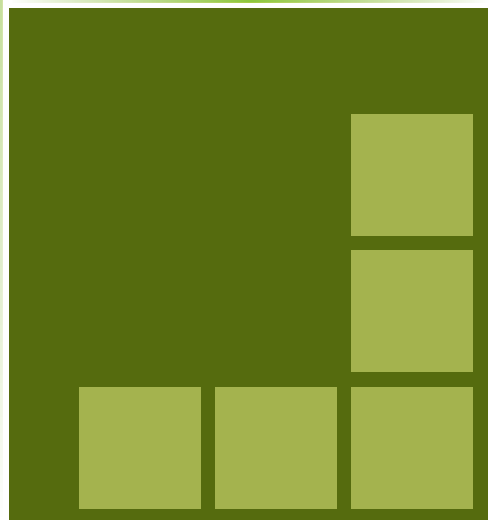
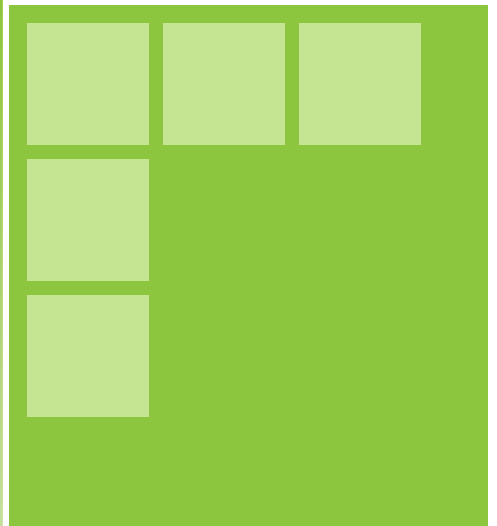
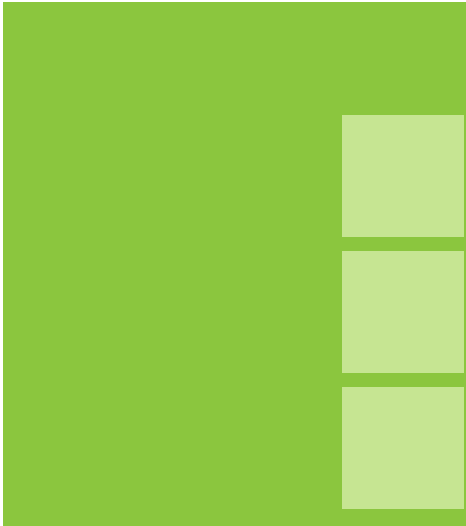


E D N A T U R A L ' S
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Trees and
Woodland



17 Trees and woodland

Introduction

- 17.1 Woodlands can fulfil a multitude of functions, depending on their composition and location. In ecological terms they play a number of crucial roles, including :
- recycling carbon from the atmosphere;
 - returning nutrients to the soil;
 - stabilising soils;
 - attenuating rainfall run-off, and hence improving water quality and reducing flooding events;
 - absorbing airborne pollution and particles;
 - regulating local air temperature and reducing urban 'heat island' effects;
 - providing specialist habitats for a range of other plants and animals.
- Any reduction in woodland cover can have major consequences for the environment, for example contributing towards flooding, erosion and climate change.
- 17.2 In a rural setting woodland provides shelter for stock and a haven for wildlife. It is also an important recreational asset, and a major structural element in the landscape.
- 17.3 Trees also make an enormous contribution to the quality of life within the built-up area. They help to define urban form, by acting as barriers, boundaries or gateways, and can soften the visual impact of development. In Edinburgh they feature prominently in key views which help to knit together the urban area with its landscape setting – for example views towards Corstorphine Hill, or over the wooded parklands of the Botanic Gardens and Warriston from the New Town. The longevity of some individual trees means that they may be endowed with important historical associations, which can be of great local or even national significance.
- 17.4 Within the city, trees are highly valued for their ability to afford privacy, shelter, shade and mitigation of noise and air pollution. They are a constant source of interest, keeping city dwellers in touch with the passing of the seasons and enabling them to catch sight of animals, birds and flowers which would be completely unfamiliar to them. The high amenity value of trees is often reflected in the enhancement of property values, with a wooded outlook generally being a positive feature in choosing a place to live or do business.
- 17.5 Whilst trees generally make a positive contribution to the urban environment, they can also have problematic effects, for example overshadowing, dangerous branches, leaf fall (with potential for blocking drains), litter trapping, root penetration, interference with traffic sight lines, and security issues. However, these can usually be addressed through good planning and design, appropriate planting schemes and pro-active management and maintenance regimes.
- 17.6 Woodland can be very varied in form and appearance. It includes not only areas of dense forest or plantation, but wooded parkland and areas where tree cover is as low as 10% – for example open pasture woodland, where ancient individual trees are of major ecological significance.

Woodland cover in Edinburgh

- 17.7 The Urban Forestry Strategy for Edinburgh (1992) and the subsequent Urban Forest Strategic Masterplan (1993) noted that there was very little woodland in and around the city generally, and in particular very little which was accessible as a public resource. However, some progress has been made over the last decade towards improving both the quantity and quality of tree cover, as well as stimulating greater public interest and involvement. It is estimated that the total tree stock in the city increased from about 1 million in 1972 to 1¼ million by the end of the millennium, largely as a result of the Urban Forest Project in the late 1990s. (This was one of the main initiatives stemming from the Forestry Strategy, and is described in more detail later on)

- 17.8 Determining just how much woodland cover there is depends on the definition of woodland used, as well as survey methodologies. A recent study by Forest Research ('A Forest Habitat Network for Edinburgh and the Lothians', 2007) indicates that tree and woodland cover throughout the entire local authority area could be as high as 3,288 hectares. Table 1 shows details for Edinburgh and other local authorities in the Lothians. Note that these figures are based on woodlands of 0.25 ha or larger where there is a canopy cover of at least 10%. This can include areas of fairly open woodland and wooded parkland.

Table 1 : Woodland Cover in Edinburgh and the Lothians

Local authority area	Total area (ha)	Woodland area (ha)	% Woodland Cover
City of Edinburgh	26,067	3,288	12.6 %
East Lothian	67,024	6,909	10.3 %
Midlothian	35,519	4,151	11.7 %
West Lothian	42,826	8,088	18.9 %
Edinburgh & Lothians total	171,509	22,432	13.1 %

source : Forest Research : A Forest Habitat Network for Edinburgh and the Lothians, 2007

- 17.9 A rather lower figure for the woodland area was derived from a recent Council study – a systematic, map-based survey of open space provision in Edinburgh, undertaken in 2005 (see chapter 16). This revealed a woodland area of 2,034 hectares, based on land use types. Again, this figure includes both urban and rural areas of the city. It includes small areas of trees as well as large, and areas where woodland is secondary to other land uses (e.g. parks, cemeteries, golf courses). A significant difference from the Forest Research estimate was the adoption of a higher, 20% canopy cover as the critical threshold. Recently planted woodlands were also included if they had not yet established a canopy.
- 17.10 Both the recent woodland cover figures are substantially higher than the 1,308 hectares recorded in a Forestry Commission survey of 1978-1982. However, the earlier survey had less technology available to provide an accurate measure of tree cover. The growth in woodland cover may in part reflect the recent spate of planting, but allowance also has to be made for different definitions and methodologies used.
- 17.11 Approximately 177 hectares of woodland has been identified as 'ancient woodland', i.e. individual sites of at least 2 hectares which can be traced back on historic maps for at least 250 years. A further 905 hectares is classed as 'long-established woodland of plantation origin' (dating back about 150-250 years). In addition to these figures there are likely to be smaller pockets of ancient woodland that have not been officially recognised and need further survey work to identify them. Between them, it is estimated that ancient woodland and semi-natural plantations account for over 55% of the city's tree cover, and about 4% of the local authority area.
- 17.12 Ancient and long-established semi-natural woodlands have particular value for biodiversity, because the soils have not been modified by recent agriculture and they support a wide range of native species. Over-mature woodland also tends to offer a good range of habitats, including a mixture of saplings, mature trees and decaying trunks. It tends to be composed of native species such as oak, ash, rowan and wych elm, although beech and scots pine are also common in old plantations. Woodland flora and fauna that have adapted to local tree species are more likely to thrive where these woodlands are preserved.
- 17.13 Map 1 shows the distribution of more significant areas of woodland in Edinburgh, highlighting areas of ancient and native woodland, heritage trees, tree preservation orders (TPOs) and designated areas of urban forest. Further details of TPOs, heritage trees and the Urban Forest

initiative are presented later in this chapter. (Note that some areas of woodland will fall under more than one designation. The simplified representation in Map 1 cannot fully portray this.)

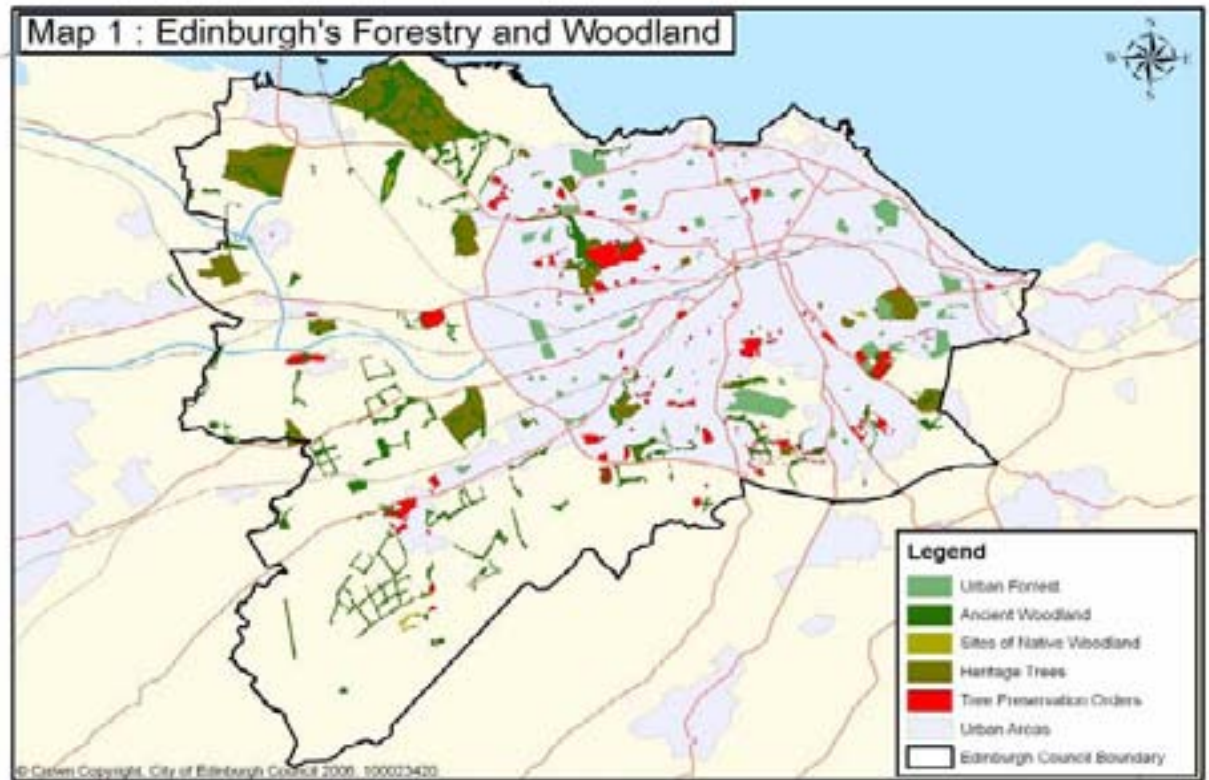


Table 2 : Scotland's urban woodland resource

Urban areas :	Population ('000s)	Urban area (ha.)	Woodland area (ha.)	Woodland cover (%)	Woodland per 1,000 pop. (ha.)
Aberdeen City	201	10,600	1,089	10%	5.4
Dundee City	159	8,300	510	6%	3.2
Edinburgh City	453	12,000	1,928	7%	4.2
Edinburgh & Lothians	644	47,900	6,617	14%	10.2
Forth	496	60,600	7,068	12%	14.2
Glasgow & Clyde Valley	1,735	110,000	15,569	14%	8.9
Ayrshire	318	41,700	3,901	9%	12.2
Rural towns	683	129,700	19,839	15%	29.0

Source : Forestry Commission Scotland, 'Woods In and Around Towns', 2005. Supplementary information from CEC Key Facts & Figures 2006/7; calculations based on GIS layers supplied by SNH and Forestry Commission.

Notes : Population is the approximate resident population within a 1 km. buffer zone of towns with a population of more than 2,000. Woodland area is derived from the FC's native woodland inventory, which includes areas of 0.1 ha. or larger with a tree cover of at least 20%; supplemented by known planting since 1988.

- 17.14 Forestry Commission Scotland have produced comparative figures for the woodland resource surrounding the major urban areas of Scotland (Woods in and Around Towns, WIAT, 2005). The published figures relate to the wider Edinburgh and Lothians area, but these have been supplemented with data for Edinburgh from other sources. Table 2 shows how Edinburgh

compares with other areas of Scotland, indicating that provision is relatively modest. Given the continuing significant population growth projected for the city, there is a case for expanding the woodland cover in order to maintain and enhance current levels of provision.

- 17.15 A tree survey carried out in 1972 identified the ten commonest tree species in Edinburgh, as shown in Table 3. These included trees growing in domestic gardens. Within the public spaces in the city the predominant species are sycamore and elm. At the time of the survey there were estimated to be about a million amenity trees within the city, of which just 71,000 were in public streets. (N.B. Table 2 is based on the city boundaries as they were in 1972, i.e. corresponding more closely to the current built-up area, and excluding the large rural area to the west of the city by-pass).
- 17.16 The largest wooded areas in the city are generally on the hills and sloping ground unsuitable for farming or development (e.g. Corstorphine Hill, Easter Craiglockhart Hill); also alongside the rivers such as the Water of Leith, Braid Burn and Almond. Other significant woodland occurs in some of the cemeteries, and in amenity space surrounding institutional buildings, business premises etc. Significant groups of trees have often been incorporated within modern housing layouts when the grounds around larger buildings have been brought forward for development.

Table 3 : Edinburgh Tree Survey 1972 : Estimated numbers of the ten commonest trees growing in Edinburgh

Domestic apple		140,000
Lilac		88,000
Flowering cherry		66,000
Sycamore		65,000
Rowan		56,000
Cypress		45,000
Crab apple		44,000
Beech		41,000
Laburnum		40,000
Birch		37,000

Source : CEC

- 17.17 Although smaller in size, it is the wooded (mostly private) garden areas in the centre of the city which make some of the biggest contributions to environmental quality, simply because they are seen by so many residents and visitors. These include, for example, Queen Street Gardens, Princes Street Gardens, Charlotte Square, St. Andrew Square, George Square, Moray Place and Ainslie Place.
- 17.18 The 30 hectare Royal Botanic Garden at Inverleith is of particular significance as it houses an extensive collection of native and exotic trees and shrubs. Relocated to its current site in 1820, it is now an internationally recognised centre of expertise in the classification, documentation, biology, evolution, ecology, conservation and propagation of plants.
- 17.19 Around the edge of the city a number of private estates retain some fine areas of woodland and wooded pasture land which contribute much to the urban setting and help to demarcate the boundary between town and countryside. These include historic estates such as Dalmeny, Cammo, Gogar, Edmonstone, Drum and Mortonhall. The northern slopes of the Pentland Hills have several commercial tree belts, some of which are highly visible from many areas of the city – for example the famous ‘T’ wood at Swanston.

Accessibility to Woodland

17.20 The Woodland Trust recommends accessibility standards to wooded areas as follows :

- one or more woodland at least 2 hectares in area, accessible within 500 metres; and
- one or more woodland at least 20 hectares in area, accessible within 4 km.

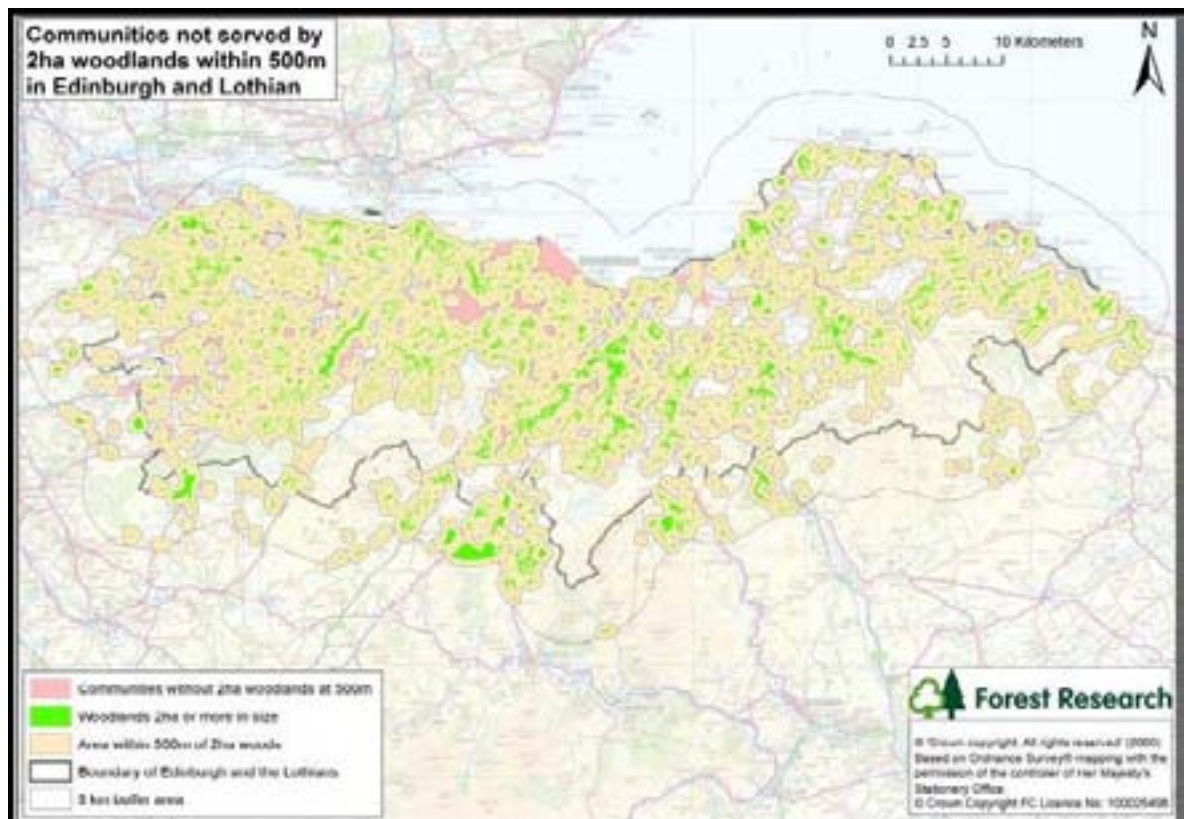
A recent study by Forest Research identified extensive populated areas in Edinburgh and the Lothians which do not meet these standards ('A Forest Habitat Network for Edinburgh and the Lothians', 2007). Map 2 is an extract from this study, showing those areas which fall short on the 2 hectare / 500 metre standard.

17.21 Within Edinburgh, the main areas which don't meet this standard are :

- the Port of Leith to Meadowbank;
- large residential areas of Granton and Pilton;
- a large area in the south western suburbs including Sighthill and Saughton; and
- the Fountainbridge / Bruntsfield area

17.22 The waterfront area of Leith is the only area in the Lothians which fails to meet the 20 hectare / 4km standard. The Forest Research study acknowledges that the woodland potential of the Edinburgh Waterfront development area is likely to be quite limited. Nevertheless it considers that opportunities could be taken to incorporate street trees and at least some limited woodland within the Waterfront development area, ideally linking to existing wooded areas such as the Botanic Gardens. This might help to make at least some inroads into the relatively poor access to woodland in the area.

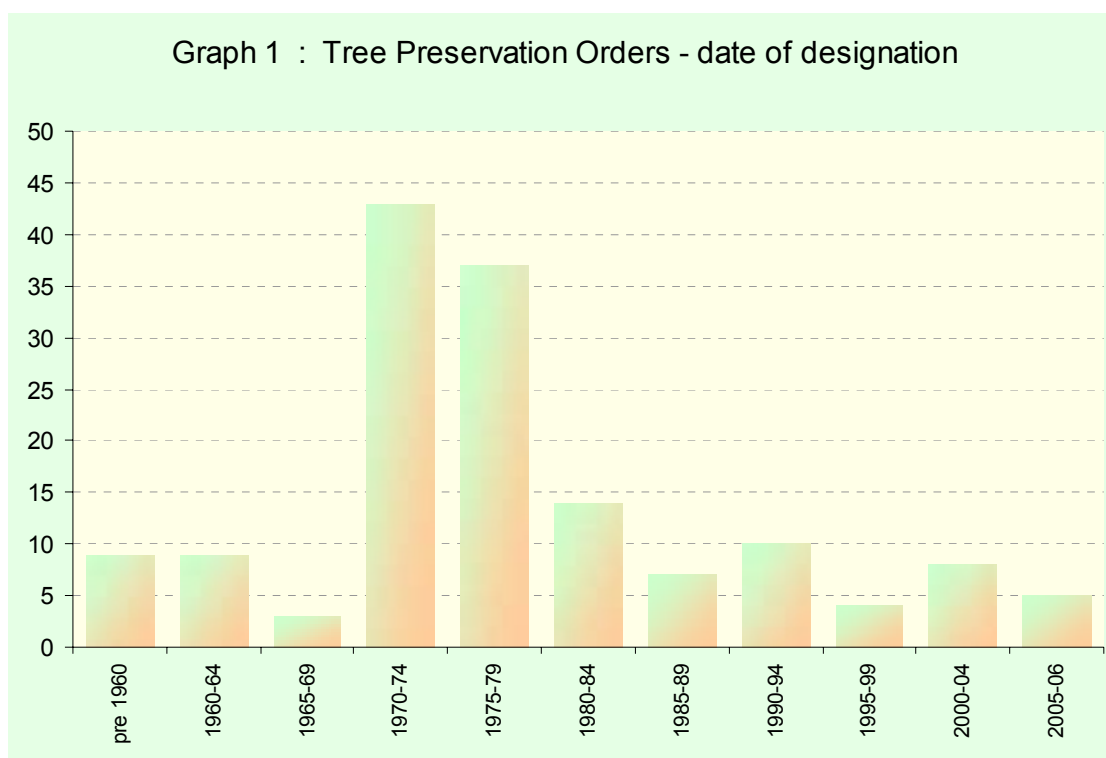
Map 2 : Areas of Edinburgh and the Lothians with less than 2 hectares of woodland accessible within 500 metres



source : Forest Research : A Forest Habitat Network for Edinburgh and the Lothians, 2007

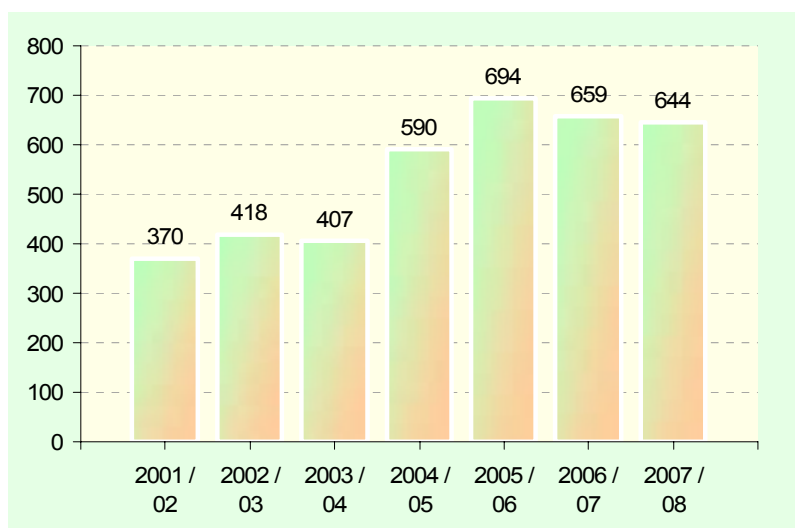
Tree Preservation Orders

- 17.23 Tree Preservation Orders (TPOs) are provided for under the Planning Acts, to protect individual trees, groups of trees or areas of woodland which make a significant contribution to the local landscape or townscape. Council consent is required to undertake any work on trees covered by a TPO, thus providing the necessary control to ensure that any essential work is carried out to recognised standards and with due regard to their amenity value. There is also a strong presumption against nearby development which would prejudice the long-term health and survival of these trees, or compromise their contribution to the landscape. Furthermore, owners of protected trees have a responsibility to maintain them in a healthy and safe condition.
- 17.24 As with TPOs, notification is also required for proposed tree work in conservation areas. This does not give the same degree of protection as a TPO, although the Council may promote such an order if circumstances warrant.
- 17.25 Graph 1 shows that the 1970s were a particularly busy period for establishing TPOs, although coverage has continued to grow, recently averaging about two or three new designations per year. There are now 152 TPOs in Edinburgh, compared with 111 in 1981. 28 of these cover individual trees and the remainder cover groupings or larger areas. As at 2005 Tree Preservation Orders covered an area of 697 hectares, which amounts to 34% of the total woodland within the local authority area.



- 17.26 Tree Preservation Orders have generally provided an effective means of protecting the city's woodland heritage and amenity. Over the last 10 years it has only been necessary to pursue one breach of a TPO through the courts.
- 17.27 All proposals to fell, lop, top, thin or prune protected trees (i.e. covered by a TPO or in a conservation area) are recorded in the Register of Tree Work. The Register also includes requests that consideration be given to extending protection to additional trees or woodland areas. The Register for Edinburgh shows a rapid increase in tree work between 2004 and 2006, followed by small reductions in 2007 and 2008 (Graph 2). Over the period January 2001 to May 2007, out of a total 3,320 entries in the Register 513 related to TPOs and most of the remainder to conservation areas. The conservation areas most affected by tree work were : Grange (456 proposals), New Town (339), Merchiston / Greenhill (256), Colinton (119), Inverleith (116) and Morningside (100).

Graph 2 : Annual tree work cases received in Edinburgh since 2001



source : CEC Development Management Monitoring Figures

Heritage trees

17.28 In recognition of their particular historic or cultural significance, or their striking size or physical form, in 2003 the Council identified an inventory of 52 ‘heritage trees’ within the city. These were selected after carrying out extensive research and consultation. Some are groups of trees rather than individual specimens. It is likely that this list will be augmented as continuing investigations highlight omissions. Table 4 sets out some examples of heritage trees.

Table 4 : Examples of Edinburgh ‘heritage trees’

Name & location	Grid ref	Species
Craigmillar Castle Yews, Craigmillar Road	284 709	yew
Comely Bank London Planes, Comely Bank Road	242 747	plane
Gallery of Modern Art Sweet Chestnut, Belford Road	235 736	sweet chestnut
Lauriston Castle, Cramond Road South	202 762	mixed
Hawes Inn Yew, New Halls Road, South Queensferry	137 784	yew
Camperdown Elm, St. Cuthberts Church, Kings Stables Rd.	248 735	elm
Colinton Yew, Colinton Church Manse, Spylaw Street	216 692	yew
Dreghorn Veterans & Redford Wood	223 683	mixed
Four Disciples, Malleny Gardens	165 665	yew
Barnton Gate Oak, 41 Barnton Avenue South	202 754	oak
Corstorphine Sycamore, Corstorphine Kirk, Corst. High St.	200 727	sycamore
Cramond Sycamore, Old Schoolhouse, 25 Cramond Glebe Rd.	189 767	sycamore
Cammo Estate, Cammo Road, Barnton	174 747	mixed
Norton House Conifer Grove, Norton House Hotel, Ingliston	135 722	exotic conifers
Hermitage of Braid, Braid Road	251 704	mixed broadleaf
Duddingston Estate, off Milton Road West	292 725	mixed broadleaf

Source : CEC

Edinburgh Urban Forest Project (1995-2000)

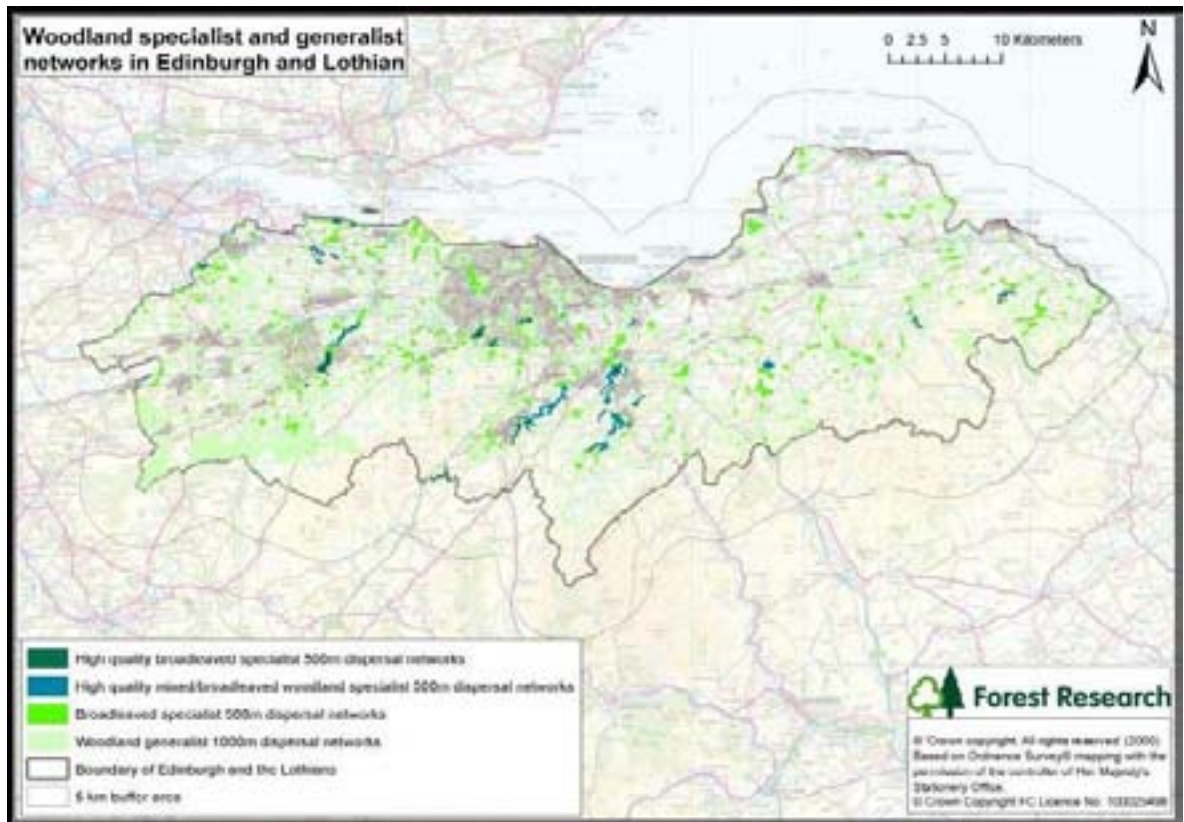
- 17.29 In 1992 the 'Edinburgh Urban Forest Strategy' identified a need to protect and extend the city's ageing tree resource, to raise its profile as an economic, cultural and social resource, and to engage local communities and businesses in planting and looking after new areas of woodland. This led to the establishment of the Edinburgh Urban Forest Project, with support from a wide range of agencies including the Millennium Forest for Scotland Trust (MFST), the City of Edinburgh Council, the Forestry Commission, Scottish Natural Heritage and Lothian & Edinburgh Enterprise Ltd. (The MFST was a National Lottery Millennium Project which funded over 70 projects across Scotland, aiming to double the area of native woodland).
- 17.30 The Edinburgh Urban Forest Project was inaugurated in 1995, initially in the Craigmillar area, on land which now falls within the new Craigmillar Castle Park. It was later rolled out to other areas of the city, establishing new areas of woodland with the full participation of local communities. As well as increasing the total tree cover, there was a need to secure a more balanced age profile, with new planting maturing over time to replace the losses of older stock. Community engagement was fundamental to the project and had a number of benefits, such as increasing the sense of local ownership (which helped to reduce vandalism) and improving understanding of ecological and environmental issues.
- 17.31 Between 1995 and 2000 some 250,000 trees were planted under this scheme, on 100 hectares of land at 71 locations across the city. The total project cost was over £1.4 million, which included an allowance for several years maintenance after planting. As well as improving amenity for present and future generations the new woodland contributes to biodiversity and other ecological objectives, through its strong focus on planting native species. Several school grounds, playing fields, golf courses and public parks have been transformed from featureless grassed areas into diverse wildlife habitats with varied landscape, whilst simultaneously helping to improve air quality, recreational facilities and educational resources. The project has been closely linked to regeneration initiatives in the more deprived areas of the city, with neighbouring residential areas and businesses now enjoying the benefits of a more attractive local environment.
- 17.32 However, not all planting sites were successfully established and others have since been lost to recent development projects, such as school redevelopment under the Private Public Partnership agreements (PPP). The total area remaining is now less than 80% of that planted, and new planting sites are needed to replace those that have been lost. The Urban Forest needs to continue to develop to provide better recreational resources for the growing population and provide a more coherent habitat network amongst the urban sprawl.

Forest Habitat Network for Edinburgh and the Lothians

- 17.33 There has been growing recognition that urgent action needs to be taken to link existing woodlands to create a 'forest habitat network' throughout Edinburgh and the Lothians. Forest networks are essential to provide a sufficient range for woodland species, and to enable them to colonise new areas and respond to pressures such as climate change or urban development. Without linkages, populations of flora and fauna risk being cut off and are consequently much more vulnerable. Woodland areas need not be contiguous but they need to be close enough to enable movement from one area to the next. Remnants of ancient woodland which are rich in biodiversity will form the cornerstones of any network, and will need to be carefully managed and integrated to expand the core woodland habitat.
- 17.34 A partnership has now been formed between the Forestry Commission, Scottish Natural Heritage and the four Lothian local authorities to manage and expand the region's woodland resource, working towards the development of a forest habitat network for Edinburgh and the Lothians. This will take as its starting point the 22,000 hectares of existing woodland. The broad structure of the network is shown in Map 3.
- 17.35 There will be a particular focus on ensuring that ample new woodland is established in and around the 'core development areas' identified in the Edinburgh and the Lothian Structure Plan (i.e. far more than just ornamental or street trees). This will have benefits for the new human

communities as well as for wildlife. Existing woodland areas will also need to be vigorously protected. The Forestry Commission provides detailed technical guidance which will help to ensure that planting and management make an effective contribution to the forest habitat network.

Map 3 : Forest Habitat Network for Edinburgh and the Lothians



source : Forest Research : *A Forest Habitat Network for Edinburgh and the Lothians*, 2007

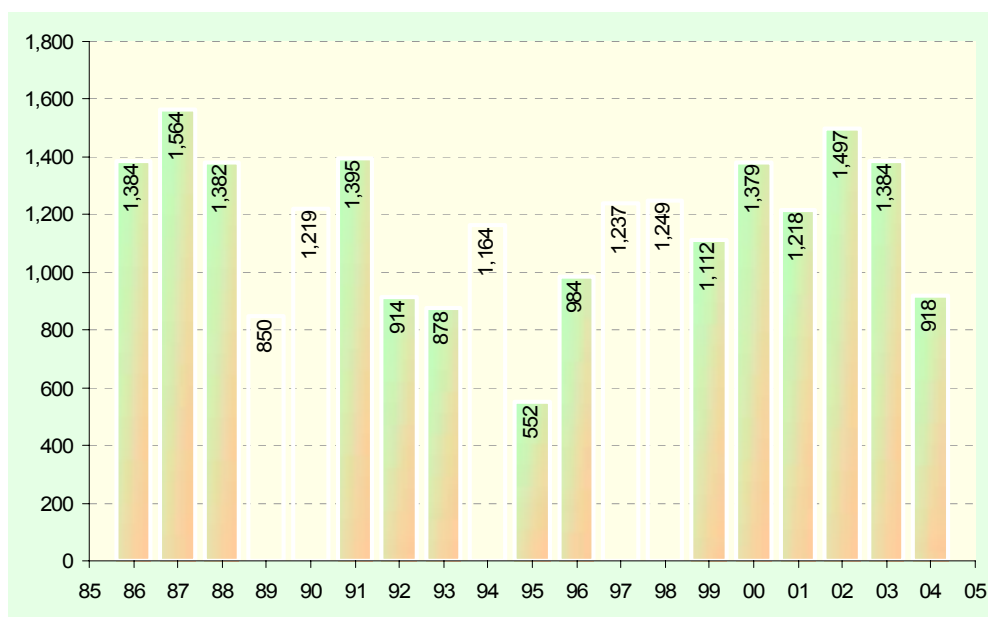
Dutch Elm Disease

- 17.36 Elms are an important landscape tree in Edinburgh, especially within the central area, where many were planted during the 19th century (for example in the gardens of the New Town, Princes Street Gardens and the Meadows). Over the last three decades the elm population throughout the UK has been decimated by the spread of Dutch Elm Disease (DED). This is a fungal disease which is spread from tree to tree by two species of bark boring beetles. A more virulent form of the disease reached the south of England in the 1960s and first appeared in Edinburgh in 1976.
- 17.37 Under statutory powers conferred by the Forestry Commission, the Council has implemented a rigorous programme of identifying diseased trees and removing them, or requiring them to be removed. The foremost objective was to ensure public safety, as elms have a strong tendency to shed major branches. However, a secondary objective was to protect the city's landscape and biodiversity as far as possible by limiting the spread of the infection, especially in the city centre. Between 1995 and 2005 the average number of trees lost to the disease in Edinburgh was 1,270 per year. About 60% of these were on Council-owned land. Graph 3 shows the number of infected trees on a year by year basis.
- 17.38 It is generally recognised that DED cannot be eradicated by control measures. However, the application of strict controls in Edinburgh has helped to slow down its spread. Consequently Edinburgh has managed to preserve more mature elms than many other cities, especially in the central area. Another contributory factor in Edinburgh is the presence of several rarer species of elm, which are less susceptible to the disease than the wych elm. Nevertheless the native wych elm remains a significant component of Edinburgh's woodlands, in places such as Colinton Dell, Corstorphine Hill, the River Almond Walkway, and along the Water of Leith. The City of

Edinburgh Council has implemented a replacement programme to replenish the city's tree stock and ensure that a multi-aged treescape is sustained for the future.

- 17.39 Dutch Elm Disease has effects on other flora and fauna which depend on the elm to some extent. For example greater spotted woodpeckers can benefit by finding more nesting opportunities in decaying trees. However, prompt removal of diseased trees has had the opposite effect.
- 17.40 Climate change could have implications for the spread of plant diseases such as DED. For example warmer conditions could enable the beetles which carry the disease to complete more breeding cycles in a year. Until now, Edinburgh's relatively cool climate has been a factor helping to inhibit the spread of the disease.

Graph 3 : Trends in the Number of Trees Infected with Dutch Elm Disease in Edinburgh, 1986 - 2004



source : City of Edinburgh Council

Woodland Management Plans

- 17.41 Ideally all woodlands should have a management plan that sets out the key objectives to guide future management plans. The UK Woodland Assurance Scheme (UKWAS) is a certification scheme that meets the international standards for good woodland management set by the Forestry Stewardship Council. Having management plans and management systems that meet these standards is likely to be a condition of receiving grant aid for woodland planting and management in the future.
- 17.42 The City of Edinburgh Council has drawn up management plans for some of the larger woodland areas within the city – notably Corstorphine Hill, Ravelston Woods, Colinton Dell, Craiglockhart Dell and Craigmillar Castle Park. These set out programmes of work appropriate to each location, including new planting, thinning, removal of hazardous branches and trees, path maintenance and improvement, fencing, the removal of fly tipping, and improved signage and interpretation for visitors.
- 17.43 Council funding for these initiatives has been supplemented by grants from the ‘Woods In and Around Towns’ Challenge Fund (WIAT, established 2004 by Forestry Commission Scotland). For example Craigmillar Castle Park was awarded £96,000 from the WIAT Challenge Fund to help pay for survey and management plan development, tree safety work, installation of robust picnic furniture, and removal of rubbish and abandoned cars. Key aims here were to encourage greater community involvement and woodland usage (e.g. through extensions to the ‘core path’

network), and enhancement of biodiversity by removal of non-native species (supporting objectives in the Local Biodiversity Action Plan).

- 17.44 WIAT Challenge Fund awards have also been made to help implement the management plans for Corstorphine Hill (£290,000, Jan. 2005) and Ravelston Woods (early 2006).

Tree wardens

- 17.45 The Tree Warden Network is a UK wide initiative to enable people to play an active role in conserving and enhancing their local trees and woods. The City of Edinburgh Council set up the Edinburgh Tree Warden Network in April 2003 with the aim of encouraging citizens to become involved in tree and woodland issues within the city. Tree Wardens are volunteers and many are affiliated to local community councils. As at May 2007 Edinburgh had around 40 Tree Wardens.