

## BACK ON THE MAP: THE SEARCH FOR NORTHERN IRELAND'S ANCIENT WOODLAND

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### Abstract

Preliminary map work has found around 2,750 woodland areas greater than 0.5 ha in Northern Ireland that have been continuously present since the first edition Ordnance Survey maps were produced in the 1830s. During 2004 and 2005 these sites are being subjected to further detailed archival work and field survey to distinguish ancient woods (present since at least 1600) from long-established sites (present since 1830 but not proven to be ancient).

Detailed archival evidence from cartographic and written sources, such as 17<sup>th</sup> century Bodley and Raven maps and Ordnance Survey memoirs (19<sup>th</sup> century), is being collated for a subset of sites for which the best archive evidence exists. Trees, vascular plants, bryophytes and a range of pre-determined physical features are being recorded in each wood.

Archive research alone will produce a core list of woodlands that may be classified with some certainty as either long-established or ancient. Analysis of the field survey data for these sites will enable derivation of a provisional list of species and features characteristic of each type and these will then be applied to categorise the remaining sites as either long-established or ancient.

As well as recording antiquity, the final inventory will classify woods as semi-natural or plantation (broadleaved, conifer, or mixed). Losses to woodland since the 1970s and areas of wood pasture / parkland and scrub are also being mapped in the field. The inventory will enable protection of Northern Ireland's ancient woodland and will be a valuable tool for spatial planning for conservation.

### Background

Ancient woods (areas wooded since at least 1600) are rich reservoirs of both biodiversity and historical information. Our most diverse habitat, they embody a conservation heritage of infinite enormity, providing a haven for rare and threatened invertebrates, lichens, bryophytes, higher plants, birds and woodland mammals. Plants and certain animals associated with ancient woodland have limited dispersal and adaptation abilities. As it has taken ancient woodland many centuries to evolve, the species that the habitat supports are accustomed to stable conditions, and are therefore extinction prone. Vulnerable species are more likely to occur in ancient woodland than in any other habitat in the British Isles (Peterken, 1993). Ancient woodland is also important for its undisturbed soils and for the historical and archaeological features it preserves. In Ireland, earthworks, including raths and ringforts, and in some areas wood banks and boundaries (Rackham 1995) give us a picture of past land use. Old coppice stools, pollards, charcoal hearths, ore furnaces and kilns point to past woodland management practices and their connection with local industrial history.

Woodland cover is very low in Northern Ireland – at 6% of land area it is the lowest in Europe with the exception of Iceland - and ancient woodland is thought to be very scarce, probably less than 0.2 % (Rackham, 1995) yet protection of all woodland is weak. Ancient woodland has no specific protection since Northern

Ireland currently has no comprehensive record of its ancient woodland. Ancient woodland inventories were produced in Britain 10 to 20 years ago, around the time when the importance of ancient woodland increasingly started to be recognised. Since then, the concept of ancient woodland has become central to the development and implementation of conservation policy and strategy, at a national and international level. The lack of an ancient woodland inventory puts Northern Ireland at a severe disadvantage, as it is an essential tool for meeting biodiversity and sustainability commitments. The UK Government has made a commitment to halting the decline and fragmentation of ancient woodland (Anon., 1999). The UK native woodland Habitat Action Plans explicitly include targets for no further loss of ancient semi-natural woodland and restoration of replanted ancient woodland as one of their main targets (Anon., 1995; Anon., 1998). The Northern Ireland Biodiversity Strategy recommends that remaining ancient semi-natural woodland sites should be protected, enhanced and extended, and incentives provided for their management (Anon., 2002).

### Northern Ireland's woodland history

In the last 10-15 years, the commonly held earlier view that the forests of Ireland were still extensive until the 17<sup>th</sup> century, and owe their demise to wanton destruction and cavalier exploitation by English colonists, is largely discredited. Documentary records are less abundant than in England, but in Ireland they can be examined in conjunction with both archaeological evidence, and a rich legacy of pollen evidence in peat bogs and lake sediments which can give us fairly accurate information about the historical period, thanks to the use of tephra dating. This method uses the presence of layers of volcanic ash within the peat cores from Icelandic eruptions of known dates to pinpoint the origin of pollen layers with far more accuracy than is possible by radiocarbon dating (Hall, 2000). The picture that emerges is that substantial clearance started during the Neolithic period and that Ireland was already poorly wooded by 1600. This is borne out by archaeological evidence and the vast number of raths and ringforts suggesting a large population in the Iron Age and Early Christian period, which indicates that the survival of large tracts of wildwood was impossible. The Civil Survey of 1654-56 indicates that at this time Ireland was one-third as wooded as contemporary England. Even by that date much of this may have been secondary woodland, with war, disease and famine having put paid to most of the original "wildwood" which covered much of the British Isles after the last Ice Age. (Rackham, 1995).

In Northern Ireland, the date of 1600 has double significance. As well as being the conventional division between "ancient" and "recent" woodland, it coincides roughly with the beginning of the Plantation of Ulster, which saw an influx of English and Scottish settlers in the north, changes in social structures, reallocation of landholdings and further turmoil and unrest which led to a wave of mapping and recording. While some felling was undoubtedly due to English settlers, with a great deal of timber needed to build the number of Plantation castles dating from this time, they also carried out some planting, as can be seen by the age of some of the trees in landscaped demesnes. It was actually the huge population explosion running up to the Great Famine, and the associated demand for every scrap of possible cultivable land, which sounded the death knell for possibly some 90% of this woodland (Rackham 1995). The Land Acts from the late 19<sup>th</sup> century onwards then resulted in land ownership passing to tenants and further clearance of woodland, creating today's rural landscape of farms (Tomlinson, 1997).

### The ancient woodland inventory

The first phase of the project to create an ancient woodland inventory (AWI) for Northern Ireland was carried out by Queens University Belfast (Tomlinson *et al.* 2003). Through comparison of Ordnance Survey (OS) maps from the first edition of the 1830s to the most recent maps (mainly dating from the 1960s and 1970s), and an intervening series dating from around 1900, a baseline digital map was produced of all woodland areas (including wood pasture, parkland and scrub) which had been continuously present since the 1830s (see Fig 1). Around 2,750 polygons of potentially ancient woodland over 0.5 ha were discovered, the majority less than 2 ha in area, and covering less than 1% of the land area of Northern Ireland (see Table 1).

In 2004 and 2005 the Woodland Trust is carrying out detailed archival research and field survey to establish the antiquity of each of these areas and to categorise them as:

- Ancient woodland (established before 1600)
- Long-established (established before 1830 but not proven ancient)
- Recently cleared

and as either:

- Semi-natural
- Plantation (broadleaved, conifer or mixed)

## Methods

Creating the ancient woodland inventory involves a certain amount of detective work, piecing together evidence from old maps, written historical sources and fieldwork. Historical sources for Northern Ireland for the period of interest vary in their quality, availability and consistency, and like all historical sources need careful interpretation within an understanding of the political and social context of the time. Alone, they would be inadequate to enable classification of individual woods as ancient or long-established and fieldwork is therefore essential. Field survey can pick up clues that would never be available from the archives, but in Northern Ireland so little work has been done in the past to identify those features and species that may typify ancient woods in the Province, that fieldwork alone would also be inadequate. For the purposes of producing an inventory of ancient woodland in Northern Ireland, historical research and field survey are both needed to complement each other. Because there is, relatively speaking, so little woodland left that is long established, potentially ancient; the intention is to carry out this work for all those sites.

## Archive research

Archival research is focusing on 17th century sources such as the Bodley maps of 1609, Raven's maps of the Clondeboye Estate from 1625, Petty maps from the 1650s and the Civil Survey of 1654. Initially it was thought that there would be a lack of material due to the various misfortunes which have befallen Irish records, but fortunately such early records still exist. These surveys and maps were created mainly as a consequence of the Plantation of Ulster and therefore tend to cover the west of Ulster. Evidence of trees and woodlands in these 17<sup>th</sup> century sources is taken as one positive indication of antiquity. Other records which are being consulted include estate maps, OS Memoirs from the 1830s and the county registers of trees. These later sources can help to suggest which woodlands are the result of planting in the years prior to the 1830s, rather than being ancient. The 1830s maps themselves are also a very useful source, with information being extracted such as wood shape (sinuous or straight boundaries) and wood type (symbols on these maps differentiate between young plantation, for example, and mature, more "natural" woodland, and between coniferous and broadleaved woodland).

Common difficulties in interpreting the sources include issues over orientation and symbolism of maps and the original purpose of creating the records. No maps prior to the first edition OS maps in the 1830s cover the whole of the Province and thus some areas have more historical evidence from the 17<sup>th</sup> century than others. In any case, a single source cannot show that a site is definitely either ancient or long-established. Rather, historical research must aim to build up a body of evidence based on a rich variety of different sources, which can then be used in conjunction with fieldwork to make a judgment on the likely antiquity of a wood.

## Field survey

Field survey involves recording a list of higher and bryophytes and relevant physical features (as determined by Tomlinson *et al.*, 2003). During spring and summer of 2004, 4,995 ha of woodland in Northern Ireland were surveyed. A unique standard check-list, made up of plants characteristic of woodland in Northern Ireland, was used to record trees, vascular plants, mosses and liverworts in each polygon. This survey work will continue in 2005 and may go on into 2006.

The survey method was a thorough walk through the wood, with the whole wood being covered in a series of traverses, approximately 50m to 100m apart or on a more irregular path to fit the conditions and shape of the wood (Kirby, 1988). The boundaries of each wood were also examined due to their importance as historical management indicators (Tomlinson *et al.*, 2003). Surveyors used current OS maps (dating from 1960s and 1970s) at 1:10,000 scale on which were marked the boundaries of polygons identified by Tomlinson *et al.* (*op.cit*) as long-established (potentially ancient) woodland. Conventional symbols were used for map annotation.

Information about the wood's canopy and condition was recorded in order to enable classification as semi-natural or plantation, and whether the area was conifer (>80% conifer species), mixed (between 20-80% conifer) or broadleaved (>80% broadleaved species). The presence of scrub and wood pasture / parkland and any changes since the production of the current OS maps, indicating woodland loss, were also recorded.

The use of a map and hand drawn sketch allowed the annotation of ancient trees, physical features and unusual / rare species of vascular plant or bryophyte for each polygon. Also defined were the internal boundaries between areas of different canopy condition e.g. semi-natural and plantation.

The list of vascular and bryophyte plant species was recorded on a five point semi-quantitative scale (DAFOR - Dominant, Abundant, Frequent, Occasional, Rare) for each site during the walk through the site, and the location of unusual/rare species of vascular plants and bryophytes were mapped. Ancient trees, coppice stools, pollards and their species were noted on the maps.. Eight-figure grid reference (using Global Positioning Systems), girth, height at which the girth was measured, the accessibility of the tree (e.g. private or public access), whether the tree was dead or alive, standing or fallen was also recorded. Information on ancient trees will also be fed into a separate project by the Woodland Trust and Ancient Tree Forum recording ancient trees across the British Isles ([www.ancient-tree-hunt.org](http://www.ancient-tree-hunt.org)). Other physical features which could have historical significance, such as boundary banks, internal walls, banks, ditches and drainage ditches were mapped, and basic information such as dimensions was noted, as was any evidence of land use post 1600. The situation and adjacent land use of each polygon was recorded.

### Anticipated results and their uses

Historical research so far has highlighted those woods for which good archive evidence is available – i.e. a number of sources dating back to the 17<sup>th</sup> century which strongly suggest that a wood is either ancient or long-established. The species and physical features associated with these historically documented woodlands will be analysed using multivariate (both classification and ordination) and univariate statistical methods. These investigations will show whether species and physical features can be found that characterise ancient and long-established woodland in the North of Ireland and can be used to help distinguish one from the other. The findings of these analyses will then be applied to help classify the remaining sites once they have been surveyed and researched. Some preliminary analysis by Tomlinson *et al.*, (2003) tentatively suggested bryophytes may also be helpful in establishing antiquity of Northern Irish woods, which is the reason for including these in field survey.

The resulting digital inventory will show all ancient and long-established woods, with historical and ecological data attributed to each, and will be made freely available via the web, though hard copies will be available on demand ([www.backonthemap.org.uk](http://www.backonthemap.org.uk)). Information will be in different formats suitable for both professional and academic audiences, and for the general public. While the Woodland Trust's primary motivation is to secure the protection of ancient woodland and thereby enable the maintenance and enhancement of woodland biodiversity across the whole of the Northern Irish landscape, the inventory will inevitably generate interest among a great diversity of professions and will hopefully stimulate further study of ancient woodland in Northern Ireland.

In terms of policy and woodland management practice, spatial information about ancient and long-established woodland should enable better protection and management of these woods through planning policy,

biodiversity action plans, site designation and grant incentives (e.g. for restoration of planted ancient woodland sites, or creation of new native woodland to buffer and extend existing ancient woods).

As a tool for better understanding Northern Ireland's landscape history, the inventory could be the starting point for further research into particular woods and estates, thus increasing our knowledge of the landscape as a whole and how it has been transformed over the centuries. While local history has long been a popular study in Northern Ireland, the level of interest in the history of woodland has not matched that in England, Scotland and Wales. As providers of shelter, food, fuel and sport over the centuries, old woods that still exist today are a rich source of information on our social history. There are still many questions to be explored: Was there a tradition of wood-pasture in Ireland and if so, what form did it take? Was coppicing practised widely and, if so, why did it apparently die out much earlier than in England? What sort of archaeological and landscape features are associated with ancient woods in Ireland?

It is hoped the inventory will also provide a huge step forward in the understanding of the ecology of ancient woods in Northern Ireland and stimulate further study and research in this area. Much of our understanding of ancient woodland originated in southern England and work in Northern Ireland still lags behind. Through the ancient woodland inventory we have the opportunity to investigate ancient woodland from the perspective of Ireland, which has a more oceanic climate than England.

## Conclusions

The UK's largest woodland conservation charity, the Woodland Trust has four key objectives:

- No further loss of ancient woodland
- Improved woodland biodiversity
- Expansion of new native woodland
- Increased public awareness and enjoyment of woodland

The ancient woodland inventory for Northern Ireland is, we believe, essential to achieving the first two objectives, but will also make a major contribution to the last two.

Table 1. Size range of long-established (potentially ancient) woods in Northern Ireland (modified from Tomlinson et al. (2003))

Size range (ha)	No polygons	Cumulative no polygons	No polygons as % of total	Area (ha)	Area as % of total
< 0.49*	146	146	5.3%	?	?
0.5 - 0.99	839	985	30.7%	599.15	5.2%
1.00 - 1.99	709	1694	25.9%	994.47	8.7%
2.00 - 4.99	563	2257	20.6%	1729.05	15.1%
5.00 - 9.99	240	2497	8.8%	1679.4	14.7%
10.00 - 39.99	210	2707	7.7%	3762.22	32.9%
>40.00	28	2735	1.0%	2680.74	23.4%
Total	2735	2735	100.0%	11445.03	100.0%

\* Polygons < 0.50 ha but which are contiguous with larger polygons and therefore included in the inventory.