A revision of the Ancient Woodland Inventory for Rother district, East Sussex

Survey report and inventory maps
October 2010

Project carried out by the
Weald and Downs Ancient Woodland Survey

A revision of the Ancient Woodland Inventory for Rother district, East Sussex

Project carried out by Philip Sansum for the Weald and Downs Ancient Woodland Survey November 2007 to October 2010

Report by Philip Sansum, with contributions
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A partnership project funded by: Rother District Council, High Weald AONB, Forestry Commission and Natural England

Natural England foreword

Natural England works for people, places and nature, to enhance biodiversity, landscapes and wildlife in rural, urban, coastal and marine areas; promoting access, recreation and public well-being, and contributing to the way natural resources are managed so that they can be enjoyed now and in the future.

Natural England considers that ancient woodlands are irreplaceable, and should therefore be protected and managed so as to maintain and enhance their special character. Knowing where ancient woods are is therefore a key nature conservation need.

The Ancient Woodland Inventory was originally compiled by the Nature Conservancy Council (a predecessor to Natural England) between 1981 and 1992, with the inventory for East Sussex being first produced in 1984. This inventory was further updated in 1989 and was digitized by the Forestry Commission in 2000 for use on Geographic Information Systems.

A new inventory revision began in Wealden District in East Sussex in 2004, consolidating the earlier work on the Ancient Woodland Inventory, and including woodlands below two hectares for the first time. The survey has continued to expand, with similar revisions to the Ancient Woodland Inventory now being undertaken across Sussex, Surrey, Kent and the Chilterns.

This report outlines the work of the project in Rother district, taking in additional historical map evidence and site surveys to verify the status of sites. Natural England will add the information captured by this project to the national inventory.

Natural England welcomes the work of this survey and the increased protection and understanding of ancient woodland that it brings.

Emma Goldberg
Forestry and Woodland Specialist
Natural England

Forestry Commission foreword

The Forestry Commission works to ensure the protection and sustainable management of our woodlands. Ancient woodlands in particular are exceptionally rich in wildlife, and often contain important archaeological and heritage features relating to their past management. The appropriate management and protection of these sites is a key concern for the Forestry Commission, particularly in heavily wooded counties such as East Sussex which contain a significant proportion of England's ancient woodland resource.

The focus on ancient woodland received a new emphasis in 2005, with the launch by Defra and the Forestry Commission of 'Keepers of Time: A Statement of Policy for England's Ancient & Native Woodland.' [1] This sets out the vision that *'Ancient woodlands, veteran trees and other native woodlands are adequately protected, sustainably managed in a wider landscape context, and are providing a wide range of social, environmental and economic benefits to society.'*

Ancient woodlands are widely recognised as being irreplaceable habitats, but many are not protected through designation. Local authorities have a key role to play in the protection of this unique resource through the planning process. This role was strengthened by the publication of Planning Policy Statement 9,[2] which includes a requirement for local authorities to identify any areas of ancient woodland that do not have statutory protection. The Forestry Commission recognises that this is a complex and potentially time-consuming task and its support for this revision of the Ancient Woodland Inventory for Rother is part of a wider initiative to help co-ordinate similar surveys.

This survey has resulted from a strong partnership between Rother District Council, Natural England, the High Weald AONB Unit, and the Forestry Commission. The Forestry Commission believes that such partnerships, working with local authorities, provide an important means for increasing the understanding, protection and sustainable management of our historic ancient woodlands.

Alan Betts
Regional Director
South East England Conservancy
Forestry Commission

[1] DEFRA and the Forestry Commission (2005)
[2] Office of the Deputy Prime Minister (2005)

High Weald AONB foreword

The High Weald Area of Outstanding Natural Beauty (AONB) Joint Advisory Committee (JAC) has been involved in the ancient woodland survey since its inception in 2003, employing the initial staff, and providing office and support services. Responsible for a large protected landscape in the South East, covering parts of East and West Sussex, Kent and Surrey, the High Weald JAC recognises that an understanding of our landscape is a vital pre-requisite for good decision making.

Ancient woodlands are a fundamental component of the High Weald's character for which it is designated as an Area of Outstanding Natural Beauty: one of England's finest landscapes. Maintaining their extent and ecological functioning is a primary objective of the AONB Management Plan. The Ancient Woodland Inventory provides us with a vital tool to achieve this objective, identifying woodlands with a new degree of accuracy, including those below two hectares. With the production of this report, 10 of the 11 districts covering the AONB have been completed.

We value these woodlands for many reasons, including soil conservation, carbon storage, biodiversity, recreation and timber supply but they also give us new insights into how humans interacted with the landscape in the past, and how people colonised and settled it, farmed and survived. There is an astonishing wealth of cultural history in these woodlands which the survey has brought to light.

I would like to thank the survey team – Philip Sansum, Patrick McKernan and Matthew Grose for all their enthusiasm and dedication to the project. We welcome the support and commitment of our partners in this project: Rother District Council, the Forestry Commission, Natural England, Sussex Wildlife Trust and the Sussex Biodiversity Record Centre.

Councillor Sylvia Tidy
Chairman
High Weald AONB Joint Advisory Committee

Rother District Council foreword

Rother District Council is pleased to have contributed to this revision of the Ancient Woodland Inventory. Rother District covers some 200 square miles and is a predominantly rural district. Some 88,800 people currently live in Rother (ONS, 2008), many dispersed across the rural area, but with nearly half being in Bexhill. Some 82% of the District is designated as 'Area of Outstanding Natural Beauty' (AONB), with further sites nationally or internationally recognised for their nature conservation value.

Ancient woodland is a key feature of the landscape and integral to the historic fabric of Rother district. It is also of significant nature conservation interest, providing a habitat for a number of priority species. It is identified as a 'priority habitat' in the Sussex Biodiversity Action Plan.

However, ancient woodland is threatened by the decline in traditional woodland management and pressure from unsympathetic leisure uses and developments. It is vitally important to have good information about the ancient woodland resource in order to promote effective conservation and management policies and practices. This revised Ancient Woodland Inventory is a significant step forward in this endeavour.

The Council itself will aim to protect ancient woodland through its planning functions. National policy (PPS9) highlights the importance of ancient woodland, advising that "once lost it cannot be recreated" and that planning permission should not be granted "for any development that would result in its loss or deterioration unless the need for, and benefits of, the development in that location outweigh the loss of woodland habitat". The South East Plan states that local authorities should ensure that the value and character of the region's woodland are protected and enhanced. This recognises the role of 'green infrastructure' and especially woodland in responding to climate change.

The Council's Local Plan sets out the following principle: 'it protects ancient woodland from development that would prejudice its ecological and landscape value'. This principle will be carried forward into the Core Strategy and other local development documents. The more detailed and up-to-date information on ancient woodlands in this revised Inventory will be used to inform local planning. By making it widely available, including through the use of geographical information systems, it will assist and complement other biodiversity plans and initiatives, including those of the Sussex Biodiversity Action Plan and the High Weald AONB Management Plan 2009.

The review of the Ancient Woodland Inventory is an example of partnership working to achieve local and national landscape and ecological objectives. Rother District Council wishes to thank The High Weald AONB Unit, Forestry Commission, Natural England, Sussex Biological Records Centre and landowners who allowed their sites to be visited.

David Marlow
Principal Planning Officer
Rother District Council

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1. Summary

Ancient woodland is a nationally important and threatened habitat, and its existence over hundreds of years has preserved irreplaceable ecological and historical features. The South East has approximately 40% of the ancient woodland in England, but this valuable resource is increasingly under threat from development pressures in this densely populated region. The Weald and Downs Ancient Woodland Survey was set up in recognition of the increasingly important role of ancient woodlands and the deficiencies of the existing Ancient Woodland Inventory.

This report summarises the methodologies and findings of a two year project (running between November 2007 & March 2010) to revise the Ancient Woodland Inventory for Rother district. The Weald and Downs Ancient Woodland Survey has worked with Rother District Council, the High Weald Area of Outstanding Natural Beauty (AONB) Unit, the Forestry Commission, Natural England, and the Sussex Biodiversity Record Centre to provide a robust evidence base upon which to assign ancient woodland status.

The whole of the district's ancient woodland resource has been re-examined. The area of ancient woodland since the original inventory was produced has risen from 7,595 ha to 8,055 ha, a gain of 460 ha as a result of this revision. This represents a modest increase from 14.65% to 15.54% of the district's area designated as ancient woodland. The number of parcels of ancient woodland in the revised inventory, by contrast, is more than two and a half that of the original inventory with the gain mostly attributable to small parcels of woodland well distributed across the district.

The revised Inventory will assist Rother District Council's planners in making decisions about development within the district, thus ensuring that the effects of any development proposals on ancient woodlands can be properly assessed and considered. The revised inventory will also enable a better assessment of the extent and quality of Rother district's ancient woodland resource to be made, and will help identify threats to the resource, areas for improving habitat connectivity, and opportunities for the strategic management of key woodlands.

2. Introduction

2.1 Background

Ancient woodland sites over two hectares in size are recorded in the county Ancient Woodland Inventories which were compiled in the 1980s and 1990s by the Nature Conservancy Council (NCC).[3] These inventories, now brought together as the National Ancient Woodland Inventory, have become an important tool for policy makers and planners whilst also assisting land managers to identify key areas for the restoration and planting of native woodlands and increasing awareness of the importance of ancient woodland.

At the time, the compilation of the original inventories was an extremely valuable process, and a landmark achievement for the conservation of British woodland. However, new information and advances in technology mean that their inaccuracies and omissions can now be addressed. With the pressure on land increasing year on year, these errors can cause significant problems for planning authorities. In addition, the exclusion of woodlands less than two hectares has undermined the protection afforded to these sites through the planning process. This is particularly the case in heavily wooded counties such as Rother, where small woodlands are a central part of the fabric of the countryside and make a significant contribution to the overall woodland resource. This inventory revision includes these small woodlands for the first time.

The original Ancient Woodland Inventory (AWI) for East Sussex was first produced in 1984, and revised in 1989, by the NCC.[4] Originally, all of the county inventories were only available on printed maps, but between 1998 and 2000 they were digitally mapped (digitized) by the Forestry Commission. This first digitization is the electronic version that most resembles the original printed inventories, which have a published methodology, although it does includes some changes made since the paper versions were produced. This digital dataset was subsequently updated on a case-by-case basis by English Nature (now part of Natural England), the successor to the NCC, and is now administered by Natural England. For the purposes of this report, a comparison has been made between the revised inventory and the digitized inventory which became available in 2000. This version is the nearest to the original inventory available to this survey in electronic format, and is referred to hereafter in the text and maps as the 'original AWI' or 'original inventory'.

2.1.1 The Weald and Downs Ancient Woodland Survey

The Weald and Downs Ancient Woodland Survey is the name given to the partnership of organisations revising the Ancient Woodland Inventory in Kent and Sussex. Similar surveys are also being undertaken in Surrey and the Chilterns. The partnership completed a revision of the West Sussex inventory in 2010. Key partners in the Weald and Downs Ancient Woodland Survey include the High Weald AONB Unit (which hosts the Kent and East Sussex surveys), Forestry Commission, Natural England, Sussex Biodiversity Record Centre, Sussex Wildlife Trust, Surrey Wildlife Trust, Surrey Biological Records Centre, Kent and Medway Biological Records Centre, the South Downs Joint Committee, and the relevant local authorities. Additional funding has been provided by the High Weald Sustainable Development Fund.

The aim of the survey is to revise and update the Ancient Woodland Inventory in these areas, and to include, for the first time, ancient woodlands less than two hectares in size. For East

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[3] Spencer & Kirby (1992)
[4] Whitbread *et al* (1989)

Sussex and Kent, the survey is based at the High Weald AONB Unit. For West Sussex, the survey was hosted by the Sussex Biodiversity Record Centre and Sussex Wildlife Trust. The survey in Surrey is hosted by the Surrey Wildlife Trust and Surrey Biological Records Centre. The Chilterns survey is hosted by the Chilterns AONB.

2.1.2 Rother Ancient Woodland Inventory revision

Rother district is exceptionally well wooded. Of the 67 local authorities in the South East region, it has the 6th greatest area of woodland, and the third greatest area of ancient woodland, with more than three quarters of its woodland area identified as ancient. These ancient woodlands represent a significant resource, covering approximately 15% of the district – a higher percentage than any other local authority in the region (based on the original AWI for comparison purposes)[5].

A large proportion of Rother (and most of its woodland area) falls within the High Weald character area (see Map 1) and AONB where small fields and woodlands form an intricate mosaic. The district is particularly well endowed with large woods and forests but many of the woods in the High Weald landscape are small linear woods, belts of trees, or other woodlands less than two hectares in size. In support of the rationale for this project it is worth quoting the report of the original ancient woodland inventory for East Sussex[6]:

> Particularly important woodland features, which may not have been included on the inventory owing to their small size, are the ancient 'shaws' or 'rews' – thin strips of woodland between fields. These are often the remnants of ancient woodland, left when adjacent areas were cleared for agriculture. They are often very rich in ancient woodland plants and, as they are often connected with larger blocks of ancient woodland, may also act as wildlife corridors.

The great extent of woodland in the district, and the absence of small woodlands in the original Ancient Woodland Inventory were important factors in deciding to undertake this revision of the inventory.

2.1.3 Historical and ecological overview of the woodland of Rother

The interacting factors that shape the character and distribution of woodland in Rother are the underlying geography, climate, geology and soils – the root environmental controls on the development and composition of vegetation – and the changing ways in which this vegetation has been used and controlled as a resource by people through history.

A large part of the district of Rother falls within the High Weald character area (see Map 1) and the bulk of its ancient woodland resource is situated here. Historically speaking, the study area is broadly similar in extent to the Rape of Hastings – one of the four pre-Norman subdivisions constituting Sussex and an area with strong historical associations with wood and woodland. This is an area characterised by a series of ridges formed from the erosion of the Wealden anticline exposing a complex of sedimentary rocks of the Ashdown and Tunbridge Wells Sands and Wadhhurst Clay. A special feature of this landscape are the steep sided valleys called gills which cut down the slopes of the ridges along lines of weakness in the bedrock. The upper ridges experience relatively high rainfall borne by the dominantly westerly airflows and the steep

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[5] Estimates based on analysis of the Forestry Commission's National Inventory of Woodland and Trees (2000), and the Ancient Woodland Inventory (2000) by Philip Sansum, High Weald AONB Unit, 2008
[6] Whitbread *et al* (1989)

topography of the gills often produces a locally humid microclimate. As a result, the woodlands of the area generally have a somewhat oceanic character.

The Weald of Sussex and Kent is nationally important for its woodlands and Rother, with some 18% of its area under woodland makes a large contribution to this. To illustrate, Rother (one of eleven constituent local authorities) contributes an estimated 30% to the total area of ancient woodland in the High Weald AONB – a protected landscape whose fundamental character is defined by its historic abundance of woods.

The district also possesses considerable ecological and historical diversity among its woods. Ashburnham Park on the north facing slopes of a sandstone ridge at the west of the district has ancient trees derived from a medieval deer park which support an exceptionally rich assemblage of epiphytic lichens. The acidic oak-beech forest and fen alderwood around a gill running through Dallington Forest harbour one of the richest woodland floras in East Sussex. A few miles east at Darwell Wood there are some restricted areas with outcrops of Jurassic limestone giving rise to soils which support localised communities of lime loving species – rare among the predominantly acid clay and sand derived soils of the district.[7]

These examples are well known and have been notified, along with a few other woods in the district (such as Maplehurst Wood, Fore Wood and High Woods), as Sites of Special Scientific Interest (SSSIs). There are, however, an abundance of woods which contain very significant ecological and historical interest in the district including hundreds of small semi-natural woods of distinctive local character which have received relatively little study or attention from science or nature conservation.

The basis of this variety is the range of topography, geology and soil conditions encountered within Rother's area. Even within a single small wood on one of the district's slopes many types of woodland can be seen – heathy oak, beech and birch woodland on the acid sandy soils of a ridge top may grade into oak -hornbeam woodland with bluebell and bramble on the damper clay soils of the upper slopes of a gill. Descending these collecting slopes the soils often become less acid and support a herb rich woodland containing ash and maple with dog's mercury or wild garlic which in turn gives way to various types of alderwood along the stream sides and elsewhere on flushed or springy ground. Some of the deeper gills host oceanic communities of plant species more typical of the westernmost, so-called Atlantic, regions of the British Isles. However, emphasizing the local distinctiveness of these habitats and their unique position in the continuum of European forest vegetation, the same parcel of woodland will often contain species of more continental affinity like hornbeam or even *Cardamine bulbifera* (see Photograph 4) which are restricted to southern and eastern England as native plants in Britain.

A brief look at the maps and figures in this report will reveal an interesting and complex spatial pattern in the distribution of the ancient woods in the district. The fertile floors of the major valleys of the Rother, Brede and Tillingham rivers stand out as areas of less dense woodland. Most of the woods shown on the inventory occupy sloping sites in the zone between the upper flanks of the ridges and the vales of the larger rivers. Another notable feature of the pattern is that while ancient woods are frequent across the area, the largest woods or densest groups of woods seem to be closely associated with the upper slopes of the ridges. Looking in more detail at larger scale maps many woods are seen to be associated with the incised watercourses which dissect the major valley slopes into a range of subsidiary ridges, or with damp slumping ground lying in between these interfluves.

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[7] Forbes (1978)

This distribution is the result of the long and complicated story of human settlement and occupation of this land and the organization of its natural resources[8]. As a generalisation, the least tractable parts of the landscape, those with poorer soils and those that were more difficult to cultivate because of high elevation or bad drainage were those which were more likely to persist as woodland or were quicker to revert to woodland in periods of subsidence in human pressure.

The first significant human inroads into the woodland cover of the South East began in the Neolithic period[9] and continued through prehistory and into the medieval period. In spite of this, forest clearance for agriculture on the heavier clay soils of the Weald and North Downs was less rapid than elsewhere, for example on the fertile coastal plains and South Downs[10], and by the time of the Norman Conquest the Weald or *Andredesweald* was still a great 'forest'. We do not know exactly what this forest looked like and the details of how people used it are still being debated and researched[11]. It was certainly not an untouched wilderness as some early historians supposed. It had been strongly affected by the activities of prehistoric peoples[12] and, particularly in the area which is now Rother district, been exploited as a source of the charcoal fuel and iron ore of Roman iron production[13] (for example around Beauport Park and Bardown).

Perhaps the chief value of the woodland in the Weald in the post Roman period was as an extensive pannage and pasturage resource used, at first seasonally and later through a scatter of permanent settlements, by transhumant herdsman from areas outside the Weald like the south coastal plain. Much of the woodland, though certainly exploited, was probably not managed intensively or systematically for timber and underwood. There may have been exceptions to this however, particularly where woods were situated close to the coast and to navigable waterways and the produce could easily be transported to areas of high demand further afield. Pioneering settlement of this region of common wooded land had been ongoing since the 8th Century. Whilst the intensity and extent of settlement and cultivation in the late first millennium may have been more significant[14] than portrayed in the popular view of an expansive, barely exploited forest in the pre-Norman era, the Weald nevertheless is generally accepted to have been among the most heavily wooded parts of the British Isles at the time of the Conquest[15].

In the period following the arrival of Norman rule there were great increases in population in the south east. The land-hunger associated with this growth could only be accommodated by colonisation and expansion of human settlement and farming through the Wealden forest. At the same time, the heightened demand for the produce of woodland, in particular as fuel, drove up the value of wood resources. In consequence, woods already enclosed and managed became a very significant asset and received even better protection, with valuable markets for timber and firewood locally and, significantly, across the English Channel in Normandy. At this time a systematic coppice management was probably more widely adopted in areas where previously woods had only been exploited extensively. With the economics of pannage decreasingly viable under these conditions the formation of the traditional landscape of the High Weald we see today, of enclosed woods in intimate mixture with fields, was largely completed during this period.

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8 see Harris (2003)
9 Drewett, Rudling & Gardiner (1988)
10 Brandon (2003)
11 ibid; Harris (2003)
12 Waller & Schofield (2007)
13 Cleere & Crossley (1995)
14 see Harris (2003)
15 Rackham (2006)

The numerous valley slope woods and smaller linear woods or shaws referred to above have been regarded by historians as the residue of the *Andredesweald*. The implication is that many of Rother's ancient woods are the relics of more extensive pre-Norman woodland-pastures or 'dens' which were gradually assarted (fields were incrementally cut into the wood from its outer edge) on multiple fronts by neighbouring farming communities pushing back the boundaries of the wood towards some, eventually formalized, territorial limit. Often these limits would also coincide with the poorer agricultural ground since the medieval colonists of the dens would have felt out the better drained and more cultivable spots on which to centre the new settlements. Many of the small field-edge shaws throughout the area may represent the culmination of a process akin to this whereby the wood resources needed to support a settlement were chased back onto the lands with the poorest soils and thin strips of old woodland were reserved in between the new fields. Some of the larger woods in the district are thought to derive from Norman emparkments of areas of 'wood- pasture' whilst others may have been formally defined and managed as coppice woodland still earlier by Saxon settlers.

In addition to these 'relic' woods, a proportion of the small ancient woods of Rother are secondary, that is they have arisen on land cleared of its original tree cover for some purpose. Many woods may have arisen on marginal land which fell into disuse following the Black Death in the 14th century (or subsequent lesser historical depressions in farming activity) and still more occupy man-made features such as the rims of abandoned marl-pits, clay diggings and stone quarries (see 4.2.5). Quantification of this interesting distinction within the ancient woodland resource must await a future study.

Since the demise of pannage and pasturage as the dominant woodland management system the prevailing historical treatment in Wealden woods has been some form of coppice. Arguably, this sustainable harvesting regime – a symbiotic relationship between trees and man – may have been operated more or less continuously from the Norman period (or before) until the end of the 19th century, albeit with fluctuations in intensity, demand, style and the type and quantity of output.

Due to a combination of factors, including the coming of railways and arrival of cheaper substitutes for many of the uses of wood (and for hops), the surging market for coppice produce of the mid 19th century was swiftly followed by a slump and the widespread abandonment of traditional woodland management in the late Victorian period continued into the 20th century. Coppicing had reached a low ebb by the end of World War II and the planting of non-native, usually coniferous, tree species grew significantly in the post-war period. Today many woods in Sussex are dominated by either a derelict broadleaved coppice or neglected conifer plantations. The closing of the broadleaved roundwood intake to the paper mill at Sittingbourne in Kent in 1991, and the recent closure of other mills throughout the country has significantly weakened the market for underwood in South East England. Without new incentives to resume the coppice systems that have formed and defined these woods down the centuries, their ecological and cultural heritage is at threat. Some hope of revival has arrived in the form of renewed interest in the firewood market and the currently burgeoning interest in wood-fuel as a heat source.

2.1.4 Project aims

The primary aim of the Weald and Downs Ancient Woodland Survey is to re-examine all available information and to present a revised Ancient Woodland Inventory for a local authority area. This enables local authority planning officers to identify areas of ancient woodland and hence provide these woodlands with the appropriate recognition in accordance with planning guidance and policy.

Additional aims of the survey are:

- To develop a better understanding of the key issues and threats affecting ancient woodland.
- To document the location of ancient woodland sites within the local authority areas which will help to identify areas of opportunity for environmental enhancement, increase the understanding of habitat connectivity, and highlight woodland areas for targeting woodland management programmes and grant funding.

2.1.5 Project funding

The revision of the Ancient Woodland Inventory for Rother district was jointly funded by Rother District Council, the High Weald AONB Unit, the Forestry Commission, Natural England and the High Weald AONB Joint Advisory Committee through the High Weald Sustainable Development Fund. Additional support for the project was provided by the Sussex Biodiversity Record Centre.

2.2 Ancient woodland definitions

Woodlands in Britain are routinely grouped into the two categories of 'ancient woodland' and 'recent woodland' according to their history. This follows the pioneering research on the subject by George Peterken, Oliver Rackham and others in the 1970s.[16] The distinction is now well established as a useful one and the concept of 'ancient woodland' is embedded in national forestry and nature conservation policy.

2.2.1 Recent woodland

Recent woodland (less than 400 years old), is where a wood has either been planted on an area of land, or where trees have been allowed to grow naturally through regeneration, usually as the result of a cessation in land use management.[17] Recent woodland sites can show similarities to ancient woodland depending on their age, proximity to ancient sites and the diversity of microhabitats within the site. However, generally their biological diversity is not as great as that of ancient woodland. These woods are therefore excluded from the inventory.

2.2.2 Ancient woodland

The definition of ancient woodland used for this survey is that given by English Nature (now part of Natural England), as included in an English Nature guidance document on ancient woodland for local authorities.[18] The relevant extract from this document is included below:

'Ancient woodland in England is defined as an area that has been wooded continuously since at least 1600 AD. Ancient woodland is divided into ancient semi-natural woodland and plantations on ancient woodland sites. Both types of stand are classed as ancient woods.'

[16] For example, Peterken (1977), Rackham (1980)
[17] Bannister (2007)
[18] Kirby & Goldberg (2006)

The trees and shrubs in ancient woodlands may have been felled or cut for coppice at various times since 1600, but as long as the area has remained as woodland, i.e. the coppice stools have regrown or the stand has been replanted soon after felling, then it still counts as ancient woodland. Because it may have been cut over many times in the past, ancient woodland does not necessarily contain old trees.

The date used to define ancient woodland for England, 1600 AD, was chosen by Peterken,[19] because it reflected the point at which good maps started to become more common and was prior to the impetus for new woodland planting from the publication of Evelyn's influential book 'Sylva.'[20] Other dates could be argued for: 1650 was used by Peterken and Harding[21] to distinguish post-medieval woods in Rockingham Forest, as a detailed map for that area was produced at that time, while Rackham uses 1700.[22] In practice 1600 has been adopted for policy and practical purposes in England.

Ancient woodland is divided into ancient semi-natural woodland and plantations on ancient woodland sites. Both types of stand are classed as ancient woods.

Ancient semi-natural woodland (ASNW)
Ancient semi-natural stands are those that are composed predominantly of trees and shrubs native to the site that do not obviously originate from planting. They include stands that may have been managed by coppicing or pollarding in the past, as well as those where the tree and shrub layer has grown up by natural regeneration.

Ancient replanted woodland (or PAWS)
Ancient replanted woodland sites (also called Plantations on Ancient Woodland Sites, or PAWS) are areas of ancient woodland where the original native tree cover has been felled and replaced by planted stock most commonly of a species not native to the site, for example conifers such as Norway spruce (*Picea abies*) or Corsican pine (*Pinus nigra* var. *maritima*), but also broadleaves such as sycamore (*Acer pseudoplatanus*) or sweet chestnut (*Castanea sativa*) [but see 3.2.5, below].

The division between semi-natural stands and plantations is not always easy to define, because there are intermediates, for example small clearings within woods, old plantations of native species, semi-natural structured stands of introduced species, planted conifer stands that now contain a proportion of self-sown native broadleaves, or semi-natural tree layers with no native understorey or improved ground floras. Therefore, a judgement may be necessary as to the balance between the planted/introduced elements versus the native/naturally regenerating elements.

For the purposes of this survey, the following definitions have also been used to help define areas of ancient woodland:

- Areas with continuous woodland cover.
- Areas managed or periodically cleared for timber or underwood production.
- Areas regenerating following woodland management.
- Open grazed areas within the woodland (at least 20% canopy over 80% of the site).

19 Peterken (1977)
20 Evelyn (1664)
21 Peterken & Harding (1974)
22 Rackham (2003)

- Temporary clearings that may have been created within the woodland complex but which have regenerated, or are regenerating, back to woodland.

2.2.3 Ancient wood pasture

Wood pasture describes woods derived from ancient pasture woodland managed for both trees and livestock or deer.[23] These woodlands are usually associated with ancient deer parks, Royal Forests or wooded common land. They frequently occur in a mosaic with other habitats and the boundaries are often poorly defined. Wood pasture was previously included on the original Inventories as ASNW where recognisable stands of trees evident on old maps remain unchanged. Parkland sites with wide-spaced trees were omitted.[24] However, the map sources used for the original Inventories were often inconsistent with only a partial coverage.

The revision of the Ancient Woodland Inventory in Wealden District, East Sussex highlighted the problems of classifying woodland sites in historically more open areas such as the Ashdown Forest and other former commons and hunting forests.[25] Some of these woodlands had been classified on the original inventory as ancient whilst others had been omitted. However, re-examination of the historic map and other evidence does not always appear to support these decisions. Study of the historical extent of these sites can reveal a complex management history with a mixed pattern of woodland, grazing and shifting agricultural use.[26] This spatial complexity and 'historical dynamism' within the woodland vegetation is a feature of many High Weald woods.

Within the revision of the Ancient Woodland Inventory for Rother, some sites were classed as a subcategory of ancient woodland, wood pasture, whilst keeping the ASNW/ PAWS split.

The following criteria were used to define the subcategory:

- Wooded today (at least 20% tree cover over 80% of the site).
- Woodland shown on the Ordnance Survey First Edition County Series maps (produced for Sussex between 1869-75), with the cartography indicating at least 20% tree cover over 80% of the site.
- Former enclosed Forest or common land as identified on the Ordnance Survey Drawings (1789-1806).

(See section 3.2.2 for a fuller description of these map sources).

Pasture woodland was therefore defined as a semi-natural habitat that has retained a wooded nature throughout recent history as documented by the above map sources. The revised inventory includes these areas and they can be readily extracted from the dataset.

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[23] Harding & Rose (1986)
[24] Spencer & Kirby (1992)
[25] Westaway (2005)
[26] Greenaway *et al* (2004)

3. Methodology and Sources

The guiding principles followed in this project are those used to compile the original inventory. The work, combining desk-based analysis, field surveys and archive research, utilised methods piloted in the Wealden district inventory revision[27] and developed in subsequent revisions to the inventory for Mid Sussex district and Tunbridge Wells and Ashford boroughs.[28]

The revision represents a complete and systematic rebuilding of the Ancient Woodland Inventory dataset for Rother. It draws heavily on the established intelligence contained in the original inventory (and its subsequent amendments) but also reappraises this information in the light of a range of, often hitherto unavailable, evidence sources. The availability of high precision digital mapping tools and large-scale historical map sources in digital format meant that, for the first time, small ancient woods (less than two hectares in size) could routinely be included in the inventory revision for Rother. Whilst the methodology aims to be systematic and robust, because of the regional scope of this research, the methods are, by necessity, desk based, with more detailed field surveys confined to a priority set of sites. The inventory is therefore inclusive, meaning that the default for borderline sites, or those for which data is lacking, is that they are retained on the inventory, thus ensuring they can be considered in future surveys.[29]

3.1 Software

The mapping of woodland in this project and much of the map research underpinning the final dataset was done in a Geographic Information System (GIS). This allows the relatively rapid comparison and combination of a variety of spatial data sources. Importantly, it also allows the editing of the dataset to a standard of spatial precision which would have been impossible to achieve within the space of time available without such technology. The GIS software used was *ESRI ArcMap 9.3*.[30] The resulting GIS database can be linked to external databases which hold more detailed site survey and archive data.

Data accrued from on-the-ground woodland survey in the project is held in a Recorder 6 database from which a report for each site outlining the main survey findings can be generated.[31] Recorder 6 is specifically designed for biological recording. It allows species observations and habitat data to be captured in an electronic format that is compatible with the National Biodiversity Network. This enables the methods of data storage to be easily reproduced and also allows easy exchange of data.

3.2 Inventory revision

The approach to mapping ancient woodland used in this project is deductive. A relatively large set of woods is first captured from highly accurate and reliable but relatively recent map evidence. This 'indicative ancient woodland dataset' is then sequentially refined and filtered by interpretation of further sources of evidence, historical, ecological and archaeological. The procedure for revising the Ancient Woodland Inventory has three interlinked elements:

1. Desk-based mapping – capture of the dataset

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[27] Westaway (2005)
[28] Westaway, *et al* (2007a); Westaway *et al* (2007b); Sansum *et al* (2009)
[29] Spencer & Kirby (1992)
[30] ESRI (2008)
[31] JNCC (2007)

2. Research on historical maps and documents – refinement of the dataset

3. Field survey work – refinement of the dataset

3.2.1 Desk-based mapping - capture of the dataset

The initial stage identified, with a high degree of spatial accuracy, that subset of the present-day woodland resource which could clearly be demonstrated to be long-established woodland. Woods of late 19th century and 20th century origin were thereby eliminated from the search.

This capture of potentially ancient woodland sites employed two key mapping elements:

- The current Ordnance Survey *MasterMap* Topographic Layer displayed over recent high-resolution aerial photographs of East Sussex.
- Ordnance Survey First Edition County Series 25 inch to 1 mile map: Sussex 1869-1875 (also referred to in this report as Epoch 1 - a term used by historians).

The first of these is the modern vector dataset from which other current OS map products are derived. It is the 'industry standard' baseline for the creation of maps and geographic datasets in the UK. The second is the earliest very large scale mapping to give a complete and systematic national coverage. It is sufficiently accurate that, following its recent digitization and georectification by a partnership between the Ordnance Survey and Landmark Solutions, it can be routinely used in a GIS environment alongside modern datasets (see Figure 1). Both maps were surveyed at comparable scales of 1:2,500 or greater and are arguably the most detailed and precise maps ever produced as a national coverage. As such, the comparison and integration of these sources provides an ideal method for the accurate capture of historic woodland boundaries – including small woods – as a first stage in revising the Ancient Woodland Inventory.

Working systematically through a grid of 500m x 500m cells covering the county, all *MasterMap* polygons visibly containing woodland on the aerial photograph were compared with the Epoch 1 maps in order to identify those areas of woodland common to both. Each woodland *MasterMap* polygon (or part of) was coded according to its presence or absence on the Epoch 1 map. This approach is flexible. If available for a given region, more layers of map evidence can be worked into the procedure. For the purposes of this mapping, woodland was defined as land with at least 20% canopy woodland over 80% of the site. Any continuous blocks of woodland were regarded as discrete sites with historical or ownership boundaries disregarded; small ponds and other open areas embedded within a larger expanse of woodland were included. Man-made linear features passing through wooded areas such as surfaced roads have generally been edited out of the polygon whereas un-surfaced tracks and natural and semi-natural linear features such as watercourses less than 10m wide have been included as part of the woodland polygon.

Woods which were depicted on the Epoch 1 map but are no longer visible (lost woods) and woods which appear in *MasterMap* and recent photographs but which are not shown on the Epoch 1 map (woods apparently of recent origin) are systematically identified in this way. The absence of a wood on the highly accurate Epoch 1 maps was generally considered sufficient evidence to eliminate it from the search for ancient woodland where it only appeared on later maps or aerial photographs. An important tenet of the methodological approach adopted was that no other elimination of woods depicted on the Epoch 1 maps was carried out based on judgement or interpretation of the map at this capture stage. Many woods shown on these maps have a modern, planted or planned appearance but may prove upon further examination (see

3.2.2) to have deeper historical origins. Premature removal of sites from the dataset would prevent any such examination being carried out.

The resulting dataset comprises a map of a particular subset of the woodland resource – the surviving portion of the woods which appeared on the Victorian Epoch 1 maps – in which woodland boundaries are both historically accurate and conform wherever possible to OS *MasterMap*. Theoretically speaking, the woods included in this dataset contain all the ancient woods in the area of interest in addition to some woods with origins in the 17th, 18th & 19th centuries (see ancient woodland definitions -2.2).

This *indicative ancient woodland dataset* was then incorporated and compared with the digital version of the Natural England existing Ancient Woodland Inventory within GIS. This allowed:

- Currently designated ancient woodland sites to be attributed to the corresponding polygons in the new Ordnance Survey *MasterMap* derived dataset subject to further confirmation of status.
- Identification and enumeration of the sites identified by the process described above as potentially new (hitherto unrecorded) ancient woodland sites.
- Potential discrepancies between the two datasets to be marked for further investigation (for example where a piece of woodland recorded on the original inventory does not appear to be shown as woodland on either the Epoch 1 map or on current aerial photographs).

A general principle has been to retain areas of previously designated ancient woodland in the revised inventory where the evidence of Epoch 1 supports this (but with boundaries now mapped to *MasterMap* standard where appropriate) and place the thrust of the research effort on assigning the correct status to the additional potential sites identified by the process described above. If incontrovertible evidence subsequently emerged in further archival and field research (see below) against an original ancient woodland designation then appropriate boundary revisions to those areas have been made.

3.2.2 Refining the dataset using historical maps

The capture stage described above yielded an indicative ancient woodland dataset comprising approximately 2,700 *MasterMap* derived polygons. This consisted of:

- 1,000 polygons of previously designated ancient woodland. This is equivalent to the 523 polygons and 7,595 ha on the original inventory.
- Approximately 1,700 polygons of potentially additional ancient woodland (wooded areas in existence since at least the 1870s) amounting to approximately 1,500 ha.

The next stage in the methodology consisted of checking this indicative dataset against the evidence of a range of historical map sources held both in traditional archives and in digital form which could be analysed in a GIS as an extension of the desk-based mapping stage (above). Not all the evidence sources consulted can be detailed in this report but the key ones are described below in reverse chronological order.

The Ordnance Survey First Edition County Series 25 inch to 1 mile maps (produced for Sussex 1869-75)[32]

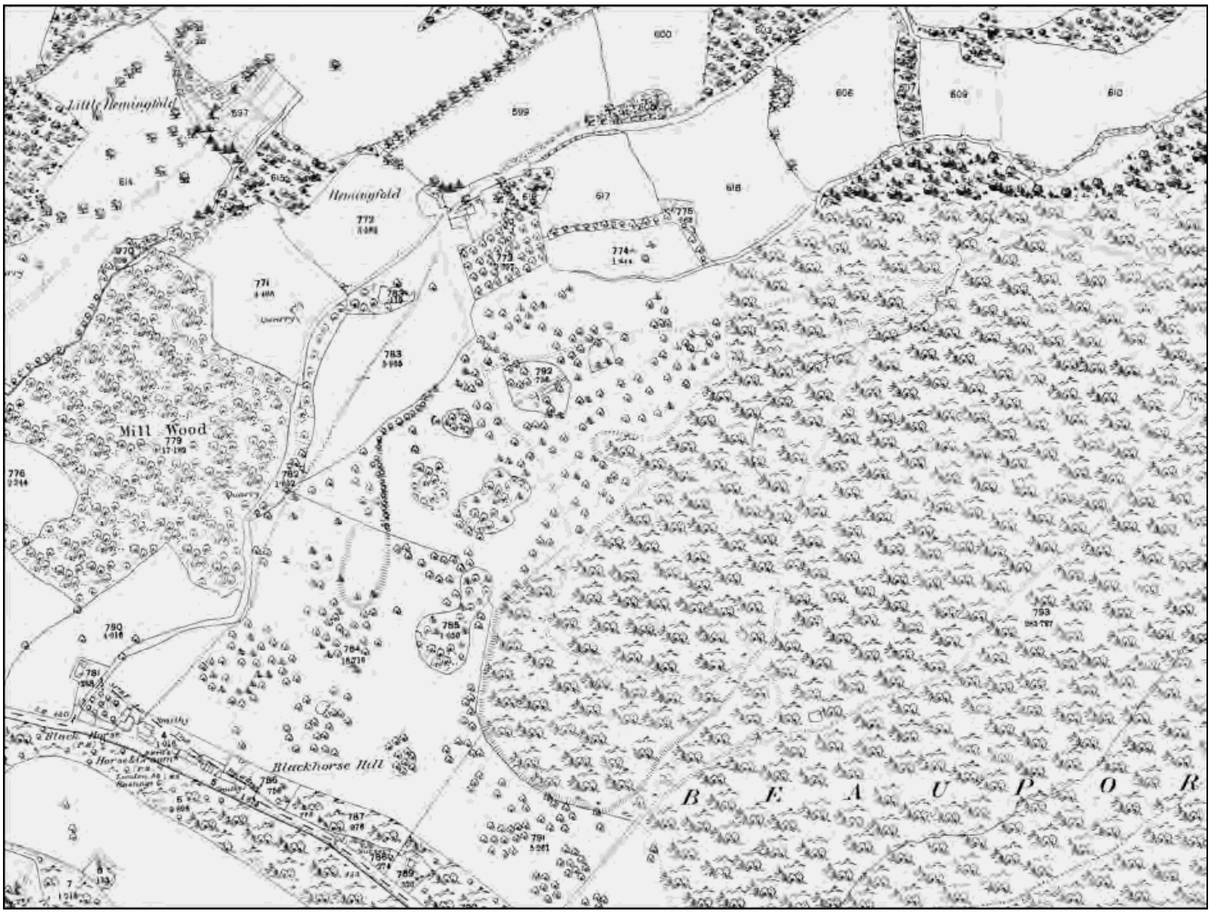

Figure 1. Example of the Ordnance Survey First Edition County Series 25 inch to 1 mile map for Sussex (1869-75) showing part of the parish of Battle around Beauport Park.

These are the digital geo-referenced Epoch 1 images used in the capture process described above (3.2.1). These maps are superbly detailed and contain a wealth of information about the woods under review beyond that of simple presence or absence (Figure 1). The engravers used an extensive palette of symbols to depict different types of woodland and scrub vegetation including, simple coppice, coppice-with-standards, high forest, plantations - mixed and coniferous, osiers, pasture woodland, parkland, etc. It is also possible to discern from these maps which woods were enclosed and which were not, as well as to see features within woods such as buildings and enclosures. In fact, the attention to nuance in the vegetation and the varying character within and among woods shown in these maps far surpasses that of modern maps and reflects the still central importance of woods and woodland produce to the rural and wider economy at the time of their production.

From the perspective of this research – attempting to identify woods which have been in existence since at least 1600 AD – the main disadvantage of Epoch 1 maps is their relatively recent date. Because of the high level of accuracy of this source, absence of a wood on these maps is considered highly significant. On the other hand, whilst more recent woods can sometimes be identified as regularly shaped enclosures or having map symbols that indicate a previous non-woodland use or recent planting, the map does not, of itself, necessarily give grounds for elimination of such sites.

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[32] Dates from the British Library: http://www.bl.uk/reshelp/findhelprestype/maps/index.html

The tithe maps for Sussex (produced from the 1834 to 1859)
Tithe Maps were produced under the direction of a parliamentary commission following the Tithe Commutation Act of 1836 when tithes in kind to the parish were replaced by payments in rental value. For this Act to be workable, a prerequisite was a consensus on ownership boundaries and the extents of properties. Furthermore, the state of cultivation of every parcel of land needed to be recorded as this determined the charges due. Of particular relevance to the use of this source for the present project is the fact that land classed as 'wood' was exempt from Tithe payment within the legal boundary of the Weald and sometimes also elsewhere. The maps provide an invaluable record of the land-use and economy of mid 19th century England[33] at the local level in the way that the Domesday Book does for the 11th century but with the important advantage of spatial precision.

The maps relating to the parishes of Rother (see Figure 2 for an example) were mostly produced in the late 1830s and early 1840s, but with some, such as Battle parish, as late as 1859. The maps for Sussex are large in scale varying from 1" to 1 chain (80" to 1 mile) to 1" to 10 chains (8" to 1 mile), though more commonly they vary between 20" and 27" to 1 mile. They show each compartment of land within the parish together with a, usually numeric, code which is indexed and listed in a bound apportionment volume detailing the owner and/or occupier, the name of each parcel of land, a description of its 'state of cultivation' and the associated rent charge calculation. The maps vary in quality and accuracy from parish to parish. The original intention of the commission was to produce all the maps to a uniformly high standard but the cost implications of this meant that there was much local variability in the results achieved and not all of the maps were ultimately given the commissioners' seal.

The modern district of Rother overlaps, either wholly or partly, with approximately 40 parish territories as they were in the 1830s. Digital geo-referenced versions of the relevant tithe maps were made available to the project by East Sussex County Council. An attempt was made to cross reference the whole of the indicative ancient woodland dataset with the Tithe Maps and apportionments both to verify ancient woodland status where this has been previously assigned and as a second filter to the potential revisions to the inventory identified on the Epoch 1 maps at the capture stage.

97% of the polygons were checked in this way. The remainder fell in areas where parts of the map in question were unreadable, missing or damaged or the corresponding number in the apportionment volume was missing or illegible. The apportionment volumes for the East Sussex Tithe maps have recently been transcribed by volunteers and staff at East Sussex Record Office, Lewes. Digital transcriptions of most of these were purchased for the project with the remainder being examined from the original documents at the record office.

These maps possess similar advantages and disadvantages, in terms of the survey, to the Epoch 1 maps – namely, accuracy (usually – see above) and a high information content on the one hand and on the other, the lack of antiquity ideally needed to demonstrate that a wood depicted is truly ancient. However, the production of these maps only a few decades before Epoch 1 does not detract altogether from their usefulness as an evidence source in this exercise. The tithe maps come at an opportune moment in the history of the region's woods, at the beginning of the Victorian period during which woodland produce would reach unprecedented heights in its economic value (prior to a decline of equal proportions in the later 19th century and early 20th century). Consequently, the first half of Victoria's reign was a time of considerable change for

[33] Kain & Prince (1985)

Figure 2. Example of a Tithe Map – Battle Parish (1859). This figure shows the same area of the parish of Battle as Figure 1. Land parcels are inscribed with unique numbers, which relate to a book of apportionments listing the owner, extent, state of cultivation and payments due. Note the richness of information relating to small compartments of woodland amongst the working fields of the farms to the north and west of this image. However, this detail is not duplicated in the then recently laid out area of Beauport Park depicted to the right of this image. Although many treed areas existed within this designed landscape – these had become features within a largely ornamental park which, for the purposes of calculating rent charges in lieu of Tithes, was classified simply as 'pasture'.© E.S.R.O

wood resources both in the style and efficiency of management and the proportion of the land given over to managed woodland.

Many woods, or parts of them, appear to have their origins in this period or in the decades immediately before. Examination of the Epoch 1 and *MasterMap* derived polygons in the light of tithe map evidence often resulted in further edits to the polygons being made, for example where part of a wood was shown to have been a field or plantation in the 1830s. Following a complete check of the polygons from the capture stage, 3% of the area of woodland in the indicative ancient woodland dataset was recorded as some other land-use than woodland at the time of the tithe survey – generally pasture, arable or meadow. Most of this land was distributed among the small (< 2 ha) polygons not mapped in the original inventory; in numerical terms 14% of these potential new sites fell into this category (i.e. not woodland c.1840). A further 53 polygons within the indicative ancient woodland dataset were identified which were classed wholly or partly as 'Plantation' in the Tithe survey. These were evenly distributed among the potentially additional ancient woodland sites and the sites designated ancient woodland by the original inventory.

Following corroboration by other sources many of these sites could be eliminated from the dataset. The Tithe Maps represent a very valuable tool for refining the inventory.

Ordnance Survey Drawings, 2 to 6 inches to 1 mile (produced for East Sussex 1789-1806), prepared for the First Edition Ordnance Survey maps[34]

The Ordnance Survey Drawings and drafts (see Figure 3 for an example) are the manuscript maps upon which the first fully triangulated large scale published maps of southeast England were based. The printed maps, referred to as the 'Old Series,' were published for Sussex in 1813. This endeavour was a military response by the English government to the Napoleonic threat of invasion from across the English Channel. It was undertaken by the Board of Ordnance (a body something akin to the modern Ministry of Defence) from which the Ordnance Survey takes its name. Work on the preliminary drawings for parts of the county corresponding with modern Rother district began in 1789 with the work complete by 1806.[35]

The most detailed drawings were made at a scale of six inches to the mile in areas of military importance. Particular attention was paid to rivers, roads, woods that could provide cover or obstruction and the contours of hills. Elsewhere, the maps were drawn at smaller scales - sometimes as low as two inches to the mile. The data from these drawings was reduced and standardised in order to produce the published 'Old Series' maps. These maps were drawn at a scale of one inch to the mile. The printed maps therefore had an attendant loss of information and simplification in the depiction of features, for instance, the straightening of woodland boundaries, the truncation of tapering gills and other linear woodland shapes and the removal of smaller woods.

The original drawings are held by the British Library, and geo-referenced scans of these data were used to supply coverage of Rother district. The images were examined along with the tithe and Epoch 1 data using GIS software. Most of the relevant information is contained on five overlapping sheets of varying size. Where maps overlap, woods may be served by two or more drawings whilst some small areas have no surviving coverage. Individual sheets were often produced by different surveyors and map styles and dates vary accordingly. The level of accuracy also varies greatly, with the finest sheets depicting, very precisely, woods as small as an acre (or 0.4ha) in size but with the poorest sheets coarse and distorted with little information on small woods.

Absence of a wood from these maps cannot be taken as proof of woodland not existing at this time. Some of the sheets represent early drafts of other sketches. Comparison between drawings sometimes reveals woods which are present on one version but not the other and comparison with estate maps (below) of similar age sometimes reveals the surveyors' apparent omission of sizeable woods. The experience of the research in Rother and in neighbouring districts of the Weald seems to suggest that while enclosed woods containing significant timber would generally be accurately depicted, simple coppices (without standards) such as low-lying alder beds, parcels of brushwood and the narrower of the gill type woods are often omitted. Similarly, where steep ground is occupied by woodland or scrub, the surveyors have often placed priority on conveying the physical relief the land, above depiction of the vegetation cover. In other places the surveyors' 'preoccupation with the lie of the land'[36] and use of dense hachuring to indicate steep topography obscures other coincident features.

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[34] Dates sourced from the British Library website: http://www.bl.uk/onlinegallery/onlineex/ordsurvdraw/

[35] ibid

[36] British Library website: http://www.bl.uk/onlinegallery/onlineex/ordsurvdraw/t/002osd000000016u00330000.html

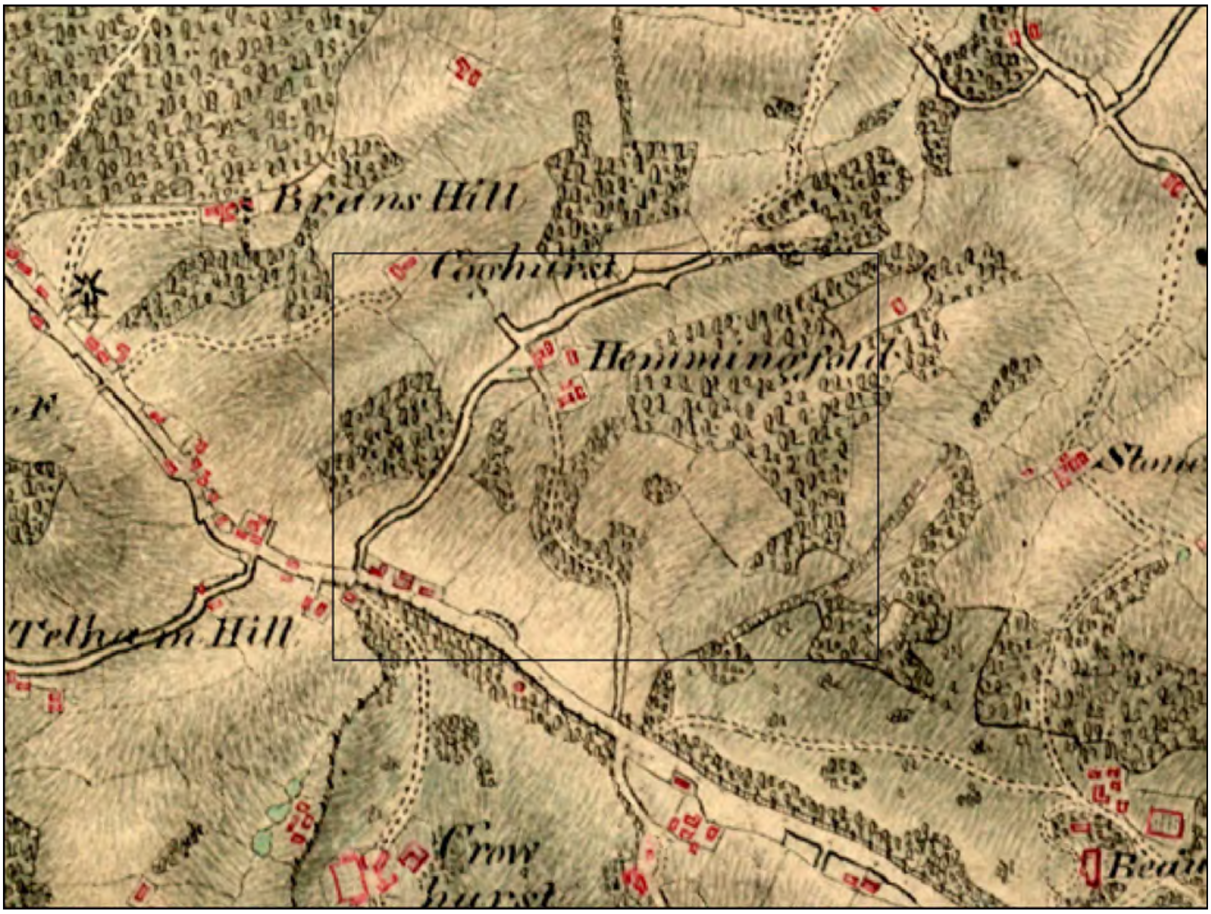

Figure 3. Example of an Ordnance Survey Drawing (produced in pen and ink on paper at 2 inches to 1 mile in 1806) showing part of the parish of Battle around Beauport Park. The rectangular line helps to provide a comparison between this map and the larger scale maps shown in Figs 1, 2 & 5. ©British Library

The suggestion has also been made that woods which had recently been cut were simply overlooked by the surveyors or that they mistook recent woodland harvesting for conversion to agriculture[37] (an error which sometimes occurs in modern map making). Large woods managed in the traditional way by coppicing would tend to be divided into a series of compartments harvested on a cyclic rotation. Such woods would perpetually contain some conspicuous growth and be visible as woodland. Small woods however, were sometimes harvested in their entirety, with a dispersed group of copses across a farm or larger estate each acting as a felling compartment within the coppice rotation. At the time of the first Ordnance Survey most, if not all, woods would have been actively managed. At any one time then, a relatively large proportion of small woods may have been at a low and inconspicuous state of growth.

We should not expect to see every small wood depicted on these maps. However, where woodland is recorded these maps are considered to be reliable and give a strong indication of possible ancient woodland status when this is supported by the context of the site and the evidence from other sources. Following the approach of the original AWI,[38] which utilised the smaller scale printed version of this source (see below), a presumption in favour of retaining those woods shown on these maps (as provisionally ancient woodland sites) has been made.

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[37] Hodson and Campbell (1989)
[38] Whitbread et al (1989)

As for the tithe maps (above), the whole of the indicative ancient woodland dataset for Rother was systematically cross-referenced with the Ordnance Survey Drawings. Approximately 52% of polygons were shown wholly or partially wooded. In terms of total area, a much larger proportion, 88% of the indicative layer, was shown as wholly or partially wooded. 45% of polygons were not depicted as with tree cover at the time the maps were drawn, but in terms of area this represents only 11% of the woodland extent in the indicative dataset. This illustrates the skew towards the depiction of larger woodlands in the drawings. The average polygon size for sites that were illustrated as wooded was 5.98 ha, compared to 0.9 ha for sites that were not depicted with trees. A small number of sites (about 2% of the total polygon number) could not be analysed because the maps were too damaged or faint to interpret or coverage was lacking.

Ordnance Survey First Edition, 1 inch to 1 mile, 1813[39]
In spite of the disadvantages of using this map to identify ancient woodland rather than the larger scale drafts produced in its development (discussed above) this source is not to be ignored completely. A copy of Sheet 5 of the Ordnance Survey First Series Map was obtained and geo-referenced for the purpose of the project and consulted alongside the other map sources when required. Although it represents a 'loss of information' relative to the drawings it also represents the definitive distillation of an immense body of work and the Ordnance Survey's final decision on what should and should not be mapped at the time. Occasionally the 1813 printed version depicts woods which are not shown on earlier drawings (although the number of woods shown on the drafts is far greater).

Yeakell & Gardner, 2 inches to 1 mile, 1778 – 1783[40]
Yeakell and Gardner originally intended to survey the whole of Sussex in eight sheets. However, a lack of subscriptions and the deaths of several sponsors meant only four sheets were published. These sheets correspond to the southern part of the county (they extend to 50°56'30" north) and therefore cover only the southern half or so of Rother district.

This map was the first, large scale, detailed plan of Sussex that used triangulation. This meant that actual field boundaries, rather than diagrammatic illustrations could be drawn. The surveyors also claimed to illustrate 'every inclosure, however small …every road, public and private… the rivers, with their bends, fords and bridges'.

The 'Great' or 'Large' survey maps, as they were referred to, are comparable in style and method to the later Ordnance Survey Drawings and the problem of the depiction of topographic relief obscuring some of the finer details, discussed above, is especially apparent when using this map to research woods lying in the steeper valleys of the district. Nevertheless, they are of great value in allowing the evidence base for a large number of sites to be extended into the 18th century period when large scale map evidence for woodland continuity becomes scarcer. They provided a very useful point of comparison with the OSDs, especially where the information given by the latter was unclear, for example where land-use was difficult to interpret or where distortion in the original triangulations and lack of detailed information on field boundaries made sites difficult to trace with confidence.

Of the approximately 900 sites referenced against this source 67% were shown as woodland and 20% were shown without tree cover. The remainder fell in areas of the map where the quality was insufficient to interpret status with any confidence.

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39 http://visionofbritain.org.uk/maps/
40 Yeakell & Gardner (1778-83)

Figure 4. Detail from Yeakell and Gardner's Map for the area of Battle parish shown in the previous figures. The rectangular line is to aid comparison between this map and the larger scale maps shown in Figs 1, 2 & 5. The density of detail exceeds that on the OSD for this part of Sussex with a more accurate portrayal of field boundaries and the positioning of small woods attempted. However, this detail is not always straightforward to interpret, the distances and angles are frequently distorted and the map covers only part of the study area.[41]

Estate maps

In the later Tudor period the production of detailed estate maps in England became increasingly common[42]. This was precipitated partly by an increasing interest in lay lands in the aftermath of the dissolution of the monasteries. Another significant factor in the development of map-making at this time was technological innovation. The use of the theodolite for triangulation from 1570 onwards (rather than the less satisfactory trigonometry produced by the 'plane table') resulted in increasingly accurate maps. Medieval cartographers had often relied on tradition, reputed area and local wisdom for their information. The introduction of a standard length chain in the early 17th century meant that units of measurement increasingly became standardised[43].

East Sussex and the district of Rother are blessed with a rich archive of estate maps belonging to the period of interest (before c.1800 when accurate and standardised county wide maps begin to appear – see above)[44]. These are of great value in determining the status of individual woods and the project has aimed to exploit this evidence source to refine the inventory where possible (see Figure 5). The majority of the material consulted is held by the East Sussex Record Office

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[41] Yeakell & Gardner (1778-83)
[42] Harvey (1993)
[43] Hull (1973)
[44] Steer (1962)

(ESRO) at Lewes but there is some relevant material deposited in the Kent Archives in Maidstone and a small number of estate maps reproduced in secondary form elsewhere were also used. Pertaining, as they do, to a dispersed array of landholdings, some as small as three or four acres, across the district they do not give a complete coverage and their study is time consuming and not always fruitful. Whether a map is relevant to the woodland sites targeted for research is often not evident until it has been examined, sometimes at length. The maps naturally vary significantly in their quality and accuracy. Each map must be interpreted on its own merit and with an awareness of its possible original purpose.

The approach to this body of information was to systematically comb the ESRO 'terrier sheets' (6 inch modern OS maps with archivists' annotations which show the extents, dates and catalogue reference numbers of estate maps held in the archives) in order to generate a list of maps covering areas relevant to the sites in the indicative dataset. This search concentrated on maps dating from the period 1590-1800, given the fairly good information already available on the 19th century landscape described above. The resulting list contained references to approximately 330 documents. About 75% of these had been photographed by ESRO and were available as digital images. These were obtained from ESRO and geo-referenced for analysis alongside the other map sources in the project GIS. The remaining documents were examined at the record office using paper maps for comparison and any relevant details were entered into the GIS data-table as supporting evidence.

Decisions on the status of c.60% of the total number of polygons (or 75% of the total area of woodland) in the indicative ancient woodland dataset could be informed in this way with reference to estate maps. The earliest map used was dated 1600 and all were dated before 1840 which corresponds to the median date of the Tithe maps – the oldest large scale mapping which could be used to systematically inform decision making on the smallest sites across the whole study area..

It should be noted that there are likely to still be other historical documentary resources of relevance to the inventory of Rother's ancient woodland resource. Estate papers describing woodland management, deeds, charters, leases etc have not been investigated due to the practical time constraints on production of the dataset. For the same reasons information in the privately held archives of landowners has not been used in the current project.

Figure 5. Detail from an estate map of c.1770 showing a farm which was formerly part of the Battle Abbey estate. The area shown corresponds to that in the earlier figures, but note that the pattern of land-use on neighbouring farms is not illustrated. The numbers and letters in each land parcel correspond to an accompanying schedule of field or wood names which gives their extent and current usage. This information helped discern the pattern of ancient woodland within the modern Beauport Park, an area which, subsequent to the production of this estate map, would see extensive changes in the landscape. BAT 4430 © E.S.R.O

3.2.3 Other evidence sources

This revision of the Ancient Woodland Inventory was primarily a mapping exercise supported by research on historical maps and field survey (see below), and evidence from these sources was given the greatest weight. However, there are important additional factors which are brought into interpretations of woodland status during the decision making process. These include:

Place names

The attraction of historic place names is the link they speak of to features in a past landscape for which we have no description. Unfortunately place-name scholars often disagree as to the true meaning of a name, with some assigning quite different topographic associations to the same term. They can however, with caution, be used as a guide to help reconstruct the landscape.[45] For example 'leah' or 'ley' refers to a woodland glade or clearing, 'den' to a woodland swine pasture and 'hyrst' or 'hurst' to a wood or a grove especially one on a hill.[46] The disadvantage is that many topographic place names probably relate to features which were atypical, and therefore

[45] Brandon (2003)
[46] ibid., and Rackham (2003)

distinctive, rather than describing the general situation. Hence, when the term hurst, originally applied to a small and distinctive hilltop grove, is later transferred to the general area of the hill, it does not necessarily support ancient woodland status for sites in the vicinity.

Wood names can also help to identify non-ancient woods. 'The plantation' or 'The Grove' for example, may indicate more recently planted woodland particularly where the site is associated with a large house and/or on cultivable land. However, a large degree of caution should be exercised because names change over time and 'The Plantation' might well occupy the site of a pre-existing wood.

Woodland shape and situation in the landscape

Larger ancient woodland sites often survive on parish boundaries or follow steep inaccessible topography such as the slopes down to a gill or the land surrounding old iron extraction pits. The boundaries of intact older woodlands are rarely straight and often follow natural features such as streams. Surviving fragments of historically larger woods, however, often do have straight margins where their modern boundaries have been chased back to the limits of viable cultivation by successive agricultural improvements.

3.2.4 Refining the dataset through field survey

On completion of the capture stage (3.2.1) and in tandem with historical research (3.2.2) a priority set of woodlands was identified for ground survey. These sites were selected in consultation with Rother District Council and were generally situated in areas of potential growth and development or where other activities potentially impinged on woodland. Survey site selection was further informed by the emerging historical evidence for woodland status and sites were prioritised where this evidence was weak or ambiguous.

The field surveys were carried out between April and August 2008 and 2009 in order to facilitate the recording of ancient woodland indicator plants. The survey aim was to make a quick assessment of each site recording the key information needed to aid in the identification of ancient woodland. The methodology was broadly in keeping with the 'walk-about' survey recommended by the Nature Conservancy Council for rapid assessment at the time of the original inventory work[47] whereby the boundaries of the site are walked and confirmed and the interior of the wood is traversed with the objective to ensure that all the major sources of variation likely to be on the site are seen (i.e. woods are not surveyed by quickly looking at just part of them unless there is good reason to believe that the part selected is representative of the whole). Emphasis was placed on recording the following:

- A list vascular plant species.

- Living evidence relating to the past management of a wood, for example, coppice structure, aged coppice stools, veteran trees or pollards.

- Archaeological evidence relating to the past management of the site such as saw pits, charcoal hearths, drainage systems, old banks, mineral diggings, etc.

- Physical features indicating a previous agricultural land use, such as ridge and furrow plough markings and lynchets.

[47] Kirby (1988)

- Historical boundary features, such as wood banks, stubbed trees or outgrown laid hedges, delineating the wood.

- Current uses or factors causing disturbance or damage to the wood.

- Structural and habitat diversity, presence of dead wood and the presence of streams and ponds following natural courses and depressions.

These features can all provide evidence of past land use and so help determine ancient woodland status. For example:

Wood banks
Distinct wood banks are characteristic indicator features of lowland ancient woodlands (though far from all ancient woods are enclosed by such banks). A wood bank consists of an earth bank, often though not always with an associated ditch, constructed at the boundary of the wood or demarcating compartments within it. Very ancient wood banks tend to be massive and asymmetric in form, and follow sinuous lines around obstacles at the wood's edge. Post medieval and modern wood banks are often straighter and lower. These banks, which were made to keep out both grazing animals and human intruders and possibly served as conspicuous displays of control and ownership, would in most cases have been topped by a hedge or fence.[48]

Ancient woodland indicator species
The presence of these vascular plant indicator species can aid in the identification of ancient woodland, and ancient woodland sites tend to be richer in terms of their species composition.[49] However, care is required as other factors affect the presence and abundance of these species. These factors include the area of the wood, the time of year of the survey, the diversity of habitats within the wood, soil type, and the position of the woodland relative to other wooded areas. Current uses, including disturbance, damage or invasive species may also influence species diversity and the time spent surveying will affect the number and abundance of species recorded as well as the likelihood of other features being recorded.

Lists of vascular plant species strongly associated with ancient woodland sites known as 'indicators' have been compiled for different geographical areas of the British Isles. These lists are based on the occurrence of species in known ancient woodland sites.[50] The South East list used in this revision is shown in Appendix 1a.

3.2.5 Deciding on ancient semi-natural or replanted ancient woodland status

The Forestry Commission's National Inventory of Woodland and Trees (NIWT)[51] was used as the core dataset to redefine the boundaries of PAWS and ASNW. This dataset is based on interpretation of aerial photography; it classifies woodland into broad categories including broadleaved, coniferous and coppice woodlands. Boundaries were then further refined using aerial photography, the existing AWI boundaries, Ordnance Survey *MasterMap* boundaries and the results from survey work.

The reliance on aerial photography for identifying PAWS means that there are inevitably some inaccuracies in the classification, for example, in distinguishing between mature broadleaved

48 Rackham (2003)
49 Hornby & Rose (1986), Rose (1999) and Rackham (2006)
50 Kirby & Goldberg (2006)
51 Smith (2000)

plantations and stands of semi-natural woodland. Ancient Semi-Natural Woodland was used as the default classification where it was not possible to determine the woodland type. The extensive areas of sweet chestnut (*Castanea sativa*) coppice in East Sussex & Kent make this crop, as a broadleaved non-native species occurring in large stands present a particular issue. The approach to sweet chestnut taken in the survey is described below.

Sweet chestnut

Sweet chestnut (*Castanea sativa*) is a non-native species, widely planted in woods in Kent, Sussex, and Surrey. As such, the significant presence of sweet chestnut in an ancient woodland should lead to its definition as PAWS. However, Hutton, considering this issue in the 1990 report on the provisional Ancient Woodland Inventory for Kent[52], provided the following comments:

> It is thought that sweet chestnut was introduced to Britain in Roman times (Rackham, 1980). Evidence that it persisted through the Dark Ages comes from the Anglo-Saxon's knowledge of the tree and from the nature and distribution of mediaeval records. By the 13th century many records specifically mention chestnut in woods which were well away from habitation. Records from the Forest of Dean and from Sittingbourne state that it was accompanied by oak and beech with which it can still be found in the same stand today, e.g. in Ellenden Wood near Canterbury. This association of chestnut with what were then the typical trees of very acid soils shows that it did not depend totally on where growers had put it.
>
> On the basis of this historical 'naturalisation' of sweet chestnut in the woods of the county, and of the present character of known ancient woods in which sweet chestnut comprises a major component of the woodland community, some sweet chestnut coppices have been included in the semi-natural category of the inventory.
>
> Many formerly mixed coppice stands have been interplanted with sweet chestnut, and the stumps of existing native trees and shrubs treated and killed. This type of management results in a dense monoculture of sweet chestnut coppice which, in many cases, has the effect of suppressing the semi-natural flora. Where the later planting of sweet chestnut in ancient woods is known to have resulted in a marked suppression of the semi-natural underwood and ground flora, such woods have been recorded as replanted.
>
> The information so far gathered in this inventory is insufficient to identify all sweet chestnut coppices where the semi-natural vegetation has been suppressed and the extent of ancient woodland in the county which should be recorded as replanted may, consequently, have been considerably underestimated.

Hutton's comments in the last paragraph above remain true for this survey in East Sussex. Sweet chestnut was only identified in the woods included in the field survey, and these only represented a small proportion of all the ancient woodlands in Rother district. Within the surveyed woods, a judgement was made on whether the presence of sweet chestnut meant that the wood should be considered as ancient replanted.

For the remainder of the ancient woodlands greater than two hectares, the definition of ancient replanted, or PAWS, was based on an analysis of the Forestry Commission's National Inventory of Woodland and Trees (NIWT), which defines all woodlands greater than two hectares into categories such as broadleaved, coniferous, mixed, and coppice[53]. However, the NIWT is likely to include sweet chestnut predominantly in the coppice or broadleaved categories, so this analysis will not help identify sweet chestnut plantations as ancient replanted areas. For ancient

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[52] Hutton (1990)

[53] Smith (2000)

woodlands less than two hectares, a judgement on ASNW or ancient replanted status was based on an interpretation of aerial photographs. This approach also did not usually enable specific identification of sweet chestnut plantations. As a result of these factors, the area of ancient replanted woodland in this revision of the Ancient Woodland Inventory is likely to be an underestimate, as it is was in the original inventory report in 1990.

However, it should also be noted that there has been a considerable amount of PAWS restoration work in the High Weald since the NIWT was published in 2000, not least as a result of the Defra/Forestry Commission 'Keepers of Time' policy in 2005.[54] This encouraged the re-establishment of broadleaved tree cover on ancient woodland sites. It has not been possible, within the resource constraints of this survey, to identify all areas of PAWS restoration that have occurred since the last inventory was published in 1989 and indeed restoration management within woodland is a gradual process so that many sites are currently 'intermediate' in status. To some extent, ongoing restoration of coniferous woodland may partially offset the underestimation of the true PAWS area discussed above. The area and configuration of PAWS shown in the results of this survey should therefore be taken purely as indicative of extent and approximate location (and not, for example, as site based management planning information).

3.2.6 Minimum size of a wood to be included in the inventory revision

The lowest size of woodland polygon considered for inclusion in the revised inventory was generally 0.25 ha, making it directly comparable with the Forestry Commission's NIWT. However, each wood is considered separately and factors such as the location and historical extent of the woodland mean that some woods under 0.25 ha may be included. This allows these woods to be considered when looking at the whole habitat matrix. Querying the GIS dataset's attribute table will allow a size restriction to be imposed if required.

3.2.7 Ancient woodland status

It is recognised that a largely desk-based exercise will always be flawed and ideally ground survey work would be undertaken in every wood. Due to time and financial constraints it was only possible to ground survey a proportion of the woodlands, so the decisions for the majority of the sites were based on map and archive research data. Whilst every effort has been made to make this revision as accurate as possible, the inventory is still regarded as provisional, as new evidence may come to light in the future that challenges the ancient woodland status of a site.

Such information, when provided to Natural England, will be considered and a decision taken on whether a site should be removed or added to the inventory. Nevertheless, although the revised inventory is described as provisional, the survey's methodology, with the use of both desk-based and field work, and the use of digital mapping technology, mean that the project represents the most detailed and thoroughgoing update of the inventory yet undertaken.

[54] Defra and the Forestry Commission (2005).

4. Results

The results of the Ancient Woodland Inventory revision are primarily stored in digital format. Natural England will incorporate the final dataset for Rother into the national Ancient Woodland Inventory. It will also be available to download from www.magic.gov.uk in due course. The revised map boundaries are shown at the end of this report. Survey data will be held by Natural England and the Sussex Biodiversity Record Centre and will be incorporated into the East Sussex county dataset of biological records.

4.1 The ancient woodland resource

The total amount of all woodland (ancient and recent) within Rother district, as recorded in the Forestry Commission's National Inventory of Woodland and Trees (2000), is 9,751 ha (Table 1). This amounts to nearly 19% of the district's area, and as such more than doubles the England average of 8.4%.[55] In terms of absolute area, Rother has the sixth greatest area of woodland in a local authority area in the South East region[56].

4.1.1 Extent of ancient woodland

The original AWI contained 7,595 ha of ancient woodland, covering 14.65% of the district's area. The revised inventory contains 8,055 ha of ancient woodland and now covers a little above 15.5% of the district's area, an increase of roughly 0.9%. The woodland area removed from the original inventory amounts to 780 ha. The additions to the area of ancient woodland were greater in aggregate than the areas removed (the revised inventory identifies some 1240 ha of woodland not recorded in the original inventory). The net gain in provisional ancient woodland area across the district is 460 ha (see Table 1).

The 780 ha loss from the original inventory was due to a combination of inaccuracies and imprecision in the initial mapping process, conversion of ancient woodland to other land-uses since the original inventory was compiled (together c. 570 ha) and misattribution of some woods or parts of woods in the original inventory (c. 210 ha). These areas were removed following re-alignment of boundaries with OS *MasterMap* and Epoch 1 maps (c.1870), using recent aerial photographs as a reference, and re-examination of the historic map evidence. Figure 6 gives an illustration of a single polygon - comparing the original inventory with the revised boundary – where the revision of the inventory has resulted in a small loss of ancient woodland area. There are a number of components to the revision of a boundary of an existing ancient woodland polygon. These involve both the removal and addition of small 'slivers' of land where the old paper-based plotting is at variance with OS *MasterMap* digital data as well as the correction of obvious digitisation errors (such as the inclusion of a field in the Figure 6 example). The large scale maps used in the current project also allow the better representation of intricacies in the ancient woodland boundary which could not be accurately plotted in the past. Because of the way the original inventory boundaries was traced from smaller scale maps and later manually digitised in order to 'capture' rather than precisely plot the woodland boundaries, previously designated woods typically undergo a slight shrinking of area during the digital revision process. When this is extrapolated up to district-scale this effect can amount to a significant area of woodland. In the Rother revision this was the case with the editing process identifying

[55] Smith, National Inventory of Woodland & Trees

[56] Based on analysis of the Forestry Commission's National Inventory of Woodland and Trees (2000) by Patrick McKernan, Forestry Commission, and Philip Sansum, High Weald AONB Unit.

approximately 7,500 small mapping precision errors and digitisation errors (see Figure 6), the average size of which was 0.076 ha.

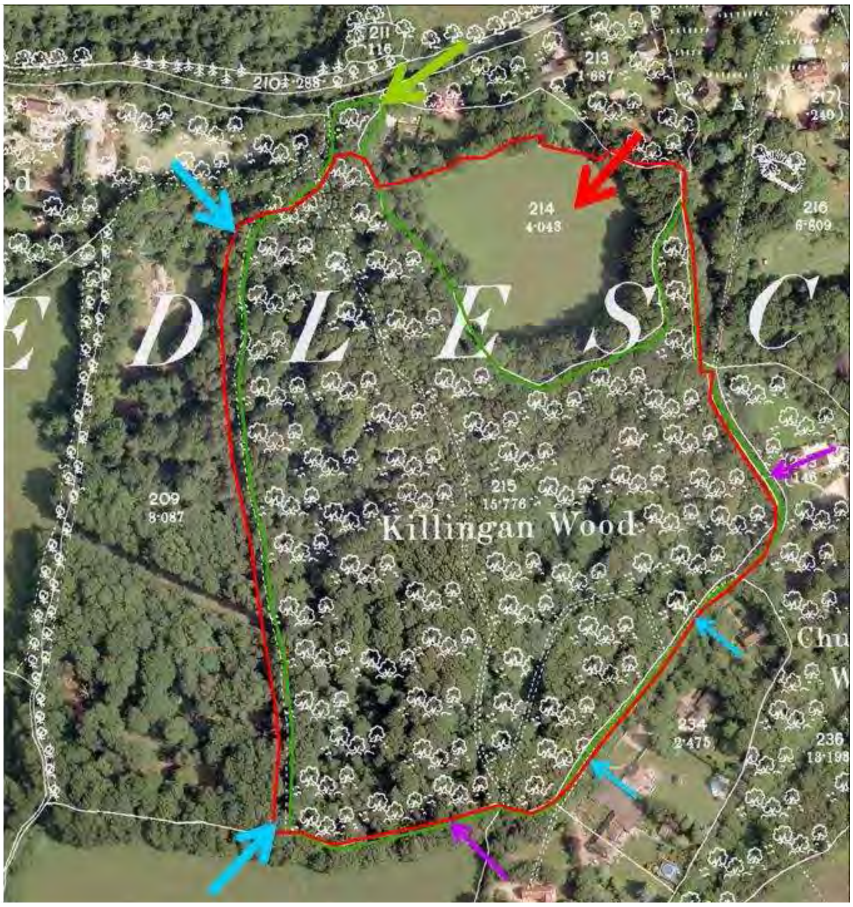


Figure 6. An illustration of how the revision process changes the area of ancient woodland in the inventory: Killingan Wood, Sedlescombe. This wood was included on the original inventory but the use of GIS, large scale maps and digital map data from the Ordnance Survey allowed its boundary to be drawn more precisely and accurately. The process also identifies and corrects errors made in the earlier manual digitisation of the original inventory. Here a recent aerial photograph is shown with the Ordnance Survey First Edition County Series 25 inch to 1 mile map for Sussex (1869-75) superimposed.

The most significant areas of removal of currently wooded land from the inventory occurred on sites overlying the Ashdown Sands where heathy ground, meadow or pasture had formerly existed in complex mosaic with ancient woodland, for example at Darwell Wood (TQ703200) and Brede High Wood[57] (TQ793200). The more detailed historical map sources available to the current project allowed the intricate patterning of recent and ancient woodland sometimes found on such sites to be discerned with greater confidence than previously. The sites thus affected generally still contain significant ancient woodland resources and many of these losses have been accompanied locally by the addition of small woods and shaws in the immediate vicinity.

The revised ancient woodland area includes about 800 new woodland parcels, or 1,240 ha of woodland not previously on the inventory. The average size of the additional parcels of woodland was 1.55 ha. The average size of woodland parcel in the revised inventory is 6.08 ha. As would be expected, the majority of the additions to the inventory fall into the sub 2 ha size classes (Figure 7) but the number of woods in the 2-5 ha size class has doubled. Some of these are genuinely 'new' sites but many have been formed by the breaking up of larger woods into

[57] Bannister (2009)

smaller units with the more precise mapping of neighbouring but non-contiguous woodland parcels that use ofMasterMap has brought to the inventory.

Table 1: Summary of the woodland area and number of separate woodland parcels from the National Inventory of Woodland and Trees (NIWT, Forestry Commission, 2000), the original AWI (digitized version, 2000), and the revised AWI (2010). All areas in ha.

	Area	**% of the district**	**Number of woodland parcels**	**Average area of woodland parcel**
Rother district	51,828			
All woodlands (NIWT) >2 ha	9,751	18.81	487	20.02
Original AWI (woods >2ha)	7,595	14.65	523	14.52
Revised AWI (including woods <2ha)	8,055	15.54	1324	6.08
Overall ancient woodland gain – compared to Original AWI (2000)	460	0.89	801	

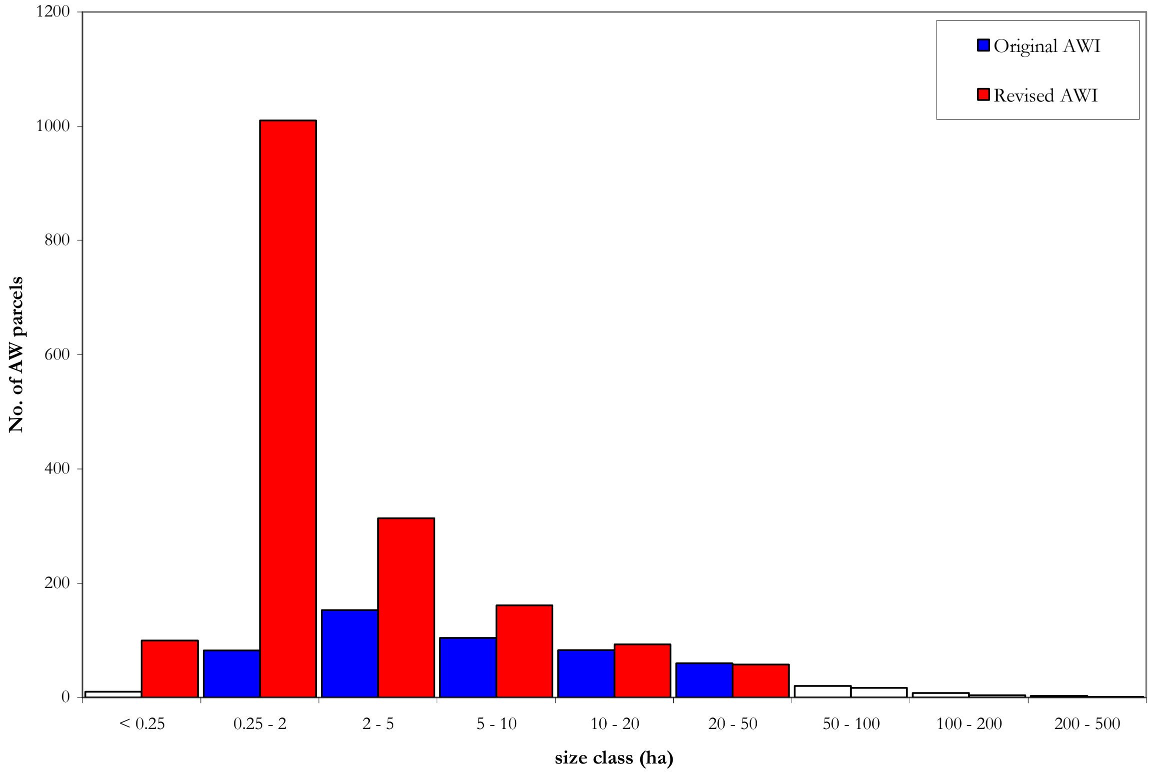


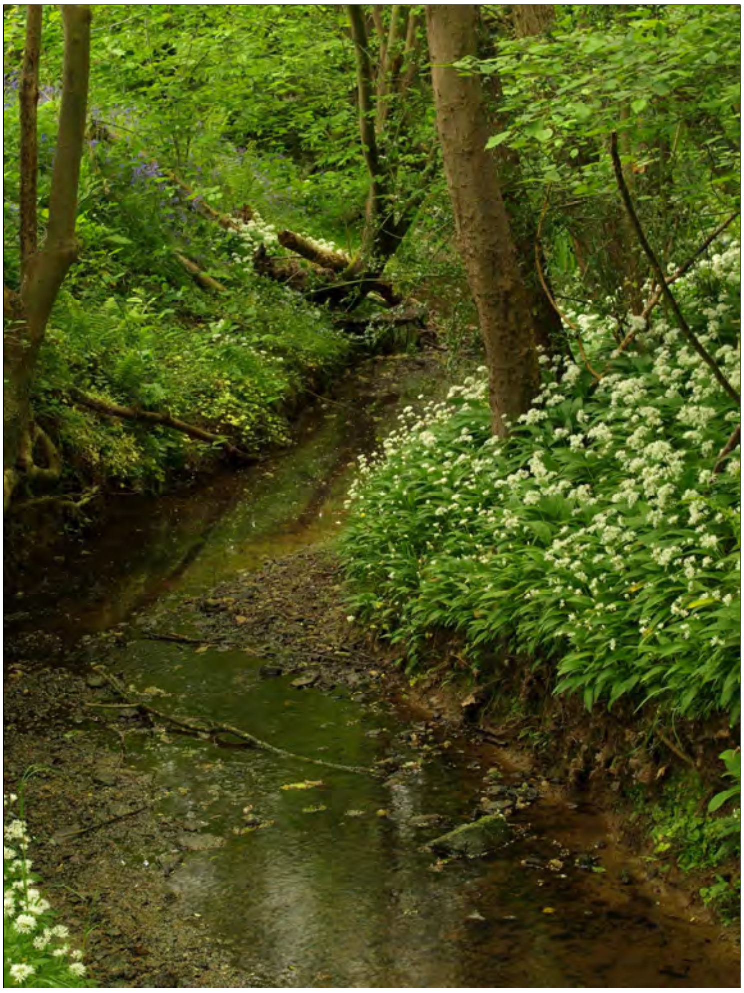
Figure 7. Histogram of the size class distribution for the original and the revised Ancient Woodland Inventories.

4.1.2 Plantations on Ancient Woodland Sites

In the revised inventory, 69% of the ancient woodland area is recorded as ancient semi-natural, with an area of 5,559 ha (Table 2). However, as discussed in section 3.2.5, the area of replanted ancient woodland, or PAWS, may be an underestimate, given the difficulties in identifying areas of sweet chestnut plantation from map and aerial photograph analysis.

Table 2: Ancient woodland types (areas in hectares).

Ancient woodland type	Area (hectares)	% of ancient woodland area
Revised AWI -ASNW	5,559	69
Revised AWI -PAWS	2,496	31
Total:	8,055	



Photograph 1. A narrow shaw forming the boundary between fields in Salehurst., Rother. Though only a few metres wide the damp woodland formed around a steeply cut winding stream is buffered from the conditions on the nearby farmland. When viewed individually on smaller scale maps such sites may appear insignificant or even invisible but this underplays their scenic and ecological significance in the landscape. Although less than 2 hectares in size the site supports good examples of semi-natural woodland communities and hosts at least 27 ancient woodland indicator species. In spite of its steep topography and small area the wood – and most others like it – was historically a valued farm resource managed as coppice.

4.2 Results from the woodland survey

A proportion of Rother district's woodlands were surveyed for this project. This was primarily for the purpose of refining the inventory by confirming the ancient status of some sites and eliminating others which proved to be of recent secondary origin. The surveys also allowed the collection of a small dataset giving information on the current character and condition of woods in the district.

The sites surveyed comprised 101 polygons (prior to further splitting and refinement based on differences in condition and status) amounting to approximately 180 ha of woodland. Approximately 70% of this area (or two thirds of the number of polygons) was accepted as provisional ancient woodland on the basis of the field survey data interpreted alongside the other historical information available (Photograph 1). The average size of these woods was 1.7 ha. The remainder of the surveyed area was judged to be of recent secondary origin or else too degraded to be defined as ancient woodland and thus eliminated from the inventory.

In addition to the formal survey, a further 114 sites, amounting to 140 ha of woodland, were visited during the course of the project, but outside of the optimum field survey season, for the purposes of rapid assessment to aid in the decision making process. These were dispersed across the district and were mainly sites where the historical evidence was too poor to allow a decision to be made on ancient, or otherwise, status. 39% of these polygons or 38% of the area were eliminated from the inventory after consideration of the improved information provided by a rapid visual inspection. Although these site visits were not conducted during the optimum period for recording of vascular plant species in woodland, a significant number of records of flora did arise from this work and these will be lodged with the Sussex Biodiversity Record Centre along with the core survey dataset.

The survey methodology sought to establish a vascular plant species list for each site, along with a record of other features that helped decide on the status of a site. These included Site damage, Woodland management and habitat features, and Archaeological and boundary features.

The data generated by this survey work are being incorporated into a county wide dataset and will be made available in summary form. Summary statistics for these features are given in Appendix 2.

4.2.1 Site damage

Site damage was taken to mean both direct physical damage, such as waste disposal or loss of woodland through garden extension, to biological factors including invasive species and over-grazing. 55% of the surveyed woodlands showed some level of damage, with grazing or browsing (30% of sites) being by far the most frequent damage type recorded. Invasive species and rubbish (dumping) were also significant (and also often encountered in the sites visited for rapid assessment (see above).

Overgrazing

30% of the woods surveyed were judged to be overgrazed (see Photograph 2). This was a subjective judgment by the surveyor based on an appraisal of the vigour of the ground vegetation, the presence of poached ground within the wood, the distribution of preferentially grazed plant species and regenerating woody species on the site, examination of basal shoots on coppice stools and the proportion of bare ground at the woodland floor. Overgrazing was generally correlated with poor or non-existent livestock control at the woodland edge. Many of the waterlogged wooded pits of the Weald are used for drinking and shelter by cattle and sheep but only in some cases does this result in detriment to the woodland vegetation where this access is uncontrolled and/or stock densities are particularly high. The use of woods as shelter in a pastoral landscape such as Rother is traditional. However, in some parts of the district deer populations have become exceptionally high in recent decades so that small woods are increasingly threatened by a combination of domestic and wild herbivores[58] (including rabbits). The high percentage of damage recorded here due to grazing is partly a result of the survey's focus on small woods which are particularly vulnerable to damage of this type but this is seen to be a general problem affecting the whole spectrum of the ancient woodland resource.

Photograph 2. Heavily grazed ancient semi-natural woodland in Burwash, Rother. The fences that separated this now derelict coppice from the surrounding pasture fields have long since fallen down and livestock now have uncontrolled access to the site. The wood is also frequented by fallow deer. The combination of high grazing pressure and cessation of coppice management has resulted in a woodland structure depleted in shrubs and ground vegetation. Some of the overgrown un-thinned coppice poles have started to fall away from their stools. Whilst the accumulation of dead wood such as this can be a desirable biodiversity feature, here it emphasizes an attendant lack of woody regeneration and the moribund nature of the wood.

Invasive species

In the woods selected for survey, native species were generally dominant in the vegetation. However, 14% of the woods surveyed were judged to have a significant presence of non-native species recorded. The most significant of these species in Rother appear to be sycamore (*Acer pseudoplatanus*) (26% of sites) and rhododendron (*Rhododendron ponticum*) (14% of sites). Cherry laurel and Portugese laurel (*Prunus laurocerasus* and *P. lusitanica*) were also fairly frequent, recorded at 6% and 3% respectively of the sites surveyed. Sweet chestnut (*Castanea sativa*) was present on 34% of survey sites but this was normally the result of past planting and management as a crop

[58] see Gill (2000, 2004)

whereas the other species mentioned were often colonising naturally or spreading from nearby planted populations; these represent the greater threat to native woodland ecology in the district from non-native species. A number of other exotics trees and shrubs were recorded in the survey. These generally were not abundant or behaving particularly invasively in the vegetation and were presumably relics of planting.

Though the ground flora of many woods is threatened by herbivore impacts there were few instances of competition from introduced herbaceous species recorded in the survey. These however may be locally significant and difficult to detect with a survey of this scale. The species in this category which were recorded by the survey were Himalayan balsam (*Impatiens glandulifera*) and a garden form of yellow archangel, *Lamiastrum galeobdolon* subsp. *argentatum*, which is known to behave invasively in native woodland and was also observed on a number of woods visited during the project for the purpose of rapid assessment.

Photograph 3. The pits and spoil heaps of historical extraction sites are frequently encountered features in High Weald woods. As is quite common, this pit on the edge of an ancient wood in Ewhurst has been used to deposit agricultural and domestic waste for many years.

Rubbish dumping

A large proportion of woods surveyed contained within them, or occupied the sites of, former mineral extraction pits. It is common for these to have been used in the past, to varying degrees, as dumps, both for domestic and farm waste but in particular for large, expensive- or difficult-to-dispose-of metal items (see Photograph 3). In the survey, 10% of the sites showed some form of rubbish dumping but it was frequently observed on other sites visited in the district. This varied from the casual abandonment of a few waste items to the more long-term and purposeful use of the woodland site as a refuse tip. This was most prevalent where the site was close to a road or habitations. Similarly, those sites situated convenient to a lay-by had sometimes been used as fly tipping points.

Garden encroachment
Of the sites surveyed, 4% had lost some of their area to the expansion of gardens. These effects were mainly seen in sites where woodland and gardens graded into one another, often without defined boundary features. In these cases garden planting and garden escapes were common. Grass clippings, compost and other garden waste would often be disposed of in woodland at the back of gardens, thus dispersing garden escapes further and causing localised nutrient enrichment.

4.2.2 Woodland management

More than half (56%) of the sites surveyed could be classed as having a coppice (of native species or sweet chestnut) derived stand structure with or without standards of oak (*Quercus robur* and *Q. petraea*). Most of the coppice was 'overstood' and apparently disused. On many sites abandoned coppice was developing towards a shady high forest structure so that the distinction between high forest (23% of sites surveyed) and coppice was somewhat blurred. On 85% of sites there was no obvious recent or current management recorded during the survey and in the other sites management often constituted small scale planting or shooting related uses rather than any form of wood harvesting. A significant number of sites exhibited no discernible stand structure and this was also associated with a lack of management on small sites.

This is in part a reflection of the state of the woodland industry as a whole, but is also likely to result from the small size of the surveyed sites. Owners of small woodlands may not have the skills to manage their woods, but even if they do they are likely to find it difficult to market their timber in small packages – often in woods without good extraction and access. Following years without management, the standing crop will tend to degenerate in quality and certainly in productivity. The longer the period of disuse the greater the problems of extracting and selling large stems become. Hence, the disuse of small coppices may lead to ever escalating neglect unless new incentives for landowners to manage them are found (see 2.1.3).

The survey included only a small sample of, generally small, woodlands within the district. Therefore these observations are not necessarily indicative of a wider lack of woodland management, particularly in larger sites.

4.2.3 Ancient woodland indicator species

Of the surveyed sites, 63% had at least 10 ancient woodland indicator species recorded, with 15% of sites having 20 or more. Nine percent of sites had five or less indicator species recorded, with the average number of indicators per site overall being 13 (minimum 2, maximum 30).

Bluebell (*Hyacinthoides non-scripta*), wood sedge (Carex sylvatica), wood speedwell (*Veronica montana*), hornbeam (*Carpinus betulus*), primrose (*Primula vulgaris*), holly (*Ilex aquifolium*), field maple (*Acer campestre*) and yellow archangel (*Lamiastrum galeobdolon*) were the most frequent indicator species, with all being present in 50% or more of the sites. Other important ground flora plants characteristic of ancient semi-natural woodland in the district were remote sedge (*Carex remota*) – 46% of surveyed sites, scaly male fern (*Dryopteris affinis*) – 44% of sites, and wood anemone (*Anemone nemorosa*) recorded on 46% of sites. Wood anemone in particular is known to be an ancient woodland specialist; it is very slow to colonise new areas, making it a good indicator of the antiquity of a wood, especially where it occurs in abundance[59]. In total, 64 out of the 100 vascular plant indicator species proposed to be indicative of ancient woodland in South East England[60] were recorded at least once. The South East ancient woodland indicator species list is appended along with an indication of the proportion of woods surveyed in which each species were recorded.

In addition to aiding in building and verifying the inventory, the field survey work and supplementary site visits have yielded valuable information about woodland biodiversity in general for the study area. With a mean of 35 vascular plant species recorded per site (minimum 10, maximum 78) some 3300 individual species records were added to the Sussex Biodiversity Record Centre database. For example, *Cardamine bulbifera* (coralroot bittercress) is a nationally scarce woodland species characteristic of ancient woodland which has one of its strongholds in the northern part of Rother district and neighbouring parts of Wealden and Tunbridge Wells (see Photograph 4). Firm knowledge of the current distribution and habitat of this species is required for its conservation[61]. This project found good populations of the plant in a number of small woods previously unregistered as ancient woodland (often close to existing records from larger woods). The new information adds to our knowledge of the species' status in the wider landscape. Thin-spiked wood sedge (*Carex strigosa*), a specialist shade sedge which is apparently restricted to (or dependent on) ancient forest habitat in Europe[62], has a patchy distribution in SE England. The Botanical Society of the British Isles currently holds records for the plant in 12 tetrads (2km squares used as a standard for the organisation of biological records and understanding species distribution) in Rother. The survey work undertaken in this project resulted in records of the plant for a further seven tetrads in the district (i.e. the current recorded range of the species has increased by 50% within the district). Data such as these indicate Rother's importance for native woodland biodiversity and emphasize how under-recorded this resource may currently be[63].

Photograph 4. Cardamine bulbifera *(Coralroot Bittercress), a nationally scarce plant which thrives in some of the ancient woods of* Rother district. *Photographed in one of the Salehurst shaws identified in the revised ancient woodland inventory.*

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59 Rackham (2003)
60 see Appendix 1a, Hornby & Rose (1986)
61 Showler & Rich (1993)
62 Honnay *et al* (1998), Hermy *et al* (1999)
63 Butterfly Conservation's Rother Woods Project has been running since 2007. Butterflies and moths are important indicators of environmental quality and change. The project has recorded more than 600 moth species in the district's ancient woods including 3 Red Data Book species, 2 UK BAP species and 8 Nationally Scarce species. In the same project the distributions of 28 butterfly species have been mapped with the discovery of important colonies of a number of UK Biodiversity Action Plan priority species.
See http://www.butterfly-conservation.org/text/1128/rother_woods.html for more information

4.2.4 Archaeological and boundary features

The woods of the East Sussex Weald are a repository of cultural heritage in the form of archaeological features. These are associated not only with the former management of the woods themselves but also with preceding historic and prehistoric land-uses.[64] This woodland archaeology is an under-recorded resource and unfortunately the survey did not have the resources to record all the features present on every site visited. Those that were recorded are summarised in an appendix to this report and described briefly below.

About one fifth of the sites surveyed exhibited a boundary bank and ditch (wood bank) with simple banks being more frequent (30% of sites). These boundary structures were sometimes marked by old stub trees. For sites to be partially bounded by a ditch was also common. These features did not usually form an intact enclosure around the current extent of the sites where they were recorded, reflecting either a degree of landscape change and adjustment of boundaries since the woodland was first enclosed or the patchy erosion of the original structures.

The fieldwork in this project recorded physical boundary features for only about half of the sites surveyed. This is notable as prominent wood banks are characteristic of many larger ancient woodland sites in lowland England. These findings reflect the survey's focus on small woods and shaws and on determining the status of woodland sites with uncertain historical evidence. Some 30% of the woodland area surveyed was ultimately judged not be ancient woodland. However, it was not uncommon for ancient woodland vegetation (identifiable through the presence of the species communities mentioned above) to have no distinctive man-made boundary features or to have boundary features typical of the field pattern in the immediately surrounding landscape. These sites probably represent the fragments of woods which were historically more extensive and small woods which have naturally colonised the less easily cultivable spots on farms such as pits (below), pond-sides and spring-lines in the distant past.

The most frequent feature of woodland archaeology recorded on the sites surveyed was a pit of some form. 36% of sites contained old mineral or stone extraction pits, ponds and water-filled hollows and depressions. The age and original purpose of these diggings often cannot be discerned but, as alluded to above, many of the small woods included in the revised inventory are probably predicated on the existence of these manmade features and wood names such as 'Marlpit Shaw' testify to their origins. This does not detract from their ecological value as ancient semi-natural woodland and often the form of the pit enhances biodiversity by providing a range of environmental conditions within a relatively small area. Not all such woods occupying former diggings are ancient of course. In the medieval Weald, marl (to enrich acid clay soils) was extensively extracted in association with stone for building[65]. This practice declined after 1400 and 200-year-old trees could be observed growing in marl-pits in the early 1600s[66] - a pattern which can also be observed on estate maps from this period. However, there was a later revival of the technique so that some 'marl-pit woods' are likely to have originated in the 17th and 18th centuries. It is highly probable that the relative richness of the flora in this special type of small wood is correlated with the time since its abandonment as an extraction site. The current ecology of theses sites is affected by a complex of other factors including management, proximity to ancient woodland and the density of connective semi-natural habitat between them. Further study of the role of 'colonisation time' in these small woods would be interesting.

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[64] Bannister (2007)
[65] Brandon (2003), Hodgkinson (2008)
[66] Markham (1625)

Other depressions and hollows sometimes recorded in Rother woods are sawpits and charcoal hearths. The former are rectangular diggings usually now eroded into a lozenge shape depression on the woodland floor. These grave-like pits were used by a pair of sawyers to cut timber on the site. They were 'invented' in the 14^{th} century[67] and provided a means of processing a wood's timber for local use until transport to saw mills became the preferred method, probably in the 18^{th} century or even later[68]. Charcoal hearths may be found in many of the gill woods which were associated with iron-making in the Tudor period – though little direct evidence for the antiquity of these features has been uncovered. They are circular or sub-circular platforms which appear most prominent on slopes where some excavation has occurred in order to level the ground. They were used to site the pyres of cut billets from coppiced woodland which were then expertly charred by 'colliers' to produce fuel for the iron industry and probably many other purposes.

In addition, internal banks and internal ditches (as separate features) were recorded within 12% and 6% of surveyed sites respectively. Both boundary and internal wood banks were often used to mark parish and other administrative boundaries. Internal wood banks were also used to delineate woodland ownership, as well as mark management areas.

A special type of bank structure found in many Rother woods is the pond-bay. This is an earth or sometimes stone-built embankment constructed across the flow of a stream and designed to impound water in order to provide a sufficient head to power some industrial activity, for example a forge, furnace or mill, downstream. They come in various shapes and sizes from small 'penstocks' in the headwaters of the stream some distance from the site of the machinery to huge dams forming the large 'hammer ponds' adjacent to iron furnace sites. A single stream valley may contain several of these features along its length in varying states of preservation. Whilst the site of the associated industry may be recorded from documents and maps, many of these striking archaeological features still lie hidden and unrecorded in Rother's woods.

[67] Rackham (2006)

[68] see Bannister (2007) for further information about these and many other cultural features associated with High Weald woods.

Photograph 5. The picture shows one of a number of pond bays (the raised feature running left to right in the middle) in the network of gill streams which fed Pashley Furnace – an enterprise of the Boleyn family - in Ticehurst in the 1500s. Whilst the history of iron making in the area is well recorded many significant archaeological features such as this remain unregistered in the district's woods. This structure, now breached by a stream seen in the right foreground, is of monumental dimensions - over 2m high and 60m long.

5. Outputs

Maps 4 to 8 at the end of this report show the revised Ancient Woodland Inventory on an Ordnance Survey 1:50,000 scale base map. Due to the map scale and the volume of small woods added to the inventory this map should be used as indicative only. These maps represent a snapshot in time and will not show any subsequent revisions. Digital boundaries will be made available to download online (www.magic.gov.uk) as part of the national Ancient Woodland Inventory dataset administered by Natural England. Any changes to the inventory made on a case-by-case basis in the future by Natural England will be incorporated into the national dataset over time.

By its nature, the revised inventory is still provisional, but represents an important advance in establishing ancient woodland status using a wide range of evidence and making full use of advances in modern technology. There may however be facts that come to light in the future that could alter or reinforce the decisions taken in this survey. The database is set up in such a way as to incorporate any future modifications or additional information.

Planning Policy Statement 9 (PPS9)[69] has strengthened the protection granted to areas of ancient woodland. PPS9 states that local authorities should identify any areas of ancient woodland in their areas that do not have statutory protection. As well as fulfilling this requirement, this inventory revision also provides an important information base for informing local authorities' planning policies, and will enable planning decisions relating to wooded areas in Rother to be made in the light of a greatly improved evidence base. The identification of 800 new ancient woodland parcels in Rother not only affords these woodlands a higher degree of protection, but also emphasises the need for a review of the inventory in other well wooded areas.

The revised inventory also provides a more complete picture of the location of the district's ancient woods within a habitat network and will help to identify areas of opportunity for environmental enhancement. It also has the potential to inform the more strategic distribution of funding for woodland management programmes, such as the English Woodland Grant Scheme (EWGS). The survey data and revised inventory will also be useful to inform the East Sussex woodland Habitat Action Plan (HAP) and Biodiversity Action Plans.

6. Discussion

Based on the available data from published revisions of the ancient woodland inventory to date[70], Rother district has the third greatest area of ancient woodland of the 67 local authorities in the South East (exceeded by Chichester and Wealden). It also has the third greatest percentage land cover of ancient woodland (exceeded by Tunbridge Wells and Mid Sussex). The English average, for reference, is 7.5%. The district contributes an estimated 30% to the total area of ancient woodland in the High Weald AONB.

As a result of this survey, ancient woodland has risen from 14.65% to 15.54% of the district, with an additional 460 ha now added to the inventory. The net gain is relatively slight in terms of aggregate area and this is a consequence of the many large woods in the district which were correctly identified in the original inventory. Most of the additional sites fall into the smallest size classes. Nevertheless, 460 ha is a considerable amount of woodland being, for example, more than twice the size of sites like Darwell Wood and Battle Great Wood – among the largest

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69 Office of the Deputy Prime Minister (2005)

70 Westaway (2005); Westaway, *et al* (2007a); Westaway *et al* (2007b); Sansum *et al* (2009); Hume *et al* (2010)

single parcels of ancient woodland in the district. More important though is the distribution of this additional ancient woodland in the landscape. The revised inventory contains more than two and a half times the number of individual parcels of ancient woodland shown by its predecessor. With the exception of the coastal or marshland parishes of East Guldeford, Camber and Rye, every parish in the district has some ancient woodland in it and this has been mapped to the highest standards of precision possible. These statistics affirm the importance of ancient woodland, both in the landmark sites like Battle Great Wood and Dallington Forest and in the less regarded 'shaws' and 'rews', as an important ecological resource and landscape characteristic of the district.

A survey of 101 woods, many falling within areas with the potential to be affected by development, was undertaken. As well as improving the evidence base for the revised inventory this provided an opportunity to increase our knowledge and understanding of Rother's current woodland resource, its ecology, history and management and the factors affecting it.

The typical wood on the small sites surveyed was unmanaged and composed predominantly of native species. There was often a coppice structure or the vestiges of one. Although the sites selected were not representative of the whole district's resource, these observations serve to underline an important point. Whilst roughly 30% (or perhaps significantly more) of the larger areas of ancient woodland are under a planted crop, usually of non-native species, the majority of the small sites reviewed in this study retain semi-natural woodland characteristics (see Photograph 1). Small woods have not been subject to vicissitudes of fashion in the forestry industry to the same degree as large woods. Hundreds of ancient semi-natural shaw woodlands escaped both the conversion to chestnut monoculture that the hop trade brought to many larger ancient woods across the Weald in the modern period[71] and the state sponsored 'coniferization' drive of the 20th century because the economy of scale was stacked against radical change in the management of such small resources. In an age where domestic and local demand for these resources is severely dented or non-existent, ironically, the same economy of scale which helped conserve this irreplaceable ancient semi-natural woodland resource, now threatens it. The management of small woods is rarely and barely viable and there are few economic advantages to owning one today. Management can be an expensive or time-consuming undertaking. Farm woods are often used solely as game bird-rearing sites or shooting coverts, shelters for livestock or are spared simply out of a conservative regard for their antiquity as landscape features which have 'always been there'. Whilst 'non-intervention' can be an acceptable or even desirable form of conservation management on some sites this is not sustainable where woods remain unfenced in a predominantly cultural landscape where pasturage is a dominant agricultural activity. Failing new incentives to resume the traditional management that conserved these woods down the centuries, many may face a continuing decline, particularly where deer numbers remain high (see 4.2.1). Some hope for future woodland management more generally has arrived in the form of renewed interest in the firewood market and the currently burgeoning interest in wood fuel as a heat source.

Future management issues aside, the predominantly semi-natural condition of the small ancient woodland resource coupled with its widespread distribution of sites has many positive implications for nature conservation in the district. The accurate mapping of this resource provides important opportunities for understanding and improving connectivity of semi-natural habitats and biodiversity at the landscape scale. The standards of mapping used in this project mean that the revised Ancient Woodland Inventory dataset will be readily synthesised with a

[71] Bannister (2007)

range of other compatible spatial datasets and inventories by researchers, conservationists, planners and policy makers addressing the complex landscape scale issues of the 21st century.

As mentioned above, ancient replanted woodlands, or Plantations on Ancient Woodland Sites (PAWS) make up an estimated 31% of the total area of Rother district's ancient woodland resource. There has been an increasing focus in the forestry and conservation sector on the restoration of PAWS, particularly with the publishing in July 2005 of the joint Defra/Forestry Commission 'Keepers of Time' policy[72]. Though reduced in their species diversity, many replanted ancient woods still retain a high conservation value, particularly in rides and clearings. The revised inventory has remapped PAWS in Rother district, and this will continue to help to identify key sites for restoration.

The importance of semi-natural ancient woodland is widely acknowledged[73]. This resource is increasingly threatened by development pressures and lack of appropriate management. It is hoped that the work outlined here will make a useful contribution to the long-term protection and appropriate management of this irreplaceable resource.

6.1 Limitations of the survey

The Rother project built on the methods trialled in Wealden and Mid Sussex, and developed in the subsequent revisions to Tunbridge Wells and Ashford.[74] The solutions to problems encountered in these previous revisions have been fed into the procedure for mapping and identifying ancient woodland used in the Rother project. There will, however, always be limitations with the types of evidence used in assessing ancient woodland status and these need to be considered by all users of the dataset:

- The limitations and inaccuracies associated with early map sources were discussed in the relevant section of this document. No decision based on historical map evidence relating to woodland can be completely infallible and a project such as this must inevitably make many such decisions. This is especially true where small woods of diverse historical character, which have been little studied in this way before, are concerned.

- Botanical evidence varies in its value as a guide to the antiquity of a wood. The use of such data is more problematic in heavily disturbed woods and PAWS sites where recorded vascular plant floras are often poor. Similarly, ancient semi-natural woods managed traditionally as coppice over centuries can become less conspicuously diverse when the coppice structure becomes derelict and the ground flora enters a prolonged shade phase with suppression of some of the diagnostic elements of an ancient semi-natural ground flora. Sudden changes in management or disturbances can bring strong secondary elements to ancient woodland vegetation locally which can mask the presence of diagnostic specialist species. In large woods such an effect is more easily identified and understood but in small woods with high ratios of edge to area the effect of disturbance, where the whole site may be affected, can be to confuse the decision making process significantly.

- Woodland archaeological features, of considerable diagnostic value in interpreting the history of a site, are most conspicuous in the winter and early spring, but ground flora

[72] DEFRA and the Forestry Commission (2005)
[73] English Nature (2002), Defra and the Forestry Commission (2005), Ellis (2004)
[74] Westaway (2005), Westaway *et al* (2007a); Westaway *et al* (2007b); Sansum *et al* (2009)

recording dictates that the bulk of field surveying is done in spring or early summer. Rarely are sufficient resources available to visit a site twice in order to form a more complete picture.

6.2 The future of the inventory

It is hoped to that this project will encourage a wider take-up of the survey with other local authorities in the South East. The Weald and Downs Ancient Woodland Survey is also working in partnership with local authorities in Kent to revise the inventory, and partner surveys are being undertaken in Surrey and the Chilterns.

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Appendix 1a: Ancient woodland vascular plant 'indicator species' in the South East

The 100 species in NCC's South East Region that are most strongly associated with ancient woodland and are typical components of botanically rich ancient woodland communities.[75]

Grasses, Sedges, Rushes and Ferns	Black bryony	Stinking iris
Bearded couch	Bluebell	Three-nerved sandwort
Common polypody	Broad-leaved helleborine	Toothwort
Creeping soft-grass	Bush vetch	Tutsan
Giant fescue	Chaffweed	Violet helleborine
Great wood-rush	Columbine*	Wild daffodil*
Hairy brome	Common Solomon's-seal	Wood vetch
Hairy wood-rush	Common cow-wheat	Wood spurge
Hard shield fern	Early dog-violet	Wood speedwell
Hard fern	Early-purple orchid	Wood anemone
Hart's-tongue fern*	Goldenrod	Wood-sorrel
Hay-scented buckler fern	Goldilocks buttercup	Woodruff
Lemon-scented fern	Greater butterfly orchid	Yellow archangel
Narrow buckler fern	Greater burnet-saxifrage	Yellow pimpernel
Pale sedge	Green hellebore	**Trees and Shrubs**
Pendulous sedge*	Herb-paris	Alder buckthorn
Remote sedge	Ivy-leaved bellflower	Aspen
Scaly male fern	Lady orchid	Bilberry
Smooth-stalked sedge	Large bitter-cress	Black currant*
Soft shield fern	Lesser skullcap	Butcher's-broom
Southern wood-rush	Lily-of-the-valley*	Crab apple*
Thin-spiked wood sedge	Marsh violet	Field maple*
Wood melick	Moschatel	Field rose
Wood meadow-grass	Narrow-leaved everlasting-pea	Guelder-rose
Wood small-reed	Nettle-leaved bellflower	Holly
Wood sedge	Opposite-leaved golden saxifrage	Hornbeam*
Wood millet	Orpine	Midland hawthorn
Wood club-rush	Pignut	Red currant*
Wood horsetail	Primrose*	Sessile oak*
Wild flowers	Ramsons	Small-leaved lime*
Allseed	Sanicle	Wild cherry
Barren strawberry	Saw-wort	Wild service tree
Betony	Slender St John's-wort	Wych elm
Bird's-nest orchid	Small teasel	
Bitter vetch	Spurge-laurel	

* Only where these species occur well within a wood and do not appear to have been planted.

[75] NCC's South East region comprised Kent, Surrey, Sussex, London and Hertfordshire. See Hornby & Rose (1986)

Appendix 1b: Percentage occurrence in the Rother sites surveyed of ancient woodland vascular plant 'indicator species' in the South East (based on 96 site species lists)

Latin Name	Common Name	No. sites	% of sites
Hyacinthoides non-scripta	Bluebell	77	80
Carex sylvatica	Wood-Sedge	70	73
Veronica montana	Wood Speedwell	65	68
Carpinus betulus	Hornbeam	59	61
Primula vulgaris	Primrose	59	61
Ilex aquifolium	Holly	58	60
Acer campestre	Field Maple	50	52
Lamiastrum galeobdolon	Yellow Archangel	50	52
Carex pendula	Pendulous Sedge	46	48
Anemone nemorosa	Wood Anemone	44	46
Carex remota	Remote Sedge	44	46
Dryopteris affinis	Scaly Male Fern	42	44
Chrysosplenium oppositifolium	Opposite-Leaved Golden-Saxifrage	36	38
Oxalis acetosella	Wood-Sorrel	35	36
Lysimachia nemorum	Yellow Pimpernel	32	33
Potentilla sterilis	Barren Strawberry	29	30
Prunus avium	Wild Cherry	26	27
Moehringia trinervia	Three-Nerved Sandwort	25	26
Polystichum setiferum	Soft Shield-Fern	25	26
Blechnum spicant	Hard Fern	22	23
Conopodium majus	Pignut	22	23
Crataegus laevigata	Midland Hawthorn	21	22
Luzula pilosa	Hairy Wood-Rush	18	19
Melica uniflora	Wood Melick	18	19
Epipactis helleborine	Broad-Leaved Helleborine	15	16
Carex strigosa	Thin-Spiked Wood-Sedge	14	15
Orchis mascula	Early-Purple Orchid	14	15
Populus tremula	Aspen	14	15
Phyllitis scolopendrium	Hart's-Tongue	13	14
Ribes rubrum	Red Currant	13	14
Adoxa moschatellina	Moschatel	12	13
Vicia sepium	Bush Vetch	12	13
Allium ursinum	Ramsons	11	11
Malus sylvestris	Crab Apple	11	11
Rosa arvensis	Field Rose	11	11
Holcus mollis	Creeping Soft-Grass	10	10
Ranunculus auricomus	Goldilocks Buttercup	8	8
Viburnum opulus	Guelder-Rose	8	8
Cardamine bulbifera	Coralroot	6	6
Festuca gigantea	Giant Fescue	6	6
Ribes nigrum	Black Currant	6	6
Hypericum pulchrum	Slender St. John's-Wort	5	5
Poa nemoralis	Wood Meadow-Grass	5	5
Polypodium vulgare	Polypody	5	5
Ruscus aculeatus	Butcher's-Broom	5	5
Bromopsis ramosa	Hairy Brome	4	4

Latin Name	Common Name	No. sites	% of sites
Cardamine amara	Large Bitter-Cress	4	4
Carex laevigata	Smooth-Stalked Sedge	4	4
Iris foetidissima	Stinking Iris	4	4
Sanicula europaea	Sanicle	4	4
Scirpus sylvaticus	Wood Club-Rush	4	4
Luzula forsteri	Southern Wood-Rush	3	3
Luzula sylvatica	Great Wood-Rush	3	3
Hypericum androsaemum	Tutsan	2	2
Sedum telephium	Orpine	2	2
Dryopteris carthusiana	Narrow Buckler-Fern	1	1
Epipactis purpurata	Violet Helleborine	1	1
Frangula alnus	Alder Buckthorn	1	1
Lathyrus linifolius	Bitter-Vetch	1	1
Quercus petraea	Sessile Oak	1	1
Solidago virgaurea	Goldenrod	1	1
Sorbus torminalis	Wild Service-Tree	1	1
Stachys officinalis	Betony	1	1
Viola palustris	Marsh Violet	1	1

Appendix 2: Summary of findings from the woodland survey work

Feature type	% of sites
Damage	**55**
grazing or browsing	30
significant presence of non-native and or invasive specie	14
rubbish	10
garden encroachment	4
garden waste	1
stable waste	1
other	1
Physical boundary features	**52**
bank without ditch at boundary	30
bank & ditch at boundary	19
ditch at boundary	14
track at boundary	2
stream at boundary	2
Physical internal features	**51**
pits and hollows	36
dry	28
waterlogged	15
internal bank	12
track running through wood	11
internal ditch	6
built structures (19th and 20th C buildings, monuments, culverts etc)	6
mounds	4
charcoal hearths	1
Living features	**35**
old coppice stools	26
Stubs	12
old outgrown hedges	4
pollards	3
other notable trees (e.g. veteran trees)	2
Current management activities	**15**
pheasant rearing/shooting	9
planting	7
(no obvious management activities)	(85)
Woodland Structure	**100**
coppice	40
high forest	23
immature, scrub or no clear structure	19
coppice with standards	16
wood-pasture	1

Maps

WEALD AND DOWNS
ANCIENT WOODLAND SURVEY

Project carried out by Philip Sansum for the
Weald and Downs Ancient Woodland Survey
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Front cover photograph: Ancient gill woodland in Rother district
(photograph © Patrick McKernan, Natural England/ Forestry Commission)