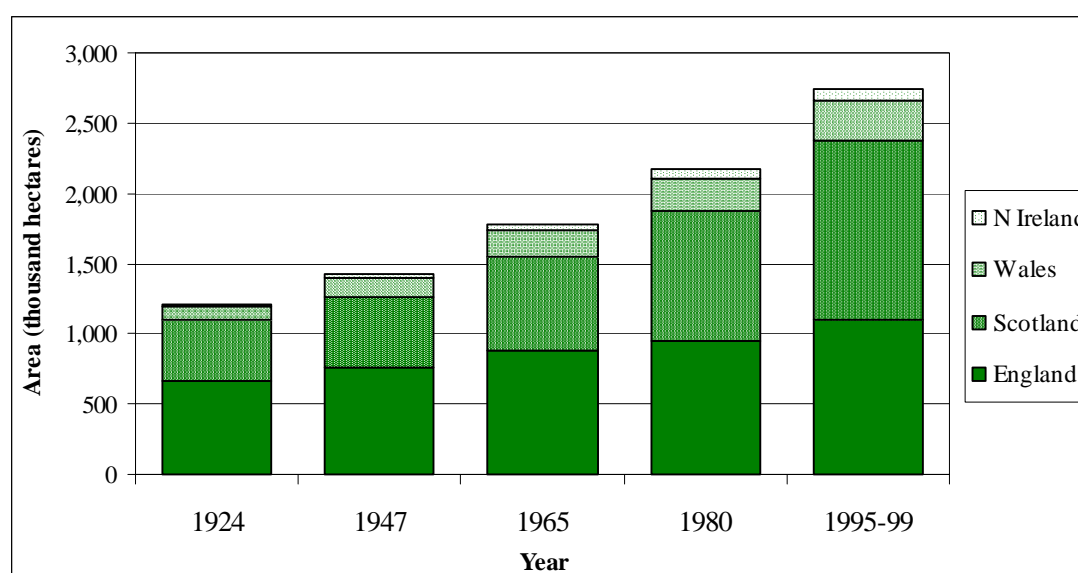
**Key Points** The area of woodland in the UK increased through the last century, from around 5% cover at the start of the 20<sup>th</sup> century to over 11% now. In 2002, woodlands cover 8% of England, 17% of Scotland, 14% of Wales and 6% of Northern Ireland.

### UK Woodland area

	Thousand hectares						% woodland cover
	1924	1947	1965	1980	1995-99	2002	2002
England	660	755	886	948	1,097	1,104	8.5%
Scotland	435	513	656	920	1,281	1,324	16.9%
Wales	103	128	201	241	287	288	13.9%
N Ireland	13	23	42	66	81	84	6.2%
<b>UK</b>	<b>1,211</b>	<b>1,419</b>	<b>1,785</b>	<b>2,175</b>	<b>2,746</b>	<b>2,800</b>	<b>11.5%</b>

Sources: GB Censuses of Woodland 1924 to 1980, NIWT 1995-1999, and NI Forest Service

Note: NIWT 1995-99 was carried out as a rolling programme. The areas for 2002 are based on the latest GIS data for Forest Enterprise, with private woodland areas projected forward from NIWT with varying base dates in 1995-99, taking account of new woodland creation and other changes.



Sources: GB Censuses of Woodland 1924 to 1980, NIWT 1995-99, and NI Forest Service.

Note: The areas for 2002 are not included in the chart, because the gap since 1995-99 is much shorter than the intervals between censuses.

## A. Woodland

**Background** Over previous centuries, there was a gradual loss of forest cover in the UK, which fell to its lowest level of 5% at the start of the 20<sup>th</sup> century. Today, the area of woodland has more than doubled from that low.

Much of the increase in woodland area during the 20<sup>th</sup> century came from new commercial conifer plantations in the 1950s to 1980s, especially in upland areas of Scotland. During the 1990s, 15-20 thousand hectares of new woodland were created each year in the UK, mostly by private owners assisted by the Woodland Grant Scheme and other government grants (see Indicator A2).

This is indicator S10 in Quality of Life Counts indicators of sustainable development.

**Future** To improve the annual updates of woodland area, it will be desirable to take account of estimated woodland loss (see Indicator A3) and obtain better estimates of woodland created without grant aid.

## A2. New woodland creation

**Relevance** New woodland creation contributes to the aim of expanding the woodland area. New woodland that is assisted by grant schemes or created by the Forestry Commission or Forest Service should be located in appropriate areas, which can be informed by land use planning tools such as Indicative Forestry Strategies and Landscape Character Assessments.

**Key Points** Around 700,000 hectares of new woodland was created in Britain during the last 30 years. Until the early 1990s, most was conifer woodland, and most was in Scotland. Since 1990, more than half has been broadleaved woodland.

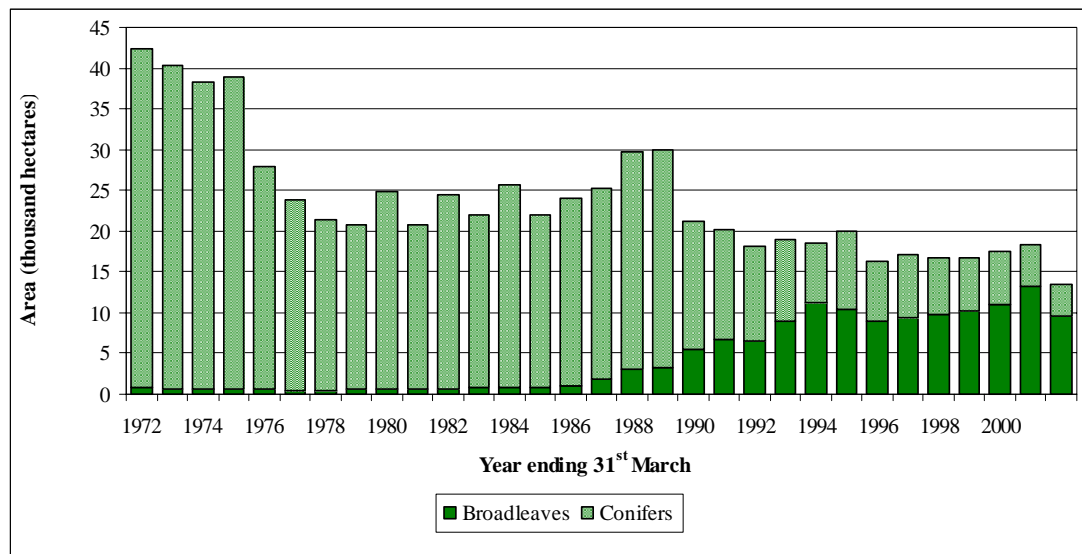
### New woodland creation – 5 year totals

		thousand hectares					
		5 year period ending 31 March					
		1976	1981	1986	1991	1996	2001
<b>England</b>	Conifer	18.3	7.0	5.3	3.9	3.2	3.2
	Broadleaved	2.4	1.5	2.3	9.2	21.5	21.2
	<b>Total</b>	<b>20.7</b>	<b>8.5</b>	<b>7.5</b>	<b>13.1</b>	<b>24.7</b>	<b>24.4</b>
<b>Scotland</b>	Conifer	148.6	90.9	100.1	94.6	38.3	27.1
	Broadleaved	0.6	0.8	0.9	9.2	21.0	28.5
	<b>Total</b>	<b>149.3</b>	<b>91.7</b>	<b>100.9</b>	<b>103.8</b>	<b>59.3</b>	<b>55.6</b>
<b>Wales</b>	Conifer	12.9	6.8	5.6	3.0	0.5	0.7
	Broadleaved	0.1	0.2	0.3	1.1	2.0	2.1
	<b>Total</b>	<b>12.9</b>	<b>6.9</b>	<b>5.9</b>	<b>4.1</b>	<b>2.5</b>	<b>2.7</b>
<b>N Ireland</b>	Conifer	5.0	4.3	3.4	4.4	3.9	2.1
	Broadleaved	0.1	0.3	0.4	1.0	1.4	1.5
	<b>Total</b>	<b>5.1</b>	<b>4.6</b>	<b>3.8</b>	<b>5.4</b>	<b>5.3</b>	<b>3.6</b>
<b>UK</b>	Conifer	184.7	108.9	114.3	105.8	45.9	33.0
	Broadleaved	3.2	2.7	3.8	20.4	45.9	53.3
	<b>Total</b>	<b>188.0</b>	<b>111.7</b>	<b>118.2</b>	<b>126.3</b>	<b>91.8</b>	<b>86.4</b>

Sources: WGS and other grant schemes, Forest Enterprise and NI Forest Service

Note: The statistics for this indicator do not include new woodland creation that is not grant-aided. It is estimated that on average around 400 hectares a year are created in this way.

### New woodland creation



Sources: WGS and other grant schemes, Forest Enterprise and NI Forest Service

**Background** This indicator does not explicitly show the main objective of the new woodland creation. The conifer plantations mostly have timber as a main objective. Much of the new broadleaved woodland contributes mainly to environmental or social objectives and can also provide a valuable commercial crop.

The average annual area of new conifer woodland has fallen from more than 30,000 hectares a year in the early 1970s to around 7,000 hectares a year in the 1990s. The average annual area of new broadleaved woodland has increased from around 600 hectares a year in the 1970s and early 1980s to around 10,000 hectares a year in the late 1990s.

**Future** It will be desirable to supplement these statistics with information on the location and type of land used for new woodland creation. This would show the extent to which new woodland creation has moved to better quality agricultural land, and could also show whether it follows good forestry practice (e.g. avoiding peatlands).

Woodland creation on brownfield sites situated close to areas of high population density can contribute to local economic development by improving the image and environment of the area. Regeneration of derelict land is indicator K1 in Quality of Life Counts indicators of sustainable development. In 2000-01 there was a total of 189 hectares of planting on damaged or reclaimed land in the 12 Community Forests.

### **A3. Loss of woodland**

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**Relevance** Woodland can be lost to agriculture, to development, or for restoration of special habitats and landscapes. For sustainable forestry, the first two reasons for loss would generally be viewed as undesirable, especially where the woodland has high environmental or social value, but the latter could be a positive indicator of forestry's wider environmental awareness. There are particular concerns about the loss of ancient semi-natural woodland, which is irreplaceable – see indicator B1.

**Key Points** This is a serious gap in our current information.

**Measures** **Loss of:**

- Ancient semi-natural woodland (ASNW)
- Other semi-natural woodland
- Plantation (conifer / broadleaved)

**To:**

- Agriculture
- Development
- Restoration of other habitats
- Open space (e.g. stream-side clearance, larger integral open space)

**Available information:**

#### **Land Use Change Statistics**

Land Use Change Statistics for England (ODPM, 2002) are based on statistical analyses of Ordnance Survey map data revisions. It takes up to 5 years for Ordnance Survey to record rural changes, and there could be a bias towards recording a rounded year of change. For the 10 year period from 1988 to 1997, total change from forestry to other land uses was around 25,000 hectares – i.e. about 2,500 hectares a year. The same source also gives figures for changes from other land uses to forestry.

#### **Countryside Survey 2000**

Woodland loss can also be estimated from the matrix of changes recorded by the Countryside Survey (Haynes-Young *et al.*, 2000). Comparison of sample data for 1990 and 1998 would suggest that about 140,000 hectares of woodland in GB was converted to other habitats – i.e. about 17,500 hectares a year. A similar comparison of sample data for 1984 and 1990 gave an even higher annual rate of conversion. The change matrices from the Countryside Surveys also show a very high level of woodland creation.

**Background** Monitoring should include the type of woodland lost, and also what it is lost to. At present, there are no statistical systems to monitor woodland loss. Information that has been published gives divergent pictures of the scale of woodland loss. The Forestry Commission's statistics on woodland area imply that there is little woodland loss, and this view is supported by Land Use Change Statistics for England, but the matrix of land-use change in DEFRA's Countryside Surveys suggests much higher levels of woodland loss.

**Future** In the future, the best single source could be repeated air photography, which could pick up natural extension and loss at forest edges, although this may not immediately show the successor land use. Air photography is now commercially available for all of GB on a 3-year cycle.

Other possible data sources include data from local planning processes, data on land-use change from Ordnance Survey map revisions, estimates from National Inventory of Woodland, and estimates from over 2000 sample 1 km squares used for the survey of Small Woods & Trees.

In the future (but not as presently held) it may be possible to make use of WGS data on felling licences.

A current research project (FOCUS – see Countryside Survey website) is trying to reconcile the Countryside Survey sample data with other sources, and investigate why they show such high levels of conversion to and from woodland. Results of this project (due at the end of 2002) should give a better view of the value of these sources for monitoring trends in the change of land use.

Information on woodland loss in Northern Ireland may become available from a digital air photography programme that is now underway, and a woodland inventory due for completion in 2005.

#### A4. Tree species

**Relevance** This gives an indication of the overall makeup and diversity of Britain's woodlands; there is a public preference for more mixed and broadleaved woodland.

**Key Points** Conifers make up about 60% of woodland in Britain, about half of the conifer area being Sitka spruce. The proportion of broadleaves has been increasing in recent years.

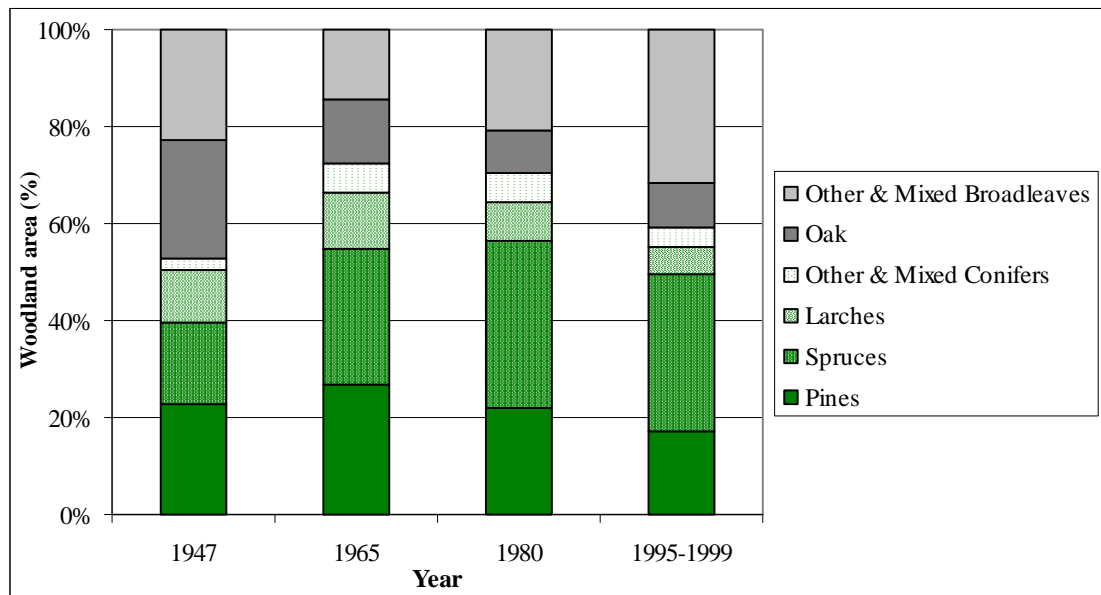
#### Tree species in GB

	thousand hectares						
	1947	1965	1980	1995-1999			
	Great Britain High forest only			GB	Eng	Scot	Wales
<b>Total</b>	<b>724</b>	<b>1,267</b>	<b>1,881</b>	<b>2,377</b>	<b>988</b>	<b>1,123</b>	<b>266</b>
<b>Total Conifers</b>	<b>382</b>	<b>917</b>	<b>1,321</b>	<b>1,406</b>	<b>340</b>	<b>916</b>	<b>149</b>
Scots pine	147	252	241	227	82	140	5
Lodgepole pine	1	53	127	135	7	122	6
Corsican pine	16	37	47	47	41	2	3
Sitka spruce	68	248	526	692	80	528	84
Norway spruce	54	106	117	79	32	35	11
Larches	79	147	152	134	47	65	23
Douglas fir	15	43	47	45	24	10	11
Mixed & other conifer	3	31	64	48	28	13	6
<b>Total Broadleaves</b>	<b>342</b>	<b>350</b>	<b>560</b>	<b>971</b>	<b>648</b>	<b>206</b>	<b>118</b>
Oak	175	166	172	223	159	21	43
Beech	65	66	74	83	64	10	9
Sycamore	23	28	49	67	49	11	7
Ash	34	32	70	129	105	5	19
Birch	27	15	68	160	70	78	13
Mixed & other broadleaves	17	43	127	309	202	81	28

Sources: NIWT 1995-1999 and previous woodland censuses

Note: NIWT areas exclude felled, coppice and integral open space. Previous Census figures also exclude scrub – i.e. high forest only.

### Proportion of woodland area by species in GB



Source: NIWT 1995-99 and previous woodland censuses

**Background** Sitka spruce is suited to producing softwood timber in many parts of Britain. The area of Sitka spruce doubled between 1965 and 1980, and increased by another third by 1995-99.

In recent years the figures also show substantial increases in the area of broadleaves, but some of the apparent increase in 1995-99 is due to the inclusion of a species breakdown for scrub for the first time, and the better coverage of the 1995-99 National Inventory.

The changing species mix has been influenced by changing priorities of forestry policy, with more importance now given to environmental and social objectives. In areas of commercial forestry where timber production is the main objective, Sitka spruce has become more dominant. Indicator A2 shows more clearly the trend toward an increased proportion of broadleaved planting in recent years.

**Future** Similar information may be available in the future for Northern Ireland, from a planned woodland inventory due for completion in 2005.

**A5. Woodlands in landscape**

**Relevance** This is intended to be an indicator for the visual appearance of the landscape. The overall landscape impact of woodland depends on the percentage woodland cover, and also on the extent to which it is broken up. Woodland should be “in keeping” with the overall landscape, and woodland design should meet the landscape guidelines in the UK Forestry Standard (FC, 1998).

**Key Points** Good indicators of woodlands in the landscape are not yet available, but the National Inventory of Woodland & Trees (NIWT) provides some information about woodland size. About 14% of Britain’s woodland area is in woodlands smaller than 10 hectares.

**Distribution of woodland size in GB**

	<b>England</b>	<b>Scotland</b>	<b>Wales</b>	<b>GB</b>
<b>All woodland</b>				
Number of woods	222,461	82,306	33,036	<b>337,803</b>
Total area (thousand hectares)	1,097	1,281	287	<b>2,665</b>
% cover	8.4%	16.4%	13.8%	<b>11.6%</b>
<b>Woods greater than 100 hectares</b>				
Number of woods	1,315	1,287	357	<b>2,959</b>
Total area (thousand hectares)	503	1,053	170	<b>1,726</b>
<b>Woods between 10 and 100 hectares</b>				
Number of woods	13,019	5,006	2,644	<b>20,669</b>
Total area (thousand hectares)	339	148	71	<b>558</b>
<b>Woods between 2 and 10 hectares</b>				
Number of woods	41,351	11,488	6,630	<b>59,469</b>
Total area (thousand hectares)	180	52	29	<b>261</b>
<b>Woods between 0.1 and 2 hectares</b>				
Number of woods	166,776	64,525	23,405	<b>254,706</b>
Total area (thousand hectares)	75	29	17	<b>121</b>
<b>Trees outside woodland</b>				
*Tree density per km <sup>2</sup>	684	245	738	<b>539</b>
<b>Total length of linear features</b>				
*Metres per km <sup>2</sup>	736	239	702	<b>564</b>

**Source: NIWT 1995-99.**

Note: Information on woodland size is not available from previous Woodland Censuses.

\* Numbers of trees and length of linear features were only estimated for non-urban areas, but the density is calculated by dividing this by the total surface area. Linear features are rows of trees, or narrow strips of woodland up to 50 metres wide.

**Background** A trend of increasing size may be indicative of reduced fragmentation, but above some limit, which varies by woodland and landscape type, can have a negative impact on the landscape. An increase in the number of small woods can come from new woodland creation, but can also come from fragmentation of existing woods. Linear features and trees outside woodland also contribute to the landscape.

This indicator presents some information that is readily available from NIWT 1995-99, using the digital map to identify woodland sizes down to 2 hectares, and results from the sample survey of smaller woods and trees.

**Future** This indicator should be developed in the light of new work, taking account of views of stakeholders. It would be desirable to have measures of woodland proximity and density, which are both relevant to connectivity. In the future, changes may be able to be monitored every few years by air photography and/or satellite imagery.

Forest Research have done some work to develop landscape indices which describe the pattern and structure of the woodland landscape. This has been tested on some areas of FC woodland but could possibly be applied to wider areas of woodland in the UK (Ferris *et al.* 2001).

Information about woodlands' contribution to the landscape in England should be available from the Countryside Quality Counts research programme that started in 2002 (see Countryside Quality Counts website).

Indices should also be available from follow-up work for the Countryside Survey 2000. The CS2000 sample data showed an increase in the number of woodland parcels and no significant change in the average parcel size. CS2000 can also provide information about adjacent land, which is relevant to an assessment of woodlands in the landscape.

## A6. Area of sustainably managed woodland

**Relevance** This indicator measures the area of woodland shown to be managed sustainably. This can be demonstrated by certification to the UK Woodland Assurance Standard (UKWAS) under the Forest Stewardship Council (FSC) or another scheme, or the FSC UK standard, but other areas are also managed sustainably. Certified forest is monitored to ensure that good management is continually in practice.

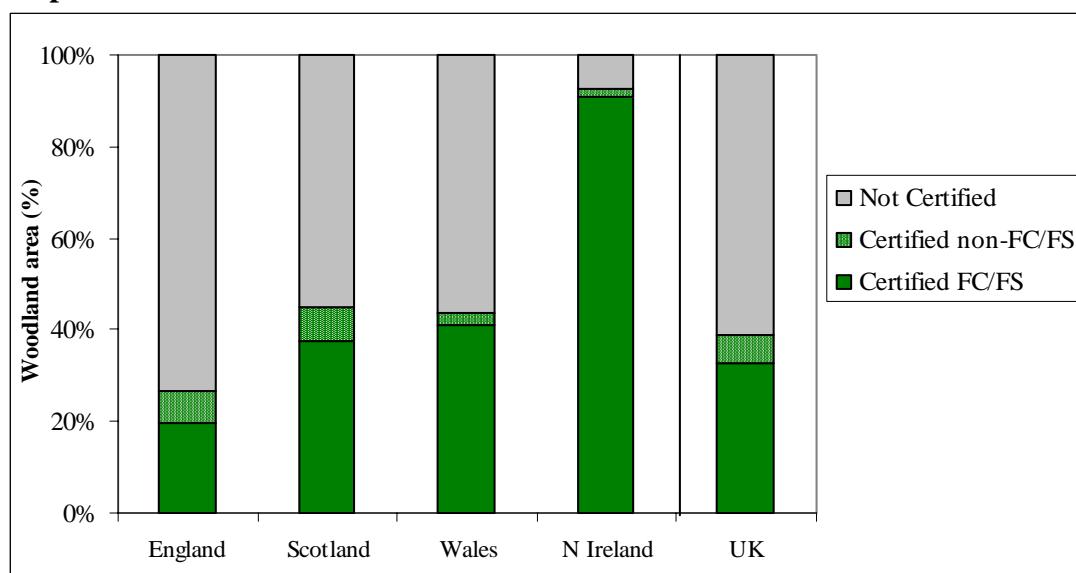
**Key Points** The FSC began certifying woodland in 1996. Since then over one million hectares (more than one third of the woodland area) in the UK has been certified. The certified area is dominated by Forestry Commission and Forest Service woodland.

### Total area certified under FSC in December 2001

	England	Scotland	Wales	N Ireland	UK
Total woodland area (000 ha)	1,100	1,317	289	83	<b>2,790</b>
Certified area (000 ha)	291	590	126	77	<b>1,084</b>
No. certificates applying to woodland in one country	14	4	3	1	<b>22</b>
No. certificates applying to woodland in more than one country					<b>7</b>
Total no. certificates					<b>29</b>

Source: Forest Stewardship Council (see FSC website)

### Proportion of woodland area certified under FSC in December 2001



Source: Forest Stewardship Council (see FSC website)

**Background** The UK has two certification standards – UKWAS and the Forest Stewardship Council (FSC) UK Standard. They are recognised as equivalent, and certification against either is recognised by the FSC International scheme. A new scheme has recently been launched – the UK Certification Scheme for Sustainable Forest Management, which will use UKWAS. Certification is credible in the UK if it is carried out by a certification body accredited by UK Accreditation Service (UKAS) or FSC International. The management practices in these woodlands are reviewed annually. Compliance with these standards is also an indirect measure of good management and protection of soils and water in the forest.

There may be sustainably managed woodlands which are not certified, perhaps because of the perceived cost of certification for small woodlands, or because certification may not be important to those who do not produce timber. These are not included in this indicator. When developed this indicator will also feature as indicator S12 in the Quality of Life Counts indicators of sustainable development.

**Future** A digital map of all certified woodland in the UK can be produced with help from the certifying bodies as a first step towards developing this indicator.

This indicator could be further developed, by summing the following categories, using GIS to avoid double counting:

- Areas certified against the UKWAS or FSC UK standards by certification bodies accredited by UKAS (UK Accreditation Service) or FSC International;
- Areas with formal management plans or other recognised plans of operation;
- Areas established with grant-aid since 1988, if it can be confirmed that such areas continue to be managed to the standards required by the grant schemes, or any losses can be monitored;
- Estimate for all other woodlands, based on National Inventory data for timber quality and any other relevant data.

There is a concern that the resulting estimates could still exclude a sizeable proportion of the broadleaved woodlands that are sustainably managed for their social and environmental benefits.

This indicator could be extended to break down the certified areas by type of woodland, e.g. conifers/broadleaves, plantation/semi-natural.

Measuring the extent of positive management, including areas where it does not meet the standards for sustainability, would require a supplementary indicator.

## A7. Management practices

**Relevance** Monitoring management practices in all types of woodland helps to assess the extent to which managers are taking actions related to possible management objectives (e.g. timber, public recreation, wildlife management). In some woodland areas, there is an interest in retaining traditional management practices, including coppice and wood pastures. There is also an interest in increasing the area managed under alternative systems to clearfelling, as they produce a more diverse age structure, which is of value to biodiversity, and may improve the landscape visually.

**Key Points** More than three-quarters of all woodland shows signs of management practices related to timber production. In England, more than a third of the area has practices related to public recreation, and around a quarter has management practices for game birds and for wildlife/conservation; the proportions applying these practices were smaller in Scotland and Wales. The area of coppice (including coppice with standards) is around 24,000 hectares, mostly in England. The area of coppice has declined, from 40,000 hectares in 1980 to 24,000 hectares in 1995-99. Time series of data are not available for other management practices.

### % of clusters where type of management practice was recorded in GB

Type of management practice	% of clusters			
	England	Scotland	Wales	GB
Timber production	76.9	89.5	75.8	<b>83.0</b>
Game birds	28.1	4.0	4.4	<b>13.7</b>
Wildlife/conservation	23.9	15.1	12.3	<b>18.3</b>
Good forest design	11.3	27.1	6.8	<b>18.6</b>
Grazing	5.1	5.4	9.6	<b>5.7</b>
Public recreation	37.2	12.3	21.6	<b>23.3</b>
Screening or shelter	14.6	7.9	14.0	<b>11.3</b>
Unmanaged	16.1	5.5	13.9	<b>10.7</b>

Source: NIWT 1995-99

Note: A cluster in NIWT was a group of 1-5 sample squares, spread over a land area of up to 40 hectares, possibly extending over more than one wood and/or more than one ownership.

### Coppice area in GB

	hectares			
	England	Scotland	Wales	GB
Coppice	11,674	554	489	12,717
Coppice with standards	10,710	630	0	11,340
<b>Total</b>	<b>22,284</b>	<b>1,184</b>	<b>489</b>	<b>24,057</b>

Source: NIWT 1995-99

**Background** In areas of coppice, trees are cut near ground level to produce many small shoots that can be harvested for staves, fencing and other products. Coppice with standards includes some trees grown on a longer rotation. The coppice areas for this indicator do not include short rotation coppice, where fast-growing species are grown as an energy crop.

**Future** At present, Forest Enterprise does not hold information centrally about management practices, but more information should be available later in 2002.

Information will also be required for the following categories:

- Wood pasture: areas of historical, cultural and ecological interest, where grazing is managed in combination with a proportion of open tree canopy cover. Wood pastures include lowland parks, where scattered trees have been planted and allowed to grow very old, as well as other cultural landscapes (often including pollarded trees) and unenclosed upland areas. For the Forest Resources Assessment 2000, it was estimated that wood pastures total 20,000 hectares in the UK.
- Continuous cover: silvicultural systems whereby the forest canopy is maintained at one or more levels without clear felling.
- Minimum intervention: management with only the basic inputs required to protect the woodland from external forces or to ensure succession of key habitats and species.