THE HISTORY OF COPPICING

IN SOUTH EAST ENGLAND IN THE MODERN PERIOD

WITH SPECIAL REFERENCE

TO THE CHESTNUT INDUSTRY

OF KENT AND SUSSEX

DEBORAH MARY FRANCES BARTLETT

A thesis submitted in partial fulfillment of the

requirements of the University of Greenwich

for the Degree of Doctor of Philosophy

June 2011

ABSTRACT

THE HISTORY OF COPPICING IN SOUTH EAST ENGLAND IN THE MODERN PERIOD WITH SPECIAL REFERENCE TO THE CHESTNUT INDUSTRY OF KENT AND SUSSEX

This thesis focuses on coppice woodland management in South East England, the region with the greatest concentration of woodland in the UK, with Kent the county with the highest proportion of ancient semi-natural broadleaved woodland. The woodland management practice of coppicing has declined, particularly since the Second World War, generally attributed to loss of markets for products fashioned from small diameter roundwood.

This thesis begins by asking questions about the decline in the coppice industry particularly the extent of the decline and the significance this has for ecology and landscape, as well for the livelihoods of both woodland owners and the workforce. This is set in context by a review of the historical background, focusing on the modern period, the previous research into the industry, and the changes in policy that have taken place over the last fifty years. The evidence for the decline and the attempts that have been made to address it are evaluated.

A series of investigations have been undertaken, including interviews, questionnaires and focus groups. These provide evidence that coppicing is still taking place over a wide area, and that there is a strong demand for products, both here and abroad, particularly for chestnut fencing. Claims by earlier researchers that the workforce is diminishing, with the majority nearing retirement, are refuted. Profiling the workforce has revealed the existence of separate groups, with distinct characteristics. These do not operate in the same way, indicating that considering the industry as a single entity is no longer valid. The importance of the chestnut workers, with a craft tradition handed down through the generations should be acknowledged.

The current political context highlights the importance of involving all stakeholders in decision making. Recommendations are made for further research to incorporate this and so enable more successful development of the coppice industry in the future, whether this is for environmental, economic or social reasons.

Deborah M F Bartlett BSc Msc CMLI FIEEM

ACKNOWLEDGEMENTS

During the course of this research many people have generously contributed their time to helping me. Special thanks are due to all the coppice workers who, overcoming their initial reluctance, now greet me with requests for forms to fill in. Without the active participation of this group this research would not have been possible.

I am grateful to Professor Ted Collins who has, during his supervision of this thesis, challenged me to clarify my thinking and focus on the relevant issues and keep within the modern period. Despite most of this ending up on the equivalent of the cutting room floor, I enjoyed the days in the archives and British Library which have deepened my understanding of land use history and policy.

Since the mid-1990s Dave Rossney, of Esus Forestry and Woodlands, has been steadfast in his support for the research into the coppice industry, particularly with the chestnut group, and taking part in invaluable development work including pig roasts and butchering deer as well as delivering training and dealing with the mountains of paperwork generated by the funding streams.

An early supervisor, Dr Peter Buckley deserves mention for encouraging an interest in woodland management while I was studying for my masters degree, as does Professor Martin Snowden for giving the chance to undertake this research.

I am grateful to Tony Witts, former student, now a collaborator and stalwart dormouse monitor, for being invaluable in dealing with technological crises.

Last but not least I must thank all the friends who, while failing to understand my continued interest in the coppice industry, tolerate it. In particular I would like to thank those who have shared woodland walks and talks with me over the years.

Most important of all are Dr A I Bartlett and Dr E M Bartlett, of whom I am very proud.

Thanks to you all.

CONTENTS

FIGURES

TABLES

ABBREVIATIONS USED IN THE TEXT

Abbreviation	Meaning
ADAS	Agricultural Advisory and Development Service
ANT/A-NT	Actor-Network Theory
AONB	Area of Outstanding Natural Beauty
ASNW	Ancient Semi-Natural Woodland
BAP	Biodiversity Action Plan
B&Q	A chainstore selling outdoor living products
BCG	British Charcoal Group
BHMAT	Bill Hogarth Memorial Apprenticeship Trust
BS	British Standard
CA	Coppice Association
CAP	Common Agricultural Policy
CBNRM	Community Based Natural Resource Management
CEPI	Confederation of European Paper Industries
CKS	Centre for Kentish Studies
CLG	Department for Communities and Local Government
Cm	centimeter
CoSIRA	The Council for Small Industries in Rural Areas
CPRE	Council for the Protection of Rural England
CROW	Countryside and Rights of Way Act
CRPF	French Woodland Owners Association
DECC	Department of Energy and Climate Change
DEFRA	Department for Food and Rural Affairs
DFID	Department for International Development
DTI	Department of Trade and Industry
EC	European Community
EPS	European Protected Species
ESF	European Social Fund
ETWF	England's Trees Woods and Forests (a policy document)
EU	European Union
e-WGS	England Woodland Grant Scheme
FC	Forestry Commission

Abbreviation	Meaning
FOE	Friends of the Earth
FSC	Forestry Stewardship Council
FWAG	Farming and Wildlife Advisory Group
GIS	Geographical Information System (computer mapping)
GWC	Green Wood Centre
Ha	Hectare(s)
HCC	Hampshire County Council
HAP	Habitat Action Plan
HEP	Human Exceptionalism Paradigm
HMG	Her Majesties Government
HSE	Health and Safety Executive
ICDPs	Integrated Conservation and Development Projects
INTERREG	A European Trans-frontier funding programme
JNCC	Joint Nature Conservancy Council
KCC	Kent County Council
LANTRA	National Training Organisation for the Land Based Industries
LEADER	An EU grant scheme applying to geographically defined areas
LUC	Land Use Consultants
m^3	cubic metre
MAFF	Ministry of Agriculture, Fisheries and Food
NCC	Nature Conservancy Council
NEP	New Environmental Paradigm
NTPC	National Training Proficiency Council accreditation
NGOs	Non Governmental Organisations
NOFFO	Non-fossil fuel obligation
NVC	National Vegetation Classification system
NVQs	National Vocational Qualifications
ONF	Office Nationale Forestière (the French equivalent of the FC)
PAWs	Planted Ancient Woodlands
PPE	Personal Protective Equipment
PTES	People’s Trust for Endangered Species
RDPE	Rural Development Plan England

Abbreviation	Meaning
RES	Regional Economic Strategy
REEFS	Regional Expressions of the England Forestry Strategy
RFS	Royal Forestry Society
RSPB	Royal Society for the Protection of Birds
SAEs	Self Addressed Envelopes
SAPs	Species Action Plans
SCAMs	Scientific Certainty Argumentation Methods
SDF	Sustainable Development Fund
SEEDA	South East Economic Development Agency
SEMDEV	South East Marketing Development Group
SEWTF	South East Woodlands and Timber Fund
SFM	Sustainable Forest Management
SSCG	Sussex and Surrey Coppice Group
SSK	Sociology of Scientific Knowledge
SSSI	Sites of Special Scientific Interest
SWOG	Small Woodland Owners Group
TDB	Technical Development Branch (of the Forestry Commission)
TEEB	The Economics of Ecosystems and Biodiversity
TEK	Traditional Ecological Knowledge
TNA	Training Needs Assessment
TRIP	Training, Research, Information and Promotion
UK	United Kingdom
VAT	Value Added Tax
VTS	Vocational Training Scheme
WCG	Wessex Coppice Group
WIG	Woodland Improvement Grant
WSCC	West Sussex County Council
WWF	Worldwide Fund for Nature
WW2	World War 2

CHAPTER 1 INTRODUCTION

This study is an investigation of the 'coppice problem' identified during the 1980s referring particularly to the chestnut industry of Kent, Surrey and the Sussexes. Research began in the 1990s when the author, then County Woodland Officer for Kent, became aware that considerable effort - and money – was being directed towards solving this by creating new markets for coppice products, despite established markets reporting shortages. This resulted in a long and tortuous journey of exploration to determine the difference between the general perception and the real situation for the industry. The local and species specific differences between the chestnut and hazel coppice industries are explored and the impact these have had on the epistemological basis of the 'coppice problem', the impacts of the decline from both ecological and sociological perspectives and the implications for future research and development.

Coppice is a unique silvicultural system whereby product can be regularly harvested and the life of the original plant prolonged, often for hundreds of years (Rackham, 1986, page 56). Coppice management of broadleaved woodland has caught the attention of those interested in nature, the public and policy makers alike, because of the charismatic species, such as the bluebells (*Hyacinthoides non-scripta*), dormice (*Muscardinus avellanarius*), nightingales (*Luscinia megarhynchos*) and several butterfly species associated with it. Since the late 1980s the prevailing view has been that the coppice industry is in (possibly terminal) decline, with an aged workforce (Hampshire County Council, 1990; Gordon, 1993), and that, as this was caused by market failure it could best be addressed by creating new markets for coppiced roundwood. This research was initiated as the author became increasingly aware that these 'facts', derived soley from research into the hazel industry, were being applied to the whole coppice sector and influencing nature conservation and forestry policy at local, regional and national level.

The South East is the most wooded region in the UK (Forestry Commission, 1998a and 2004a). The requirement for the agencies, the Forestry Commission, Natural England and DEFRA, to deliver public goods (or ecosystem services) and the agendas of conservation organisations to maintain the wildlife associated with coppicing have led to the current focus on driving woodland management by creating markets for wood fuel (Forestry Commission, 2006). It is thought that targeting funding towards creating this new market will increase the area coppiced, so meeting targets for biodiversity conservation, notably for butterflies, dormice and woodland birds, as well as contributing to reducing carbon emissions.

The advisability of considering the coppice industry as a whole, despite differences in species worked and products, and of developing new markets in the absence of a robust evidence base, has been questioned by the author since the 1990s. This was based on regular requests received from commercial companies unable to source enough chestnut fencing to meet the demand and led to a series of research questions, primarily:

To what extent is the 'coppice decline' a matter of fact?

How much and why does this matter?

Why have attempts to reverse the decline by creating new markets failed?

Attempting to answer these led to further questions that needed to be addressed in order to understand the situation and consider ways the perceived decline might be addressed. These were:

How much coppice woodland is currently managed?

Who is carrying out this work?

What are the issues for the workforce?

How can these issues be addressed?

A survey of the underwood (or coppice) industries was undertaken in 1923 by FitzRandolph and Hay (1926a and b). A more recent study by Professor E. J. T. Collins (2004), part of the review of *Rural Crafts in the Countryside*, provided information on the hazel industry but, for a variety of reasons, failed to engage the chestnut sector, so continuing to feed the impression that the industry had virtually died out.

CHAPTER 2 BACKGROUND

Until recently it was considered that trees were the 'natural' vegetation cover of the British Isles other than at high altitudes[1] or in areas subject to regular flooding. The species composition of this dense 'wildwood' reflected local physical and edaphic conditions, with disturbance events such as over-mature trees falling, fires or storms creating temporary clearings. These would have initiated development of ground flora from the soil seed bank, which would then be replaced first with shrubs, then trees. Settlement of this landscape by man and clearance for agriculture has been established by the archaeological evidence, principally the pollen record (e.g. Rackham 1980, 1986 and 1990; Tansley, 1939).

An alternative view, that the 'natural' vegetation of Europe was savannah rather than dense woodland is now accepted. The fixed pattern of ecological succession to climax vegetation, as postulated by, for example Odum and Odum (1953), has been superseded by a more dynamic paradigm. This visualises nature as a tangled web rather than a steady-state system (e.g. Anderson and Jensen 2005; Mast and Chambers 2006) and has led to the emergence of landscape ecology[2]. This was reinforced by the publication of *Grazing Ecology and Forest History* by Franz Vera (2000) which synthesises the fossil herbivore record and pollen evidence to suggest that large tracts of pasture were maintained by grazing animals within a dynamic woodland matrix. This, the Vera Hypothesis, has led to conservationists proposing grazing as an effective tool for 'naturalistic' woodland management. This is controversial,[3] as the impact of deer on woodlands is generally considered a major problem[4]. The relevance of Vera's hypothesis, formulated in the European context, to England is considered by Hodder et al. (2005).

[1] Above the tree line
[2] This emerged as a scientific discipline in Eastern Europe and, rather later in the USA. For further information see http://www.landscape-ecology.org/ or http://www.iale.org.uk/
[3] And not endorsed by Vera himself (pers. comm.)
[4] Forest Research documents on this issue are available at http://www.forestry.gov.uk/fr/INFD-6CHC56 accessed 3/4/11

It is indisputable that woodlands and trees covered a greater area in the distant past and that anthropogenic influence is responsible for woodland clearance. Piggott (1981) suggests that Mesolithic man may have supplemented natural woodland clearings by creating “hunting lawns” rather than (or perhaps as well as) clearing for arable farming, on the basis of an increase in grasses and plantain (*Plantago* spp) in the pollen record. Whatever the aim, tools would have been required; the archaeological evidence reveals flint axe blades across southern and eastern England throughout the Mesolithic period[5] (Piggott, 1981). From circa 4000 BC there is evidence of surface and deep mine quarrying for axe blade material across Europe and transport, perhaps trade, of stones and flints up to 80 kilometres, demonstrating the importance of tools. The most famous of these mines in the UK is Grimes Grave, Norfolk, with several more located in Sussex, for example at Mesvin and Church Hill, Findon (c3400BC), Black Patch/Harrow Hill (c3000) and Cissbury (c2800), (Piggott, 1981).

Forest clearance with these tools must have been hard work, even when facilitated by killing larger trees by de-barking, reducing canopy shade and water uptake, so enabling crops to be planted beneath (Piggott, 1981). Lighter, flatter axes were produced in the Bronze Age[6] and palstaves (chopping and cutting tools similar to small billhooks or machetes) were used. Specific woodman’s felling axes, of heavier construction, did not emerge until Roman times[7] (Piggott, 1981) and, although metal saws were used at this time this seems to have ceased when they left Britain (Roberts, 1999).

[5] 8500 - 4000 BC
[6] 2300 – 700 BC
[7] 43 AD to the C5th

As land was cleared for farming and population grew the timber[8] and underwood[9] would have been used with increasing intensity. England now has relatively little woodland cover, at almost 12%[10]; and it is thought that the cleared area has exceeded the wooded area for at least 2,500 years with conversion of woodland to farmland probably slowing during the Roman occupation (Rackham, 1986). Woodland clearance reflected the needs of an expanding population, with fluctuations and reversion of marginal land in response to the periodic outbreaks of plague, in the 7th century, the notorious Black Death of the mid 14th century and the great freeze of 1739 and consequent famine (Baille, 1995). Conversely rises in grain price as occurred during the Napoleonic Wars, would have increased clearance (Ernle, 1961).

Wood of various sizes, from large trunks to small twigs would have been used for a wide range of purposes, ranging from construction material and fences to household items[11], furniture, tool handles and, importantly, as fuel. Trees were lopped as fodder for animals, both fresh and dried for winter supplements[12], producing wood pasture (Piggott, 1981; Evelyn, 1664; Thirsk, 1964). This continues in parts of Europe with poor grazing. Use of trees for human food would have been seasonal and focused on nuts, although leaves are still eaten and used for tea, with sap, notably from birch (*Betula* spp.) used as a sweetener and for alcoholic fermentation across Europe.

[8] The definition of the term timber is unclear. UK Government includes wood derived products, e.g. paper as "timber" in the current procurement policy – see http://www.proforest.net/cpet/uk-government-timber-procurement-policy/defining-2018timber-and-timber-products2019 - although it is more usually used to refer to large material derived from single-stemmed trees.
[9] Small trees and bushes, including coppice, growing among – and beneath – standard trees; Rackham (1986 page 67) considers this of more value than timber
[10] See http://www.ukagriculture.com/countryside/woodland_ecosystem.cfm accessed 12/12/10
[11] Treen is the term for cups, plates and spoons, all made from wood
[12] See http://frontpage.woodland-trust.org.uk/ancient-tree-forum/atfinternational/norway/images/2%20Norway.pdf accessed 13/12/10

2.1 Definition of woodland

The Oxford English Dictionary defines a wood as:

> *"A collection of trees growing more or less closely together larger than a grove or copse, but including these, and smaller than a forest with or without undergrowth"* (1989)

There are regional, and in some instances local, differences in the characteristic mix of tree and shrub species found in natural woodland. This reflects the ambient physical conditions such as geology, soil, hydrology, weather and altitude combined with biological factors, for example predator populations. The natural woodland of the British Isles has always been subject to disturbance by natural events such as flood, fire and storms which act within the context of slowly changing climatic and weather patterns and can alter the competitive relationships between, and consequently the proportions of, different species. Composition reflects the species best adapted to the ambient conditions, as described by Ellenberg's Indicator Scores (e.g. Hill et al., 1999) and based on gradients of light, temperature, water and nutrition. The ecological requirements of individual species have been widely studied and inform replanting and restoration schemes (Peterken, 1993a) although changing climatic conditions suggest these need to be reconsidered (Broadmeadow and Ray, 2005).

The way woods have been harvested and browsed has altered species composition. Requirement for particular raw materials has favoured particular species at various points in time. Small-leafed lime (*Tilia cordata*), dominant in pre-historic lowland woods, has almost disappeared[13] despite seeding freely and coppicing well. This is because the leaves are selectively browsed by wild[14] and domesticated stock. They were also eaten by humans as salad (Edlin, 1970).

[13] Remnants are being preserved for example by the Lincolnshire Lime Woods project see http://www.forestry.gov.uk/newsrele.nsf/WebPressReleases/B77ADF4640831A4B802571680040065E accessed 2/6/2009; also in parts of Central England and Essex (Collins, pers comm.)
[14] Especially deer

Woodlands now contain introduced species such as the fast-growing sycamore (*Acer pseudoplatanus*), native to central Europe. Some consider this a Roman introduction (Binggeli, 1994), and Edlin (1973, page 76) refers to carved sycamore leaves dated to 1282. These views are refuted by Rackham (1986, page 56) who considers the first record to be an ornamental garden tree in 1578. Evelyn (1664) advised against planting sycamores on the grounds of the honey dew[15].

Sycamore seeds readily; this regenerative capacity has led to it being considered as a weed[16] and establishment across the British Isles up to altitudes of 500m above sea level (Stace, 1991). The wood is particularly white and easy to work so has been widely used for wooden spoons, treen[17] and dairy ware. The related Norway maple (*Acer platanoides)* is also naturalised here. Sweet (or Spanish) chestnut (*Castanea sativa*), also thought to be a Roman introduction, has been naturalised, particularly in the South East, for centuries (e.g. Rackham, 1990).

Woodland is considered as either ancient or secondary. The former is on land presumed, usually on the basis of map evidence, to have been wooded since at least 1600, and comprises ancient semi-natural woodland (ASNW) or planted ancient woodlands (PAWs) where composition has been altered by over-planting. Virtually all ASNW will have been managed as coppice at some time and selection for particular species is likely to have occurred. Secondary woodland is that which has developed on previously cleared land, i.e. the continuity of tree cover has been broken. Confusion can arise as tropical forests regenerate after fire or other natural disaster and this is referred to as second growth as opposed to virgin forest. The term secondary woodland has negative connotations in Britain reflecting the focus on ecologically functional communities, with ground flora and associated wildlife now considered as important as the trees (e.g. Rackham, 2003).

[15] Exudate from the aphids living on the leaves
[16] Usually defined as a plant growing in the wrong place
[17] Domestic tableware – plates, spoons, platters, bowls, cups and the like

At the beginning of the 1980s woodlands began to be described by stand type (Peterken, 1981) reflecting the emerging interest in native broadleaves which was beginning to replace the previous focus on economic forestry (e.g. Grayson, 1993). More recently, descriptions have been based on plant communities rather than species with the development of the National Vegetation Classification system or NVC (Rodwell, 1991; Hall et al., 2004). This is the current standard although the resilience of these communities under climate change scenarios is beginning to be questioned (Dr Mark Broadbent, 2009, pers. comm.)

The definition of woodland currently employed by the Forestry Commission and used as the basis for national statistics is:

> *"land under stands of trees with a canopy cover of at least 20% (or having the potential to achieve this), including integral open space, and including felled areas that are awaiting restocking ……. There is no minimum height for trees to form a woodland at maturity, so the definition includes woodland scrub but not areas of gorse, rhododendron, etc., outside woodland. This is a different definition from that used internationally which is based on 10% canopy cover and a minimum height at maturity of 5m, but the two definitions are estimated to give similar areas of woodland in the UK. … Woodland includes native and non-native trees; semi-natural and plantation areas*[18]*.*

Woodland can also be described on the basis of structure, for examples as high forest[19], even or uneven aged, coppice, simple coppice or coppice with standards. Coppice can resemble high forest when shoots are singled and grown on, a system known as 'stored' coppice; this makes the terms 'managed' or 'unmanaged' woodland somewhat unhelpful.

[18] Source http://www.forestry.gov.uk/website/foreststats.nsf/byunique/sources.html accessed 23/8/11

[19] In England the term forest has a specific meaning not necessarily related to woodland

CHAPTER 3 COPPICE SYSTEMS

The word coppice is derived from the French *couper*, to cut[20] (James, 1990, page 37), and is a technique that creates a crop of small diameter poles by cutting 'maiden[21]' trees to the ground, so that these sprout, re-growing with multiple stems, and then cutting them again. The majority of broadleaved (as opposed to coniferous[22]) trees respond to coppicing, responding by producing multiple shoots - or springing - when cut. The exceptions are Alder (*Alnus cordata),* beech *(Fagus sylvatica),* birch *(Betula* spp*.), c*herry *(Prunus* spp*.),* and some poplars (*Populus* spp)*.* These may re-grow when young, but will not sustain repeated coppicing. The term coppice is - or was used historically - in different ways, for example:

- The act of cutting underwood grown on rotation
- To fence – or incopse – a wood after cutting
- A wooded compartment in wood pasture, the origin of the term copse[23]

Rackham (1980)

It is the first definition that is in current use. It is virtually certain that the majority of woods would have been managed in this way in the past simply because it makes sense to save effort by harvesting the smallest wood that will suffice for the intended purpose. Harvesting would have been piecemeal and woods have resembled many currently seen in France, where local people cut firewood among larger trees left for meubles[24]. This is formalised as uneven-aged silviculture where the relative proportions of understorey, mature trees and all size classes between, are kept constant (Kerr, undated, c2000 and personal observation on study tours with ONF[25]). Tending the coppice crop could have meant merely

[20] Although the current French translation of the term coppice is taillis
[21] Single stemmed
[22] *Araucaria araucana*, Monkey puzzle, and *Sequoia* spp. do regrow from cut stools
[23] This term is still in current use for a small area of trees and shrubs within the farmed landscape
[24] Timber trees used for furniture making
[25] Office Nationale de Foret - the French equivalent to the Forestry Commission

protection from grazing animals, so concentrating stools at the same stage in one place makes obvious sense, or by active propagation.

The uses for coppiced roundwood have varied over time. Archaeological evidence shows it has been practiced since at least the Bronze Age and indicates it was widespread through the Roman and Saxon periods. The earliest evidence is the use of bundles of coppiced branches to firm the surface of trackways. The Abbott's Way, which runs for over 2.5 kilometres across the Somerset Levels, has a more complex "corduroy" construction, and used about 21,000 yards (circa 19,200 metres) of split alder (*Alnus* spp.) held together with around 50,000 birch (*Betula* spp.) pegs. The Walton Track used hazel (*Corylus avellana*) woven into hurdles measuring 3 by 1 metres (Piggott, 1981), similar to those found in long barrows and as the framework of wattle and daub buildings (Gravett, 1971). A coppice causeway leading to Wickhambreaux Water Mill, Canterbury, Kent, was discovered in the late 1970s (Roberts, 1999). Early buildings were of wattle and daub construction with a woven hurdle, often of hazel, the structural element. Later, as buildings became more robust, oak was the material of choice for timber framing with split material, either oak or chestnut, as the basis for lath and plaster.

The largest and most constant use of coppice product has been, and is still, as fuel. Hornbeam (*Carpinus betulus*), oak (*Quercus* spp), beech (*Fagus sylvatica*) and ash (*Fraxinus excelsior*) have long been favoured, with lime (*Tillia* spp), poplar (*Populus* spp) and horse chestnut (*Aesculus hippocastanum*) considered poor quality fuels. Chestnut (*Castanea sativa*) spits so can only be burnt in closed fires and, in the past, was considered too valuable to burn (e.g. FitzRandolph and Hay, 1926), although the by-product from higher value processing of this and other species is often used as firewood[26]. Family fuel demand has been calculated and extrapolated to show pressure on woodland (e.g. Piggott, 1982). Iron smelting in the Weald during the Roman period has been estimated at 550 tons per year requiring a total resource of around 23,000 acres of coppice (Rackham, 1990).

[26] The Arboricultural Information Exchange publishes a list of burning characteristics and seasoning requirements, see http://www.aie.org.uk/ accessed 3/5/2009

3.1 Definitions of coppice, coppice with standards and pollarding

Where all the trees are managed by coppicing the system is termed simple coppice, as illustrated in Figure 3.1, below.

Figure 3.1 Simple coppice

Standard trees would have been retained to provide large timber and seed, with acorns and beech mast both important as animal feed. Trees grown close together draw each other up, competing for light, and produce long straight stems; grown individually they branch and produce wider, denser, crowns. When the underwood is cut regularly, before it gets too high, the trees left to mature spread their branches as they overtop the crop beneath, a sylvicultural system referred to as coppice with standards. Figure 3.2, on the following page, shows young standards over chestnut coppice.

Figure 3.2 Coppice with standards

This is a characteristically English system (James, 1989). In France, for example, oaks (*Quercus* spp) are usually grown in dense plantations, producing long, straight timber. In contrast standard oaks over coppice grow more slowly so were in demand for shipbuilding, providing *crook* branches. Single trees in fields and in hedgerows also supplied the dockyards with *compass oak* (Roberts, 1999). Chestnut (*Castanea sativa*) is not usually found as standards as it is more valuable as coppiced roundwood and is prone to ring shake. This reduces timber quality as splits develop around the growth rings on drying, a characteristic that makes chestnut an ideal wood to process by cleaving. Standard trees are no longer valued for timber[27], and reduce productivity by shading the underwood and competing for water, so they are absent from the most commercial coppice[28].

[27] Although they are important for some wildlife
[28] An issue of concern from both the landscape and biodiversity perspective

Pollarding is the cutting of trees in a similar manner to coppice but above ground level, leaving a permanent trunk that is termed the *bole* (Rackham, 1986), so that the branches re-grow out of the reach of deer and domestic grazing stock. Areas of wood-pasture, grazing land dotted with pollards, remain as testament to this practice; some are former deer parks where the re-growth was cut for winter fodder. Pollards, either single or in lines, were also used to mark administrative boundaries and landownership (e.g. Rackham, 1990; Bannister, 1996), with some on woodbanks for greater emphasis. Internal divisions within woodlands marking areas to be cut in a year, variously known as panels, hags or, in the South East, cants, were marked by smaller banks, ditches and sometimes by mini-pollards, called stubs.

Figure 3.3 Pollards

3.2 Coppice cycles

The rate at which trees grow is determined by species and ambient conditions. Differences in yield are affected by soil, hydrology, weather, aspect and altitude as well as by competition with other vegetation, including the proximity of other trees, whether these are of the same or different species. Close-planted trees grow

faster, but will be thinner than those more widely spaced. The science of forestry exploits these characteristics, aiming to produce straight timber quickly. Investment is offset against the predicted returns at harvest, which may be decades later. Sale of thinnings may provide interim income (e.g. Bright, 2001). The financial aspects of coppice management are simple in comparison; a proportion is harvested on an annual rotation, the cutting interval determined by growth rate and intended use. Investment is minimal and returns regular.

Peterken (1981) provides an algebraic model for coppice cycles. Underwood is cut every *y* years, usually between 3 and 25, so the wood is divided into *y* compartments[29] with one cut each year, when the crop is *y* years old. Standards were historically harvested on multiples of the coppice rotation, *ny* years, so one n^{th} of the mature trees would be taken out and at least the same number of seedlings – the wavers - selected to grow on. Woods could only be grazed when growth was tall enough to withstand browsing, after *x,* usually at least four, years. This means each cant would be grazed for *y-x* years and there would be underwood of all ages, from freshly cut to *y*-1 years, as well as a range of standard trees. Areas available for grazing, particularly for fattening pigs on acorns or beech mast, constituted a system known as pannage, which continued into the early Middle Ages (e.g. Rackham, 1990; 2003).

The earliest documentary record of a coppice cycle is that of Columella, writing in Italy in the 1^{st} century. He recommended cutting chestnut underwood at five years growth and oak after seven years (Rackham, 1990).

It is easy to imagine how the coppice system seen today, where areas of woodland are cut over in rotation (as shown in Figure 3.4, on the following page) has developed. This type of industrial coppice may be of mixed species or, in planted woodlands, mono-crops of hazel (*Corylus avellana*) or chestnut (*Castanaea sativa*); both can be layered[30] as well as grown from the nuts.

[29] know as 'cants' in Kent, but other names - for example coupe, panel, parcel, sale or fell elsewhere)
[30] Branches bent down and fixed in contact with soil root readily so forming new plants

Figure 3.4 Coppice cut on rotation showing growth of different ages

3.3 The principal coppice species

Individual tree species have been coppiced for different specialist products, based on local growth rate combined with specific characteristics (such as hardness, durability, pliability and bark quality), in various parts of the country and at different times in history. Rotation length for value-added products was (and is) usually specific, while that for firewood and charcoal, which can be made from lower grade or overstood[31] material, is not. A simplified summary is given in Table 3.1, on the following page.

[31] A term applied to older coppice, relative to that required for specific products

Table 3.1 Characteristics of different coppice product*

TREE	CHARACTERISTIC	USE/S
Alder	Water resistant	Clogs, hop poles, turnery ware[32], rakes
Ash	Fast growing on chalky soils;	Hoops, hurdles
Beech	Timber	Furniture;
Birch	Fast maturing heathy soils	Kindling – pimps, Besoms, turnery ware, clogs
Chestnut	Fast growing; rot resistant as the proportion of heart wood to sap wood is high Cleaves easily	Hop poles, fencing, gate hurdles
Hazel	Fast growing Cleaves easily; pliable	Woven hurdles, thatching spars, hoops
Hornbeam	Very hard	Mill/wheelwrights Firewood
Lime	Soft, fine grained Fibers beneath bark	Carving, hat blocks bast used as string
Oak	Cleaves well High tannin bark	Oak swill baskets, post and rail fencing, tan bark

*NB use may depend on age of material (firewood and charcoal not included)

(derived from various sources)

3.4 Regional characteristics

The tree species occurring in natural woodlands are a function of the local biotic and abiotic environmental factors combined with the way in which they have been exploited and modified over time. This has resulted in distinct regional differences, acknowledged in the identification of 159 National Character Areas[33] by Natural England and in the landscape assessments routinely carried out by local authorities as part of the land use planning system.

[32] Items made using a pole lathe such as bowls and chair legs

[33] http://www.naturalengland.org.uk/ourwork/landscape/englands/character/areas/default.aspx accessed 8/6/2009

Regional differences are a function of the demand for particular products within an economic distribution radius as well as the locally available trees. Some items, such as rakes and baskets, were used countrywide although with locally distinct forms. Woven baskets of willow were the norm in the South, while swill baskets of split oak were characteristic in the Lake District (Barratt, 1983), as well as Shropshire and Warwickshire (FitzRandolph and Hay, 1926a) where oak coppice was more common. Skeps, made of coiled straw bound with strips of bramble (*Rubus fruticosa)* bark, were used for eggs and as bee skips. Trugs have been made in Hurstmonceaux, Sussex for over 200 years closely linked with cricket bat manufacture, although only two firms remain (interviews 36 and 39). Trug making was also recorded in Northamptonshire, associated with the Kingscliffe Turnery (FitzRandolph and Hay, 1926a), renowned for wood turning with an annual fair selling produce of local pole lathe turners recorded into the early 19th century[34]. Turnery was also vibrant in Shropshire where 120 men were recorded turning wooded bowls and ladles on pole lathes[35] in one yard although these authors also found machinery had been introduced in the early 1920s.

Local solutions evolved in response to market demand, for example the different ways barrel hoops were made. Rods were soaked in some areas and heated, either over fires or steamed, while in others were dispatched unbent (FitzRandolph and Hay, 1926a). No hoop makers remain in the UK although the French firm of Hémard and Vignol, Limoges, still produce a range of chestnut hoops for use in vineyards and gardens[36]. Many other examples could be given; the reader is referred to the reviews of Edlin (1947 republished 1973) and Geraint Jenkins (1965) for comprehensive coverage of this topic. Hazel (*Corylus avellana*) and chestnut (*Castanaea sativa*) have proved so useful that they have been extensively 'farmed', particularly in the South East (this is discussed in detail in later sections).

[34] http://www.oldtowns.co.uk/Northamptonshire/kingscliffe.htm accessed 2/7/2009
[35] A hand lathe operated by a foot treadle that could (and can) be quickly set up anywhere. This has been revived and there is a thriving Pole Lathe Association, and an annual 'Bodger's Ball; members are hobbyists and demonstrators rather than full-time workers
[36] http://chataignier-cloture-lambris-parquets-angouleme-dordogne.hemard-vignol.fr/ accessed 4/5/09

3.5 Chestnut in the South East

Sweet chestnut (*Castanea sativa*), prior to the development of pollen analysis, was thought to be a native tree but on the basis of archaeological evidence[37] is now believed to be a Roman introduction(Rackham 1986, page 55), probably to make flour from the nuts. There was heated debate over the origin of chestnut, recorded in the Proceedings of the Royal Society between 1770 and 1771 and it has been suggested this was the foundation of the science of historical ecology (Rackham, 1986, page 54). Some considered chestnut indigenous while others, notably Daines Barrington, who had set out four criteria for determining if trees were native or not, claimed that chestnut did not fulfil these. The ensuing debate makes fascinating reading, particularly as some of the woods mentioned by name are still in existence as commercial chestnut coppice. Information about specific woods is summarised in Table 3.2, below.

Table 3.2 Chestnut Woods in Kent (many of which still exist)

WOOD NAME	LOCATION	OWNERSHIP	THORPE'S COMMENTS
Cranbroke	Newington	Mrs Mercer	chestnut poles aplenty
Squirrel	Stockbury	Mr Roper	
Long Tun			
Binbury			large chestnut pollards
Nettlested	Stockbury	Mr Thorpe (the writer)	very old stools > 10ft in circumference producing very good poles; felled in his grandfathers time and twice in his own.

(after Thorpe, 1771)

Thorpe also referred to the *C.sativa* versus *C.vulgaris* debate, identifying that botanical herbalists, such as John Bauhine[38], John Gerhard[39] and John

[37] In the form of charcoal at sites conclusively dated to the Roman period
[38] Circa 1697

Parkinson[40] all refer to *C. Vulgaris,* and further that the French distinguish between the native "*chataignier*" and the improved "*marronier*" grown for the fruit. Edward Hasted (1771), better known for his *History and Topographical Survey of the County of Kent*, published in 1797, contributed to the debate. He referred to the number of pigs listed in the Domesday survey of 1086[41] and cited an earlier reference to a large tract of chestnut woods near Sittingbourne (Kent) extending from Milton towards Maidstone, and including the area now known as Chestnut Street. Barrington's final evidence was based on the Newington Woods and the occurrence of chestnut there in uniform rows.

Chestnut is not mentioned by William Turner, author of *The Names of Herbes* in 1548, possibly because he was based in Northumberland. Phillip Miller first classified this species while curator of the Chelsea Physic Garden in the 1740s[42].

Rackham questions the validity of place name evidence used in the debate on the basis that the Old English for chestnut – *cyst* or *cisten* – is similar to other Anglo-Saxon terms (1986). He does acknowledge that records of Chestnott Wood, Milton, show it was established in the C13th at which time the value was the nuts rather than roundwood or timber[43] but, although many medieval woods were effectively coppice with standards, chestnut is not generally recorded prior to the Tudor period (Rackham, 1990).

The importance of this debate rests not in the question as to whether chestnut is native or not but in the evidence presented which demonstrates that chestnut was well-established in the Sittingbourne and Faversham area of Kent at that time. This remains the heart of the chestnut industry today, with some of the woods, including Chestnut Wood, Newington, still managed commercially and by members of a family that has been doing so for generations (interview 15).

---

[39] Presumably Gerard, herbalist and gardener to Lord Burghley, in Elizabeth I's reign; the original edition of his herbal was published, amended by Thomas Johnson, in 1633

[40] John Parkinson, gardener, and herbalist to Charles 1st, wrote *Paradisi in sole Paradisus Terrestris* published in 1629

[41] See www.domesdaybook.co.uk for more details

[42] http://www.chelseaphysicgarden.co.uk/aboutus/former.html accessed 16/4/10

[43] Indicating that it was probably not managed as coppice

CHAPTER 4 CHESTNUT FENCING

The chestnut industry of the South East is considered in some detail later in this thesis and this chapter is included to provide background information for those unfamiliar with the different forms of chestnut fencing.

Fencing has a long history, from the *dead hedging* (cut material piled up, often on wood banks to protect coppice springs from grazing animals), through mobile hurdles for folding stock to permanent field and property boundaries. Hurdles make temporary enclosures and come in two forms; gate or woven. FitzRandolph and Hay (1926a) describe chestnut gate hurdles recording these in most regions where sheep and arable farming were practiced together, although nets were used in Yorkshire. Regional differences in construction and in price were observed with the production typically marketed within a 12 mile radius. Jones (1927) describes gate hurdles made from ash and Tabour (2005) describes the characteristics of hurdles from different parts of the country and provides illustrations to show construction details.

FitzRandolph and Hay refer to chestnut being used as the *wattles* for woven hurdles. However, although young growth is pliable and can be woven, it has been impossible to corroborate this (1926a). Woven hurdles are usually made from hazel[44], and these remain a significant product. FitzRandolph and Hay described a seasonal peak in demand in autumn and that large numbers were required by agricultural shows and for racecourses (1926a). There is evidence of both types of hurdle being used in livestock markets in the early part of the 20th century as illustrated in Figures 4.1 and 4.2, on the following page.

[44] Willow can be used but does not last well; it is commonly used for woven hurdles in Eastern Europe and these are currently imported in quantity, selling at a lower price than woven hazel hurdles

Figure 4.1 Woven hurdles used to pen sheep (Surrey History Centre collection)

Figure 4.2 Gate Hurdles at Guildford Market (Surrey History Centre collection[45])

[45] Research carried out for Surrey County Agricultural Society/Surrey Hills AONB Partnership at the Surrey History Centre, July 2008

The durability of chestnut, combined with its characteristic ease of working, made it ideal for gate hurdles. These were widely used until very recently[46] as temporary enclosures for sheep for folding on arable land to add manure, at lambing[47] or to allow lambs to creep, giving them access to fodder before the adults. In Kent construction of these was frequently combined with making other forms of fencing and ladders, the latter were particularly important in the fruit growing areas[48] (FitzRandolph and Hay, 1926a). A ladder works is illustrated in Figure 4.3, below.

Figure 4.3 Ladder making at the Tong Works, Dunkirk, c.1965
(photograph provided by Gary Tong)

[46] There was a gate hurdle maker in the village in which I grew up who combined small scale farming with selling these to other farmers; he had his own woodland and cut material as needed.
[47] Some consider only woven hurdles gave enough shelter for lambing but e.g. Woods (1921) records gate hurdles reinforced with cut bracken or draped with sacking in bad weather (page 117)
[48] Dwarfing rootstocks are a relatively recent phenomenon, ladders were needed for both fruit picking and pruning the trees

Post and rail fencing is illustrated in Figure 4.4 below. This consists of split lengths of chestnut slotted horizontally into morticed posts, and is robust enough to contain horses and cattle. There are various subtly different styles, such as Sussex rails[49]. This fencing is also made from oak.

Figure 4.4 Post and rail fencing

The word *pale* originates in the park pales that surrounded mediaeval deer parks. These were constructed from cleft oak stakes that were set in the ground and as well as nailed onto a horizontal rail. FitzRandolph and Hay (1926a) describe wired chestnut fencing, known as paling, as having been introduced in the early 1900s. Pales are split from cross cut chestnut; they are of uniform length, pointed at both ends and, since at least the 1920s have been tied into bundles of 25. These are either submitted to the employing firm or, if self-employed, sold on to a merchant for wiring into a continuous roll. This pattern continues today (e.g. interviews 6, 7, 15, 18, 22 and 27).

[49] These are 9' 6" long (interview 20 – a specialist in these)

FitzRandolph and Hay (1926a) considered wired paling fencing, illustrated in Figure 4.5, below, as ideal for marking out gardens and “controlling children”. A boom in production was reported in 1922 with established production in Haselmere (Surrey), Frant (Sussex), Rainham and Penshurst (both in Kent), reflecting Local Authority house building in England and Wales which rose from 576 in 1919/20 to 15,585 in 1920-21 and 80,793 in 1921-2 (Mitchell, 1988).

Figure 4.5 Pale fencing, with a top wire

The original wiring machine is attributed to E. J. Preedy, Fencing Contractors of Leytonstone, and was apparently capable of producing twenty five 10 yard rolls a day (interview 27). This was a hand-cranked system based on a long chain, similar to a bicycle chain, and was observed in regular use in 2006, as shown in Figure 4.6 on the following page. One has been seen in use in Hereford recently[50].

[50] The yard of interviewee 43, May 2011

Figure 4.6 The Port brothers' workshop with their wiring rig

A horizontal version is illustrated in Figure 4.7 below.

Figure 4.7 Flat bed paling system showing stapling of the wire to the pales

This method has the advantage that the spacing can be altered and that the wire can be stapled to secure it. A very long bed is needed but it can produce a high quality product, as illustrated in Figure 4.8, on the following page.

Figure 4.8 Close wired screening from 6" pales

Spile fencing was described by FitzRandolph and Hay (1926a) as heavier than paling and as made in many Kentish villages by 'spile-turners'. Currently the term spile is used for split stakes of various kinds (e.g. interview 15), and spile fencing for a specialised technique wired in situ. Few remain who are skilled in this (e.g. interview 17). The distinction between paling fencing and spile fencing is unclear in historical accounts. FitzRandolph and Hay (1926a) described the chestnut fencing industry as having multiple structures, varied organisation and some small companies, implying others worked independently. These authors commented that it took twice the labour to cut wood of the same age for fencing than for hoops, so there was greater employment potential. It also carried on all year round while hoop making occurred in winter, combined with summer farm work. The chestnut fencing market developed through the early 20th century alongside complementary markets for the knotty or twisted poles that do not split easily. These by products were marketed as plant supports of various kinds as well as firewood (FitzRandolph and Hay, 1926a). Later the paper pulp industry provided an outlet which continued into the 1980s.

CHAPTER 5 METHODOLOGY

This research builds on investigations carried out prior to the author's association with the University of Greenwich (Bartlett and Rossney, 2007). It is an attempt to provide a robust, evidence-based, context to inform future development of the coppice industry in the South East. An extensive review of the available literature was carried out. Despite substantial historical material very little has been published regarding the chestnut industry except in the context of the hop industry. Much of the recent material is in the form of unpublished reports which tend to focus on the coppice industry as a single entity although some focus on creating new markets for chestnut (discussed in Chapter 8).

Primary data have been collected by the author using several different means, as follows:

- Interviews with key informants
- An investigation into the area of woodland coppiced annually
- A series of investigations into the coppice workforce, their businesses and livelihood issues

These are detailed in the following sections.

5.1 Interviews

The author was trained by Rob Perks, of the British Library, in Oral History recording and has been involved in a number of Oral History projects relating to agriculture and rural land use[51]. In the course of this research interviews were conducted with numerous stakeholders to gain different perspectives on the recent history of the coppice sector. These interviews were not structured but the subjects were encouraged to tell their story, a recognised methodology (Perks, 1995; Perks et al., 1998) and were not recorded as this would have necessitated

[51] For example on sheep walks for the Local Heritage Initiative; use of farm machinery, working horses and cattle breeds

agreements for recording and archiving of the material to be signed[52]. Confidentiality was of paramount importance so detailed notes were taken during the interviews or immediately afterwards if the subject expressed disquiet[53], and have been word processed. Identification is by number in this document to preserve anonymity while enabling the interviews to be cited. Background detail is provided in the following Table 5.1. Many of those who were interviewed did not complete the questionnaire.

Table 5.1 Information about those interviewed

*Indicates spokesperson for a family or group involved in the same activity

NUMBER	CATEGORY	MAIN SPECIES (ranked by importance)	COUNTY	GENDER
1	Cutter; processor	Chestnut; mixed	Kent	Male
2	Cutter; processor	Chestnut; mixed	Kent	Male
3	Cutter; processor direct sales	Hazel only	West Sussex	Male
4	Cutter; processor	Chestnut only	Kent	Male
5*	Processor; firewood dealer	Chestnut; mixed	Kent	Male
6	Cutter	Chestnut	Kent/Sussex border	Male
7	Woodland owner	Chestnut only	Kent	Male
8	Processor (pales)	Chestnut only	Kent	Male
9	Processor (spars)	Hazel only	West Sussex	Male
10	Processor	Mixed	East Sussex	Male
11	Processor (post and rail)	Chestnut only	Kent	Male
12	Cutter	Chestnut only	Kent	Male
13	Manager	Mixed	Cumbria	Male
14*	Cutter; processor; (charcoal; firewood)	Chestnut; mixed	Kent	Male
15*	Cutter; processor; (stakes/poles)	Chestnut only	Kent	Male
16*	Dealer (fencing)	Chestnut only	Kent	Male
17*	Processor (hurdles; spile; lathe)	Chestnut only	Kent	Male

[52] The Oral History Society has protocols and a standard form of words for such permission, an example is available at http://www.oralhistory.org.uk/public_docs/ohs_recording_agreement.pdf accessed 8/9/11

[53] It was made clear that those involved could read my notes; those expressing unease were the less- literate

NUMBER	CATEGORY	MAIN SPECIES (ranked by importance)	COUNTY	GENDER
18*	Cutter; processor (pales)	Chestnut only	Kent	Male
19*	Dealer (fencing)	Chestnut only	Kent	Male
20	Cutter; processor (post and rail)	Chestnut only	Kent	Male
21	Woodland owner	Chestnut only	Kent	Male
22*	Processor; dealer (fencing; charcoal)	Chestnut; mixed	Kent	Male
23*	Dealer (fencing; post and rail)	Chestnut only	Kent	Male
24	Woodland owner	Chestnut only	Kent	Male
25	Cutter; processor; (firewood)	Chestnut; mixed	Kent	Male
26	Dealer (machinery)	Chestnut; mixed	Kent	Male
27	Timber haulier	All	Kent	Male
28	Academic (forestry)		Kent	Male
29	Dealer (machinery)	Chestnut; mixed	Kent	Male
30*	Dealer (fencing; charcoal)	Chestnut only	West Sussex	Male
31*	Cutter; processor (pales)	Chestnut only	West Sussex	Male
32	Cutter; processor; (firewood)	Chestnut; mixed	East Sussex	Male
33	Manager	All	Kent; Surrey; the Sussexes	Male
34	Cutter; processor (charcoal)	Hazel	Dorset	Male
35	Cutter; processor; (charcoal; firewood)	Hazel; mixed	Surrey	Male
36	Processor	Mixed	East Sussex	Female
37	Processor	Oak; mixed	Ireland	Male
38	Owner; manager; dealer	Mixed	S Wales	Male
39	Processor	Chestnut; mixed	East Sussex	Male
40	Cutter; processor (pales)	Chestnut only	Kent	Male
41*	Cutter; processor (firewood; fencing; lathes)	Chestnut; mixed	Hereford	Male
42	Cutter; processor (firewood; fencing; lathes)	Chestnut; mixed	Hereford	Male
43*	Cutter; processor (fencing; paling)	Chestnut only	Hereford	Male

NUMBER	CATEGOREY	MAIN SPECIES (ranked by importance)	COUNTY	GENDER
44	Manager	Chestnut; mixed	Hereford	Male
45	Cutter; processor (charcoal)	Chestnut only	Hereford	Male
46	Processor (charcoal)	Hazel	Hampshire	Male
47	Cutter; processor (charcoal)	Hazel; mixed	Kent	Male
48	Processor (hurdles)	Hazel only	Hampshire	Male
49	Cutter (hurdle poles)	Hazel only	Wiltshire	Female
50	Manager	Chestnut; mixed	Kent	Male

5.2 Investigation into the area of woodland coppiced

As County Woodland Officer the author was charged with implementing the Kent Biodiversity Action Plan, which had a target to increase the area of woodland managed as coppice although there was no baseline and no established method of determining this. The use of non-professional volunteers to gather data, particularly when this is required over a wide geographical area and a long time period, has a long history, particularly in the field of ornithology (Bonney et al., 2009; Bhattacharjee, 2005). It is the basis of the extensive annual surveys collated by the British Trust for Ornithology (BTO)[54], without which population trends would not be readily apparent. Cooper et al. (2007) applied the lessons from Cornell University's bird research to habitat monitoring, and similar 'citizen-science' projects have gained momentum in the UK, particularly with the post Agenda 21 era emphasis on community engagement and involvement with environmental issues (Silverton, 2009). These projects often combine the need to acquire data with raising environmental awareness among the citizen scientists who take part. While it is important to be realistic and give clear instructions to volunteers there is evidence that results can be comparable to those of professional scientists (Smith and Evans, 2003).

[54] For more information see http://www.bto.org/volunteer-surveys, accessed 2/9/11

In this instance a simple survey, included as Appendix 1, was devised asking for information about areas of coppice cut within a specific time frame, where this was taking place and some additional detail on the species harvested. This was piloted over winter 1999/2000, using the Parish Tree Warden Network. Returns were disappointing; with additional input from agency staff and woodland managers, this revealed about 76 hectares of woodland, in 48 parishes, was coppiced between the 1st of September 1999 and the 31st of August 2000.

The survey was repeated for the season 2000/01 and 2001/02 using a wider network of volunteers[55] with, for example, a flier mailed to all parish councils and members of CPRE[56]. The information requested remained constant although the year dates were changed and a graph of results included[57]. The third year, 2002/03, saw a concerted effort to increase the response rate by sending SAEs[58] to all previous respondents, thanking them for their contribution and enclosing a questionnaire. Articles about the survey appeared in *The Orchid*, the Kent Downs AONB newsletter (although this was potentially confusing as it was accompanied by a photograph of pollards); The Kent Wildlife Trust newsletter (distributed to over 13,000 members); Woodlots and the Ashford Borough Council Environmental newsletter. The later surveys included returns directly from the coppice cutters as they began to consider it useful, raising awareness of their work.

The questionnaire requested grid references, name of wood and parish, so that sites could identified and be plotted on GIS[59] enabling regularly coppiced woodlands to be identified. Data could be sorting by different criteria, for example by landscape character, to help target extension to promote coppice management and landscape management funding, for example under the SDF[60].

[55] The Tree Warden network had not provided good coverage as returns were only received from 48 parishes out of a total of more than 300
[56] Campaign for the Protection of Rural England
[57] The importance of giving feedback in citizen science projects has been emphasised, for example by Silverton (2009)
[58] Stamped addressed envelopes
[59] Geographic Information Systems
[60] Each AONB has a Sustainable Development Fund that they can allocate to particular projects

The coppice survey provided information about actively worked coppice within the specified survey year. Surveys dependent on voluntary response are unsystematic and likely to be underestimates, particularly as areas cut are not necessarily visible from roads or footpaths and may only be known to the landowner and cutter/s. Objection to coppicing is an issue so there are advantages to keeping it out of the public eye. A considerable amount of validation was carried out with the author visiting about 20% of the sites, and this revealed no falsification in the returns (although unreported sites were observed and added). The same survey was repeated, after a five year interval, for three seasons, 2007/08, 2008/09 and 2009/10. The coverage was extended to the South East rather than restricted to Kent as coppice workers began to submit responses from a wider area.

5.3 Previous investigations into the coppice workforce

The author has been engaged for many years in research into coppice woodland management, those involved in this activity, the issues they are experiencing and the way this is affecting woodland management. Specific examples are briefly reviewed in the following section to provide the context for the current investigation.

5.3.1 Supply Chain research

An investigation into the chestnut supply chain was carried out with officers from the Technical Development Branch (TDB) of the Forestry Commission. Visits were made to work sites to review the way cutters were working. This resulted in an internal report which identified that groups, often composed of family members, were working in isolation and this was a contributory factor to their lack of awareness of up to date working practices and the potential benefits of these. There were two outcomes. Firstly, a Coppice Harvesting Efficiency course was developed to introduce cutters to bench felling techniques and hand tools; secondly, focus groups were held to explore the issues, particularly the barriers to expansion, for the woodland owners, the bulk buyers of coppice products and the cutters themselves.

5.3.2 Health and Safety workshops

In the early 2000s casual questioning of those involved in the industry revealed concerns over Health and Safety issues. The woodland owners and managers expressed their difficulty in communicating with cutters and concern over the number without NTPC[61] chainsaw certificates[62]. The author prepared and submitted a successful European Social Fund (ESF) bid to deliver training to make existing, well-established, cutters legally compliant. The issue of Health and Safety was also addressed by holding a series of workshops with an HSE[63] official to de-mystify the legislation and specifically to make cutters competent in carrying out risk assessments[64]. During these workshops participants were asked what could be done to help them and the response, "*get the public off our backs*" was unanimous. A thousand signs were produced explaining the importance of coppice woodland management funded by, and carrying the logos of, organisations such as the Woodland Trust and RSPB[65]. These were distributed free, providing an incentive to provide information, and have had enduring popularity to the extent that a further batch was produced in 2007.

5.3.3 INTERREG projects and database

Two INTERREG[66] projects relating to woodland in Kent and Nord-Pas de Calais were written, submitted and managed by the author and enabled the contact details gathered in an ad hoc way in earlier initiatives to produce a database of cutters and processors. This was handed to the Forestry Commission as a resource but, despite the original intention for this to be widely disseminated to

[61] National Training Proficiency Council accreditation
[62] European legislation was putting the onus on land owners to ensure those working on their land were competent as part of the risk assessment process
[63] Health and Safety Executive
[64] These do not have to be written down, although this is recommended. The most important factor is to go through a checklist, identify potential hazards and take steps to minimise these
[65] Royal Society for the Protection of Birds
[66] A European Trans-Frontier funding program

enable woodland owners and managers to find their nearest coppice worker, this has not been realised[67]. The data were analysed and a summary has been published (Bartlett and Rossney, 2007).

From the summary above it can be seen that data collection has evolved over time rather than being designed from scratch. Although this may be a valid criticism of the methodology the format was dictated by requirement of various funding programmes and to enable comparisons with other pre-existing data sets.

5.4 Coppice Workforce Questionnaire 2008-9

The constant changes in funding streams necessitaties continual gathering of data and a new questionnaire was devised, included as Appendix 2, based on elements of the LANTRA[68] Training Needs Assessment format, as required by the Rural Development Plan England (or RDPE) but also with reference to the National Countryside Crafts survey (Collins, 2004), to enable comparisons.

Collection of information from this group has particular ethical considerations. From the earliest days of working with the coppice industry it has been clear that, although some are highly educated, the majority are not. The traditional chestnut workers, as opposed to the career changers who mostly work mixed species or hazel coppice, generally have very low levels of educational attainment with literacy a challenge for some. In face-to-face situations this is dealt with sensitively; some ask for the questions to be read and their answers filled in. Problems were encountered with the ESF project as family groups may have the same names, e.g. John X, father of John X and George X, all working with Uncle George X and giving the same address[69]. Photographs had to be attached to record sheets to overcome this problem. This was little help with the identical triplets, with the same birth date; fortunately these do not all have the same address.

[67] This was an internal Forestry Commission decision rather than a reflection of the quality of the data
[68] LANTRA is the Sector Skills Council for land based and environmental industries, for more information see http://www.lantra.co.uk/About-Us.aspx accessed 20/9/11
[69] This is a genuine example

Coppice workers, particularly the traditional group, are generally suspicious of interference and of outsiders asking questions. Over the years they, or their associates, have received tangible benefits from the work undertaken by the author, from providing free information boards[70] to subsidised training that they actually want. As a result they come forward volunteering to fill in (or dictate) coppice survey forms and asking to complete the database questionnaire. A good relationship has been built up (based in part I'm afraid on cake) and, at events such as the 'Weald Wood Fair' they bring along others to provide information. Data collection would have to be pragmatic rather than systematic, although it is also collected on training courses if participants have not already provided it.

5.5 Focus Groups

The announcement of funding for forestry and woodland under the Vocational Training Scheme (VTS), part of the England Rural Development Plan, was the incentive for carrying out further investigation into training needs in the coppice sector. As required by VTS, these were carried out to the LANTRA TNA[71] format which required the author to be trained by LANTRA and registered as a Training Needs Assessor. This method takes participants through a process during which they identify issues limiting their business development and the opportunities open to them. The TNA methodology[72] is a commercial product, training is expensive and there are no available references, either in the literature or on the Internet, providing details.

[70] Explaining that coppice is good for wildlife produced in response to cutters problems with the public accusing them of destroying trees
[71] Training Needs Assessment
[72] This was developed by Tony Warmsley, now an independent consultant, when he was a member of the LANTRA management team, prior to 1997. It has now been replaced by the 'Assisted Skill Check' methodology, again a commercial product. Information supplied by John Godden, LANTRA Industry Partnership Manager, in a meeting 16/9/11

The author has considerable experience in running participatory events of this type with examples of methods developed being widely published (e.g. in Wates, 2000; see also Bartlett, 2005; 2000 and 1999). Four events were conducted with the numbers in each varying between 10 and 14. The participants were self-selecting. Key figures in the industry were contacted and it was these who invited their business owning colleagues to come in to their yards or workshops and take part.

5.6 Development activities

Setting up events to enable horizontal information exchange, to supplement the formal (vertical) training, was eligible for funding under the ERDP[73]. This has enabled a series of informal social events to be held and information such as feedback from the 2009 Cumbrian Coppice Conference, and on changes in legislation disseminated, as well as get-to-know-each-other activities. The annual Hands on Day, held at the junction of Surrey, Hampshire and Sussex is currently in its third year and is attracting workers from a wide area. It has been expanded with demonstrations of skill, trying out others techniques and equipment, a tool auction, overnight camping and a pig roast (not to mention rather dreadful homemade cider). Coppice week was held in August 2010, based on a traditional earth burn marking St Alexander's day (the patron saint of charcoal burners). Subsidised master classes for coppice workers run alongside this proved so popular that it was repeated in May 2011. The RDPE funding also enabled genuine coppice workers (as opposed to salaried staff) to attend the South East Coppice Conference[74], held in October 2010, at a highly subsidised rate.

[73] England Rural Development Plan, 2nd Pillar of the Common Agricultual Policy support for agriculture and forestry

[74] Full report available at http://coppicegroup.files.wordpress.com/2010/11/2010-south-east-coppice-conference-report.pdf accessed 30/11/10

CHAPTER 6 HISTORICAL BACKGROUND

This topic could be the focus of an entire thesis. This chapter will give a brief résumé to set the context to the research but is, of necessity, superficial, and focuses on the South East, particularly Kent. The prehistoric evidence for coppice woodland management has been alluded to previously; it will not be repeated here.

6.1 The distant past

Rackham (e.g.1986) considers that woodland had been cleared from half of England by the start of the Iron Age, around 500 BC, probably slowing during Roman occupation. Woods were coppiced intensively around concentrations of population and where there was an industrial demand for fuel, such as the iron producing areas of the Weald, which required charcoal (Cleere and Crossley, 1985; Roberts, 1999). Rackham (1980) calculated that these required the annual output from 23,000 acres (9,300 hectares) of coppiced woodland. The availability of both iron ore, and the fuel to exploit it, is considered to be one of reasons the Romans came to Britain. Other industries, such as tile production in the Blean, also dating from the Roman period but continuing into the Victorian era, would also have required large quantities of wood fuel (e.g. Streeten, 1982). Fuel wood and timber were transported by sea around the south coast and into London wharfs (Roberts, 1999). As well as bringing technology in the form of metal saws for cross cutting which facilitating cleaving along the grain with a beetle[75] and wedge, the Romans built good roads.

Numerous Anglo-Saxon charters make indirect references to coppicing (e.g. Rackham, 1986). Witney (1990) considers the Jutes to have abandoned saw technology and previous iron-smelting sites. Widespread use of coppice continued. Wattle hurdles were the basis of buildings and wood the major fuel for domestic cooking, heating and many industrial processes. Salt was made by

[75] A simple wooden mallet

evaporating seawater in salt pans. Lappenberg (1845) listed 385 on the Sussex coast while according to Furley (1871) there were 285. The demand for wood would have been consistently high (Furley, 1871; Witney, 1990) in proportion to population. Witney (1990) has deduced woodland coverage in this period on the basis of place name evidence, with "field" endings indicative of wood pasture while "-den" and "-hurst refer to woods. The inclusion of a tree name may imply that it is rare, and so of note, rather than indicating it was common (Roberts, 1999). Land ownerships are also reflected in place names e.g. King's Wood, and "-minnis" endings implying common ownership (Wallenberg, 1931; 1934).

By the 8th century the Weald commons had been divided into swine pastures (or dens) associated with North Kent manors for pannage. Squatter settlements, later treated as freeholds, developed and the situation became complex with the settlers owning the Wealden soil while mast-bearing trees remained with the lords who controlled the pannage (e.g. Witney, 1990). The pannage season was short, from the autumnal equinox, when acorns ripened, to Martinmas[76], when most pigs were killed and salted. Transhumance along drove roads from East Kent into the Weald was not the only route; livestock was also shipped from Thanet to the river Rother, with salted carcasses and fuel wood carried back. Witney's extensive research has established pannage to have been past its peak by the time of Domesday and it declined rapidly thereafter (Witney, 1990). Documentary references to wood pasture for cattle are rare, although there are several in the Canterbury area. For example at Nackington, on the edge of the Hardres Forest and to "*hridra leah*" or cattle glades near Petham and Buckholt and, in 724 to "*Liber de hyda*" in Blean, Buckholt and Oxney (Witney, 1990). These woods would have consisted of mixed species as oak (*Quercus* spp) leaves and acorns are toxic to cattle[77] and stock would have been separated from recently coppiced areas by banks and ditches.

The Domesday Book, commissioned in 1086 by William the Conqueror, was the first extensive land survey carried out in England identifying owners and resources

[76] The 11th of November
[77] See for example http://www.provet.co.uk/lorgue/5a5a0e1.htm accessed 10/3/08

for taxation purposes. It does not specifically refer to coppice although underwood is used to describe some woodland[78]. Deductions from the numbers of pigs reported in Domesday indicate that the South East was heavily wooded at the time of the survey (Morgan, 1985). Witney (1976) pointed out that coppiced woodlands, by definition, would be unsuitable for swine feeding and so references in Domesday to unproductive woodland, i.e. not yielding acorns, are considered to refer to coppice (e.g. Furley, 1874, page 743). Domesday has shown that, around 1086 AD, woodland and wood pasture combined covered a maximum of 15% of the land area nationally and that large areas of thesewere rare.

The Weald remained the largest wooded area in Norman times (Roberts, 1999, page 26) and much woodland research in the South East has concentrated on this area. The availability of charcoal was one of the three pre-requisites of the Wealden[79] iron industry, the others being ore and flux. Witney (1990) argued that smaller woods across the countryside were also important as they were more accessible; the Weald was notoriously isolated and, despite the iron industry, less populated.

Most mediaeval woods are thought to have been coppice with standards (e.g. Rackham, 1990). An early record[80] of rotational coppicing and annual sale of standing underwood is found in the 1356 estate books of the Bishops of Ely (Rackham, 1995, page 312). Coppice was referred to by the Latin phrase "*sylva caedua";* with various English spellings such as "*coppis", "copys", "copye"* and "*coppy"* also used. The terms "*copse", "coppse", "copsewood"* and "*coppsewood"* are understood as refering to coppice with standards (James, 1990 pages 37-38), commonly of oak[81] (see also Jones, undated[82]). Evelyn (1670, page 12) uses the term "*copsing"*.

[78] http://search.atomz.com/search/?sp-q=underwoodandsp-a=00070f53-sp00000000andsubmit.x=85andsubmit.y=8 accessed 10/3/08
[79] Including parts of Kent, Surrey and Sussex
[80] Rackham claims this as the earliest although these is ample documentation of rotational coppicing prior to this date
[81] Retaining standards within coppice became a legal requirement in the 16th century (Evans 1992).

The value of woodland soared during the mediaeval period and was, in places, comparable to the best arable land (e.g. Rackham, 1990; Roberts, 1999 and Wheaten, 2002) although clearance by assarting[83] was also occurring (e.g. Rackham, 1980; Wheaton, 2002). Demand for wood increased with population as did value, hence the need to protect woods by woodbanks and ditches to prevent livestock grazing young coppice growth. The cost of creating and maintaining woodbanks and accompanying ditches in time, effort and money, was significant (Wheaton, 2002, page 32; Ballard, 1920) and many of these archaeological features remain evident today (e.g. Bannister and Bartlett, 2005).

Availability of transport and proximity to markets were the key factors determining management. Land hunger, with increase in population, led to clearance of remote woods but some of the most accessible woods, near to towns, the coast and rivers, survived to the present day. Muhlfield (1933) contrasts the value of a wood near Folkestone, with cheap sea transport, with Wye, at the foot of the Downs near Ashford, with no navigable water, where woods were more important for cattle pasture. North West Kent, with the river Medway, and woods along the Thames fed the "*insatiable*" London market, with fuel in various forms, from faggots[84] to log wood, transported on the Medway. The first competition from sea coal occurred in the time of Edward 1st [85] (Furley, 1974).

Kent was considered the richest county in England in the 14th century based on the woollen trade (Church, 1948), with sheep husbandry requiring hurdles either of woven hazel or the gate type for folds[86]. Loss of woodland to agriculture came to an abrupt halt around 1350 with the Black Death[87] (Baille, 1995), the subsequent lack of both workers and consumers causing abandonment and reversion of previously ploughed land.

---

[82] http://www.heritagewoodsonline.co.uk/wood/history.html accessed 28/9/09
[83] The clearing of trees and bushes to prepare land for cultivation
[84] Tied bundles of brushwood
[85] Edward 1st reigned from 1239 to1307
[86] Temporary, easily moved, pens
[87] The outbreak of Plague "*the great mortality*" which began in southern England in 1348 rapidly spreading across the whole country and estimated to have killed 9 in 10 of the population (Morgan, 2001)

As the population recovered, demand – and value – rose again, increasing the importance of maintaining ownership boundaries. Documents dated 1382 refer to trespass in the Blean and a mandate from the Archbishop of Canterbury threatened excommunication to any who:

> "*entered against the will of the prior and convent the coppices and woodland commonly known as le blene and there cut down trees*"
>
> (Wheaten et al., 2002, page 61)

By the end of the 14th century substantial timber buildings were becoming more common, although wattle and daub remained important. The rip saw was re-introduced, pre-dating saw pits (Roberts, 1999, page 63) although cleaving remained the most efficient way of reducing timber and roundwood to size. According to Roberts (1999) chestnut (*Castanea sativa*) in the pre-hop era was the basis of a specialised industry producing an enormous output of laths, strips 5ft long, an inch wide and half an inch thick to carry roofing or plaster, an advance on wattle and daub. A site near London Bridge, holding stock of 87,000 lathes in 1350, is cited (page 86), said to be a quote from *Building in England down to 1540* by Salzman. However the source document (Salzman, 1952) records that in 1441 twelve oaks at Langley in Buckinghamshire produced 7,000 laths, suggesting that oak rather than chestnut was used. Chestnut cleaves easily and is currently used for lath production (interviewee 17, who has two to three orders a year) and has been specified by English Heritage for a restoration in Gloucester (interview 42, although he usually makes then from oak).

By the 15th century demand for coppiced roundwood was such that long-term planning was needed to maintain regular supply. Canterbury Cathedral Archive holds ecclesiastical records, particularly relating to the still extensive Blean woodlands (Rackham, 1990; Wheaton, 2002). This resource has been studied by the Blean Woods Research Group[88]; which included the mediaeval Latin scholar

[88] Formerly the Blean Historical and Archaeological Research group, originally an adult education class attached to Canterbury University in the 1970s; annual reports were published but activity ceased after the publication of *The Blean – Woodlands of a Cathedral City* in 2002.

Alexander Wheaton, who has transcribed many documents demonstrating the productivity of the woods, the intensity of working and notably, the diversity in the forms of fuel wood (Wheaton, 2002). These show that every last twig was used

The iron industry in the Weald is widely considered to have given rise to intensive coppicing of the whole of the Wealden woodlands (e.g. Furley, 1874; Whitney, 1990; Roberts, 1990) as well as significant water management, still evident in the pond bays and hammer ponds (Bannister and Bartlett, 2008). Thirsk (1987) describes the Weald as pasture and woodland, with small subsistence farms within an area otherwise characteristically arable in this period. Tudor ironworks have been calculated to have required 900,000 acres[89] of regularly coppiced woodland (Roberts, 1999) with similar demand assumed for other mineral processing activities, from the tin mining in the South West to the lead smelting in Derbyshire (Bunting, 2006). These calculations should be treated with caution as plant growth varies significantly with a wide range of environmental variables including species, planting density, age of stool, aspect, weather, hydrology, soil, pests and diseases, all of which can vary dramatically over a small area. Crossley (2005) argued that, rather than causing English woodlands to become a dwindling resource, industrial fuel requirements ensured the resource was maintained.

Sea transport continued to be important with timber imported from the Baltic and used, for example, for building the Brewers' Hall in London in 1423 (Roberts, 1999) and for ship building (Page, 1926).

6.2 The 16th Century

Rackham (1990) considers the use of wood, based on building and heating needs, to have remained in equilibrium for 500 years, only breaking down in the 20th century. While this represents an overall picture, local industrial demand would have varied, with peaks and troughs against the steady background of domestic

[89] Equivalent to 364,000 hectares

requirements. The 1513 records for the Blean[90] reveal an output of 34,000 curt[91] faggots, and a steady annual production of between 30,000 and 40,000 annually. Cleere and Crossley (1985) calculated that the Wealden furnaces in the 16th century needed 2,500 acres of coppice with a further 1,500-1,600 acres to fuel the forges[92], reflecting the enormous growth of the iron industry in the late 15th century. This scale of industry led to an Elizabethan[93] edict requiring users of roads to contribute to their upkeep either financially or by spreading cinders (Roberts, 1999). Those in the Weald were particularly muddy. In 1546 numbers employed in producing fuel were estimated to exceed those directly involved in iron production by five times.

Legislation was introduced in 1544 to ensure maintenance of the resource by excluding livestock for four years after cutting and an interval of 14 years before re-cutting (Straker, 1931 and 1961). The Weald, being so heavily wooded, was originally exempt. However, concerns about the impact of the iron trade were so strong that a Commission of Inquiry[94] was set up in 1549 to enquire into the number of iron mills and furnaces, how much "*great wood*" was "*destroyed*" annually, the effect on the price of wood, and whether the industry in France had a similar detrimental effect on local inhabitants. The jurors concluded each enterprise to have used at least 1,500 loads of wood converted to charcoal (Straker, 1931 and 1961), and a series of Acts of Parliament in 1558, 1581 and 1585 aimed to reduce the impact, especially in the Weald. In the subsequent 60 years the charcoal price quadrupled, seriously affecting domestic fuel users. This was partly due to inflation but was exacerbated by an Act of 1574 which prohibited charcoal burning within 18 miles of London and 8 miles of the Thames, significant as water was the cheapest transport (Straker, 1931 and 1961).

Iron production was not the only demand on Wealden woodlands, which were also characterised as wood pasture with heath and coppice (Thirsk, 1987). This author

[90] The account books of Canterbury Cathedral Priory
[91] Short
[92] The iron ore was smelted in the furnaces and then processed, often into munitions, in the forges
[93] Elizabeth 1st reigned from 1533 – 1603
[94] Reported in full in the chapter entitled "Fuel" in Straker (1931)

also mentions the woollen trade, based around Cranbrook increasing its fuel demand in response to the 1566 Act requiring that only dyed cloth could be sold, in an attempt to stop French competition (Roberts, 1999). Straker (1931), records 6,542 acres of fuel wood harvested between 1553 and 1573 in Cranbrook and the adjoining parishes, although the proportions destined for the cloth and iron trades is unclear. Expansion of glass production was apparently limited by lack of wood cutters (Hewitt, 1926). Population growth across the South East stimulated woodland clearance, but this was balanced by the commercial value, particularly of fuelwood (Chalkin, 1965). Coppicing maintained, rather than destroyed, woodland as long as stock was excluded during the crucial early stage. Managing woodlands as coppice ensured continuation of the resource.

6.3 The 17th Century

The value of coppice in the 17th century is well-documented (e.g. Chalkin, 1965; Wheaton, 2002; Rackham, 1986). The fuel requirement for different industrial processes has been calculated by Westermann (1995) demonstrating why, for example, glass making did not take place in mining or metal smelting areas. This is shown in Table 6.1, summarised from Westermann (1995).

Table 6.1 Fuel requirements of industrial processes

Proportions of wood required per unit of finished product		
Product	Finished product	Wood required
Salt by boiling C16-17th	1	15
Pig iron	1	15
Wrought iron	1	30
Copper	1	200
Silver	1	300
Potash	1	2000
Glass	1	2400

Roberts (1999) refers to a John Norden who, in 1607, described charcoal as being of "*an infinite quantity*". This is contradicted by accounts from the 'Committee for the Supply of London with Wood for Fuel', established in 1643, which referred to "*pillaging*" of woods near the navigable River Medway and the Thames estuary, implying a growing demand for fuel (Roberts, 1999).

In 1637 John Browne, the King's gun founder, requisitioned fuel. The residents of Cranbrook reacted by petitioning the Privy Council requesting this should be sourced from Sussex, to protect their resource (Chalkin, 1965). This is corroborated by Hewitt (1926) who records John Browne as declaring his intent was to "*restrain*" the wood-brokers (or coppice merchants), who had increased the price from 5s to 11s a cord, rather than harm the clothiers.

In 1653 half the furnaces in England were in the Weald, but by 1717 this had fallen to 14 out of a total of 61. Whether this is related to fuel is unclear as advances in smelting efficiency were also reducing fuel consumption (Westermann, 1995) Mineral fuel, known as seacoal or pitcoal[95], became more generally available from around 1650[96]. Crossely (2005) considers increasing use of this fuel to have been not merely in response to rising wood fuel prices, but also the attraction of innovative processes. This author demonstrates, from both archival and archaeological evidence, that sustainable woodland management skills developed during the 16th and 17th centuries were shifting to longer cutting cycles producing larger roundwood that could, if required, be grown on to meet the requirements of ship builders. This reflected changes in land ownership, with strengthening of tenancies after 1700 which made continuity of management possible and increased the incentive for taking a long-term view. Andrew Yaranton, in his book *England's Improvement by Sea and Land* suggested that the ironworks were actually increasing the resource of woods and timber (Roberts, 1999).

[95] To distinguish it from charcoal
[96] There had previously been limited coastal traffic in coal from the Tyne and Swansea areas

Rising concern over the effect of tree felling on England's woodlands led to the Royal Society commissioning John Evelyn to carry out a review. He expressed the opinion that it would be advantageous to import iron from America rather than exhaust domestic woodlands but, at the same time, suggested that woodlands could be managed in such a way as to conserve them (Evelyn, 1664). Industrial demand was the principal cause for concern but a range of these were competing for the resource; it was not only the ironworks (Chalkin, 1965). The Navigation Acts, for example that of 1672, increased demand for ship timber at Greenwich, Deptford and Chatham, adding to the demand for larger timber (Furley, 1874; Roberts, 1999)

Land use in 17th century Kent, derived from estate maps, manorial and estate surveys, suggests extensive woodland on the Downs and in the Weald, as shown in Table 6.2, below. Woodland on the sandstone (Greensand) is probably under-estimated as the extensive commons were not surveyed (Chalkin, 1965).

Table 6.2 Land use in 17th Century Kent (after Chalkin, 1965)

Region	Arable %	Meadow %	Pasture %	Woodland %	Marsh %	Total %
Weald	29.5	15.5	40.2	14.7	-	99.9
Sandstone	34.1	17.2	43.8	5.1	-	100.2
Downs	54.3	5.3	17.5	22.7	-	99.8
North Kent	67.3	1.0	17.6	8.2	5.5	99.9

Hops (*Humulus lupulus*) were introduced from north Germany or Russia in the 16th century, with the first hop garden recorded near Canterbury[97] in 1520 (Museum of Kentish Life, undated); some consider this to have been in the village of Westbere[98]. Hop gardens increased during the Elizabethan period, both in size and extent, averaging between a half and two acres (Chalkin, 1965). By 1650 Kent

[97] In East Kent, distant from the Weald
[98] http://www.herefordshire.gov.uk/htt/535.aspx accessed 12/4/10

was the source of a third of the national production (Chalkin, 1965). In 1697 Celia Fiennes commented on the number of hop gardens between Sittingbourne and Canterbury (Fiennes, 1888). The investment required to establish these was considerable, and for 1679 this has been estimated at £10 - £15 an acre. Each plant required several poles to support the bines, the name given to the climbing hop stems, so even small gardens required several thousand poles, of 12 to15 years growth, and which were replaced every 3 or 4 years (Chalkin, 1965). Potential profits were substantial but risks were high and some gambled on future returns (Chalkin, 1965).

Hop poles were not the only market for the woodland resource outside the Weald. The copperas industry, on the coast, was based on sulphur stones (pyrites) being boiled in lead vats for up to a week, and the resultant crystals were worth £5 a ton in 1634 (Hewitt, 1926 page 397); Hasted mentioned six copperas houses in Whitstable alone (1797). Trade in 17th century Kent was still directed through the ports to London, with shipments twice daily in the 1630s (Thirsk, 1997). Inland enterprises were hampered by bad roads and mud, particularly in the Weald, with an account from 1600 describing transport of ship timber taking two years over land and lamenting the high cost compared to water carriage (Chalkin, 1965). Sheep production combined with arable farming[99] continued in much of Kent, evidenced by the annual export, from Faversham alone, of more than 2000 bags of wool throughout the last decade of the 17th century. However broadcloth production declined from this point as the Weald artisans moved to linen production[100] (Slater, 1926). Demand for domestic fuel, both for cooking and heating, would have continued to increase with population. Likewise, household and agricultural items would also have created a constant demand met by craftsmen engaged in the underwood trades.

[99] A combination requiring hurdles made of coppiced roundwood
[100] This died out in the 19th century as flax gave way to hops – hop bagging was the last linen to be produced (Slater, 1926).

6.4 The 18th Century

Despite increasing availability of coal North West Kent remained an important source of fuel, including kindling, for London. The Weald had easily accessible ironstone and available fuel but was not ideal in all respects for the iron industry. Forges were often idle in summer, due to lack of water[101] and the heavy Wealden clay soil could make transport difficult. Accounts dated 1746 suggest fuel to have constituted 82.5% of the production costs of guns (Chalkin, 1965), probably influencing landowners to retain woodland as coppice rather than convert it to pasture or arable (Hewitt, 1926). Straker (1931 and 1991) considers that colliers[102] were often directly employed, either by iron masters or clothiers; some of these owned woods to secure the resource. The demand from the wool trade can be deduced from a 1725 record of thirty looms in one village[103], each with eighteen spinners as well as carders, sorters and dyers (Church, 1948).

The industrial revolution resulted in innovations in the iron smelting process, such as the use of coke by Abraham Darby (Roberts, 1999). Despite this, iron produced using charcoal remained in demand, particularly for edge tools, so small forges using traditional methods[104] persisted (Furley, 1874). Roberts (1999) reports advertisements for standing underwood appearing in newspapers from the 1750s, although Furley (1874) maintained that the "*extinction*" of the Weald iron industry was caused by a lack of charcoal in sufficient quantities resulting in high prices, and that this resulted in ironmasters and their workers relocating to South Wales where there was available and affordable coal. Jones (1927) suggests it was the woodland resource and available charcoal that had first attracted this group, in the first half of the 18th century but that this later became the limiting factor and incentive for the development of new processes.

[101] Considerable effort was expended on water management, documented in Bannister and Bartlett (2008)
[102] Charcoal burners
[103] Goudhurst, near Cranbook, on the edge of the Weald
[104] Woods (1949) records scythe and sickle makers favouring this after the second World War

International trade in timber, wood products, metals and other goods was buoyant in the latter half of the 18th century Alexejev et al. (1995) reported that Britain was increasingly dependent on imported metal from Russia and Sweden. These authors describe regulation of wood harvesting in Nordic countries to restrict conifer felling when cones were ripe according to the direction of the wind, thus facilitating regeneration. Alexejev et al. (1995) describes large-scale production of handsaws in early 18th century Russia that were sixty times more efficient than axes. Sawmills, rare in England, were common on the continent and quantities of prepared material, such as barrel staves, were imported via Amsterdam, with timber and pitch the return cargo (North, 1995). Internal trade was facilitated by the developing canal network, which by the 1770s was opening up routes to the North and West Midlands (Morgan, 2001). This is likely to have impacted on the demand on coppice woodlands and their products. Coal output doubled between 1750 and 1800, with steam pumps enabling extraction from deeper seams, and horse drawn railways enabling work further from waterways (Morgan, 2001), and so reducing dependence on wood fuel, particularly in urban areas.

Wood cutting, processing and carting would have been significant for rural employment, particularly as this was a period of accelerated agricultural development[105] (Mingay, 1968). Straker (1931; 1991) showed all tree species in the Weald to have been used for fuel, with the exception of elder (*Sambucus nigra*), which was too pithy, and hazel (*Corylus avellana*), which was too valuable as a source of pliable rods used, for example for weaving hazel hurdles. These, along with the Kentish gate hurdle, commonly made of cleft chestnut, were used for folding flocks of sheep on arable land at night[106] (Chalkin, 1965).

[105] The Agricultural Revolution, as described by Ernle (6th Edition 1961) and Hammond and Hammond (1911) is now considered as a period of accelerated development rather than a single event.

[106] Sheep, grazed on the downs and coastal marshes were important for wool meat and milk

At the beginning of the 18th century it has been calculated that a third of the rural population were independent of direct agricultural income, rising to half by 1800 (Stobart, 2004). In the Midlands and North rural out work[107] manufacturing and craftsman-retailing were common; Stobart (2004) considers this an integral part of rural life at this time, using shoemakers and tailors as examples. Bunting (2006) describes similar practices in stocking and lace making. The complex supply chain interactions are equally applicable to the coppice sector, with some selling to merchants while others focused on direct sales.

The mid 18th century saw the start of the industrial revolution, following a period of very low agricultural prices (Morgan, 2001). The general trend was increase in population, despite the high mortality across Northern Europe in the 1740s (Baille, 1995). Farms were becoming larger by the processes of engrossment[108] and enclosure[109], with the latter facilitated by Parliamentary Acts[110]. Historians have long debated the role of enclosure and removal of commoners' rights in the rise of landlessness and wage dependency in the workforce[111]; it is indisputable that there was a concentration of industries and movement of significant numbers of the rural workforce into urban areas. The latter half of the 18th century also saw a rise in the importance of large parks and estates, with the "*London ring*" of country estates within a day's carriage ride of London, emerging (Bannister, 1996; 2007). Roads became safer and faster as a national system of turnpike roads[112] was established in the 1730s (Morgan, 2001).

The Weald was increasingly seen as a source of quality ship building timber, with the oaks (*Quercus* spp) retained as standards over the coppice in demand and recorded as being seasoned at the Chatham naval dockyards in 1772. Transport was an issue and the idea of a Weald canal to link the rivers Medway and Rother was mooted (Roberts, 1999). The importance of woodland in other parts of Kent

[107] The making up or finishing of products carried out at home on a piece work basis
[108] Engrossment occurred when small farms were bought up and merged together.
[109] Enclosure was the incorporation of common lands, moorland and 'waste' into commercial farms
[110] This did happen in the same way in Kent, which did not have open field systems (Orwin, 1949)
[111] The process of proletarianisation.
[112] Prior to this the responsibility for maintaining roads fell to the parishes they passed through

is evidenced by Hasted (1797) who described East Kent as open countryside with coppiced woodlands and particularly noted large tracts of coppiced woodland, mostly of oak in the "*Ville of Dunkirk*", between Canterbury and Sittingbourne. The hop industry was, at this time, expanding rapidly, particularly in Kent, the Garden of England, adding flavour to beer (Whitlock, 1983). William Randall, a Maidstone nurseryman was, in 1777, promoted chestnut coppice poles for supporting the hop bines (Roberts, 1999).

The end of the 18th century witnessed the French Revolution[113] and the widening gap between the rich and poor led to the "*revolt of the housewives*[114], and proposals for poor law reform. As a component of the support for those in rural areas it was suggested that "schools of industry" should be set up in every village, providing employment for those unable to find work (Hammond and Hammond, 1911).

6.5 The 19th Century

In 1803 Admiral Lord Nelson produced a report declaring only 10% of the navy's timber need was being met by British produce. This impending crisis focused attention on long-term woodland management planning to ensure supply of 100+ year old oak (Roberts, 1999). Rackham (1990) estimated half all timber shipping ever built in Britain was launched between 1800 and 1860, with a 74 gun warship requiring around 2,500 trees (Roberts, 1990). Imported timber was considered inferior, although masts were sourced from the Baltic, which also provided sawn timber. The UK lagged behind in sawing technology, with the first steam driven saw mill built in Battersea by Marc Isambard Brunel[115] around 1805 (Roberts, 1990). This concept was developed by Brunel, Bentham and Holl, with a sawmill enabling ten men to do work previously requiring over a hundred installed at

[113] This had a major impact on woodland management in France as inheritance legislation, originating from this time, has led to woods being divided rather than maintained as large holdings under a single owner

[114] As a protest against rising prices food was seized and sold to the poor at a reduced rated and the proceeds given back to the original owner

[115] The father of Isambard Kingdom Brunel

Chatham Naval dockyards[116]. Roads in west Kent were still so poor that timber was commonly sawn[117] on site under the supervision of shipwrights and then transported by water. The Kent Trade Directory of 1828 included five Timber Merchants in Maidstone and four in Chatham (Roberts, 1999) with adverts for standing oak emerging in local papers from around the same time. This contrasts with the findings of the Marshall Report which declared that there were no large trees left except in hedgerows. This was attributed to the combined demands of ship building and the tanning industry[118], with the latter having an annual requirement for 60,000 loads of bark, principally oaks in the early 1800s (Roberts, 1999).

In 1805 John Boys, in his *A General View of the Agriculture of Kent*, found substantial areas of woodland, both coppice and timber trees. The iron industry remained apparent in the Weald, although much reduced. In the first half of the 19th century technical improvements in blast furnace technology (e.g. Neilsons' hot blast process) and in forging (e.g. James Nasmyth's steam hammer) had increased efficiency, reduced fuel requirement, and brought down the cost of iron goods. Boys recorded the importance of woodland for firewood, ship timber and particularly for hop poles *(*Boys, 1805). The term plantation is used by this author with reference to the origin of hop poles in East Kent, suggesting specific planting for this use. This is corroborated by other contemporary sources, for example Wheaten (2002), Roberts (1999) and Buckley (1950).

The hop acreage, estimated at 25,740 in 1835, rose to 46,600 in 1878 according to taxation records (Roberts, 1999). Hop poles lasted for about 6 years and calculations, based on the assumption that about 3,000 poles could be harvested from an acre every 12-14 years[119], have estimated that around 60,000 acres would

[116] According to the Dockyards this was the first use of stream see http://www.thedockyard.co.uk/The_Dockyards_History/Mechanisation__Industrialisation/mechanisation_industrialisation.html accessed 8/9/11
[117] Or cleft using wedges if a flat edge was not required – this required less effort
[118] This trade continued to be important till the late 19th century when chrome was discovered
[119] Productivity depending on soil and aspect

have been required for this market alone[120]. Similar calculations have been made with respect to the workforce. Between 1841 and 1861 7-8,000 acres of coppice was recorded as cut annually in Kent and this would have required upwards of a thousand winter workers. However, the National Census records only 225 wood cutters in 1841, and 410 in 1861 (Collins, 1989), possibly reflecting part-time work. Other uses for coppiced roundwood should not be forgotten. In the early years of the 19th century sea defences at Cliffe[121] were recorded as requiring 4-6000 piles and a similar quantity of faggots (Roberts, 1999), and demand for wood fuel continued.

Robert Baker reviewed the farming of Essex in 1844. He described the woodland as extensive but that the value had fallen over the preceding twenty years. This was attributed to timber imports, increasing use of iron and "*network*" for folding sheep and, significantly, coal[122] reducing demand for firewood. As woods were no longer profitable Baker considered many would be lost (Baker, 1844).

In contrast, George Buckland (1845), reviewing farming in Kent, described the "*great value*" of the woodlands, particularly in the hop growing areas, where "*improvement*" had taken place with "*unproductive*" species replaced with chestnut (*Castanea sativa)* which quickly gave good profits. It is of interest that this author recorded that tenants of the Dean and Chapter of Canterbury Cathedral were prohibited from doing this (perhaps accounting for the current importance of the Blean woodlands for nature conservation and archaeology rather than economic value). Buckland considered the "*sterile*" soils on the chalk produced the best poles, with plantations capable of doubling investment in ten or twelve years.

[120] The author remains unconvinced by such calculations as yield is extremely variable and modified by multiple factors
[121] A coastal village in Kent, on the Hoo Peninsular
[122] Transported by water

The Mereworth Estate, still growing chestnut, is named[123]. On the Greensand and the Gault Clay woods and field corners had been planted up for hop poles and the Weald is described as densely wooded, producing quality large oak, but with roads frequently 80-150 feet wide and a "*complete puddle*". Hop cultivation is detailed with poles between 10 and 16 feet in length, depending on the soil, age of plant and variety of hop, with the tallest poles used in mid-Kent and three[124] commonly used per hill[125]. These were tied together with rushes.

Table 6.3 Hop pole prices, after Buckland (1845).

LENGTH (feet)	PRICE (per 100)
10-11	8s
12	13s
14	21s
16	30-35s

Buckland gives a specific example of a mid-Kent hop garden that, in 1844, restocked with new 16 foot poles, sourced from a distance of 10 miles, for a total cost of £60 an acre. Checking the poles cost £8 10s a year. Charcoal was used to dry the hops in the oasts, but was beginning to be mixed with anthracite. The importance of coppice for poles is illustrated by the following quotation:

> "*In consequence of the constant and increasing demand for hop poles and firewood generally, the management of woodland forms an important feature of the rural economy of this county, more particularly in the hop districts"*
>
> (Buckland 1845, page 290)

[123] And described as being on the Downs although it is outside the designated AONB, and on the Greensand
[124] Up to ten in some instances
[125] the term used for the small mound on which each hop plant was grown

Buckland describes the improvement of the Hempstead estate[126] as having increased the value from 5s to £40 - £45 per acre in thirty years. Management of chestnut is compared to that of larch (*Larix decidua*) which is harvested as a single crop after 9-10 years, while the coppiced chestnut persists. The hop industry also accounted for an influx of workers many of whom, according to Buckland, would otherwise have been "*thrown on the rates*" during the winter. The enclosure and planting with chestnut of Coxheath (1300 acres in 1815) and Sydenham and Bromley Commons (both between 400-600 acres in extent) is chronicled.

The farming of Sussex was reviewed by John Farncombe in 1850. He, like Cobbett, took a dim view of speculation in the hop industry and plantation for poles. Hedges were obviously of particular concern to Farncombe who described hedgerow trees as of little value and their shade as damaging the hedge beneath. He recommended net and wire[127] fences to prevent sheep eating them (Farncombe, 1850).

The availability of wire had importance for the hop industry. The tripod system of poles supporting each hop plant (or hill) had been followed by various modifications such as an umbrella system using twine (e.g. Museum of Kent Life, undated) and the first wire work system was introduced around the mid 1870s. This was said to have been introduced by one Henry Butcher, of Sheldwich, near Faversham (Roberts, 1999, although this cannot be corroborated). Three horizontal wires were attached to the poles with strings run from the lowest to the middle then diagonally to the top wire of the next row, by workers on stilts[128]. This reduced the number of poles, but required taller, stronger, king poles to support the wire work (Edlin, 1973).

Hop growing and its impact on the coppice industry has received considerable attention (e.g. Roberts, 1999; Rackham, 1986). Some have made calculations of the area of chestnut woodland by extrapolation from hop tax returns but this is

[126] Now known as Hempstead Forest and owned by the Forestry Commission
[127] An early reference to wire used in fencing
[128] Also made from chestnut poles

complex, as pole densities varied between 2,000 and 3,600 an acre in 1835, the acreage was expanding and training systems were constantly changing[129]. Using fewer poles saved money so removing them from the ground over winter and pickling[130] lengthened their life. Chestnut was not the only wood used and these factors combine to make the accuracy of these calculations questionable. The hop industry was also localised and, although the market for hop poles was undoubtedly very significant, it must be considered in the context of the general everyday use of wood for fuel, household items and other specialised products. The major hop growing areas tended to be those also important for fruit and vegetable growing, requiring pea sticks and bean poles with a specialised industry producing baskets and wooden ladders for picking, and the barrels and crates required for transport to market. Basket making was a long established trade although the form changed in response to markets (Hewitt, 1926). Interestingly there are documents in the Cowdrary Estate archive that record chestnut was first planted there for the barrel industry (S. Homewood pers. comm).

Cluttons, land agents for the Dean and Chapter of Canterbury Cathedral over a very long period[131], recommended improvement of woods in the Blean complex, on grounds of profitability in the 1860s, perhaps reflecting the lack of enthusiasm for the Church to engage with this earlier[132] (1864). The same document records the intention to plant 145,000 chestnuts in 1894 and a further 27,500 in 1895, accounting for the decline in the oak coppice[133]. This was a period of depression in the agricultural sector and, according to Perry (1974), few took advantage of the opportunity to diversify into forestry and woodland management.

Brick making rose in response to demand for house building[134]. The clamps in which these were fired required wood fuel. In 1891 3,335 men are recorded as

[129] There is a wealth of information and photographic evidence in the Centre for Kentish Studies at Maidstone (CKS)
[130] Prior to creosote dipping
[131] This continuity of management advice only ended with the sale of much of this estate in the second half of the 20th century
[132] As recorded by Buckland (1845) see the preceding page 54
[133] This is now only found in Ellenden Wood and is not actively managed.
[134] It doubled between 1800 to 1851

employed in the brick industry in Kent alone, rising to 5,113 by 1901 (Hewitt, 1926). 160,000,000 clamp burnt bricks were produced annually by the Faversham and Sittingbourne brickfields, situated near creeks and transported to London by barges. Potters also needed wood for their kilns (Hewitt, 1926) and the woods around Orpington supplied the birch broom[135] makers of the "*metropolis*" (Hewitt, 1926). Alder (*Alnus s*pp) clog and patten making was carried on throughout Kent. Portland cement, patented in 1824, was produced by mixing chalk and clay which was then burnt in kilns, again with wood fuel, although by the beginning of the 20th Century these were replaced by coal fired rotary kilns (Hewitt, 1926).

The development of rail transport[136] made coal more widely available. This was just one of the changes taking place towards the end of the 19th century. Many impacted on the woodland industries. Others included metal replacing timber for ship building with fittings of imported teak, chrome salts replacing oak bark in the tanning industry, wire and barbed wire fencing reducing the need for hurdles and hedgelaying (Roberts, 1999). The industrial revolution had significant impact on the situation of the rural population, including woodland workers and craftsmen. The first half of the 19th century saw a surplus of labour, although the imposition of poor rates, set locally, could work against maximising efficiency. This was referred to by some as the "*farm burden*"[137] (Wilson-Fox, 1968). Patterns of agricultural employment were changing from the farm servant model, with low wages but board and lodging provided, to the use of day (or casual) labourers. Cobbett, of *Rural Rides* fame, while passing through the Weald in 1822 observed coppicing and commented on the "*pleasant and profitable work*" in winter, followed by tan barking in April and May. This, combined with the importance of wood as fuel, made those in wooded areas better off than in the arable areas (Buckley, 1950).

[135] Often known as besoms or besom brooms
[136] The Crab and Winkle line from Canterbury to Whitstable was the earliest, opened in 1837. Prior to this is coal was only readily available in mining areas and harbour towns
[137] There was an incentive to employ more workers rather than use machinery as this effectively reduced the poor rates imposed; equally, according to Wilson-Fox, the top-up from poor relief kept agricultural wages low

Threshing machines were introduced, replacing men at harvest time[138] and increasing the numbers working on the roads and on poor relief. Mingay (1968) noted that rural poverty was significant in the 1830s, particularly in Kent and Sussex and this is likely to have contributed to the Swing Riots which began in Lower Hardres, near Canterbury, with the destruction of a threshing machine and rapidly spread across Kent and into Sussex. Perhaps surprisingly, it is reported that farmers were supportive, as they were keen to see rents and tithes reduced (Mingay, 1968). Cobbett supported the Swing Riots and produced a pamphlet *Rural War* encouraging action.

The agricultural labour force reached a peak around the middle of the 19th century (Orwin, 1949). The Great Agricultural Depression[139] saw harvests fail but, instead of prices rising in response to shortages, imports replaced home grown food[140]. This resulted in farm amalgamations and conversion of arable to pasture[141]. According to surveys carried out at the turn of the century rural incomes were, in predominantly arable areas, insufficient to support a family (Orwin and Whetham, 1964). The introduction of death duties, in 1894, exacerbated the effects of the Depression on the large landowners and estates, which were already suffering from poor harvests and bankrupt tenants defaulting. The need to realise assets led to the widespread felling of under-mature oak (Roberts, 1999).

By the end of the 19th century Board of Agriculture records, dated 1895, found only Kent, Hampshire, Surrey and the Sussexes to have more than 10% of woodland cover (Roberts, 1999, page 151). This represents the value these had retained as sustainable commercially productive woodlands and demonstrates this was greater than the value the land would have had if cleared for agricultural production.

[138] And reducing the leavings that could be gleaned
[139] Usually dated 1870 – 1914 but with peaks in the late 1870s and early 80s and the 1890s
[140] Helped by the opening of the Suez Canal in 1869
[141] Summarized by the phrase ‘down corn up horn’

6.6 The Early Years of the 20th Century

At the start of the 20th century the national hop acreage had fallen from the peak of 1878 of 77,000 (31,000ha) to 32,000 (13,000ha), and again to 11,000 by 1932, largely due to imports[142]. The hop pole industry would always have produced a range of ancillary products such as fencing, tree stakes, faggots and rods, as well as bundles of pea sticks and bean poles for the market gardens of north Kent and Thanet. The early years of the 20th century saw rapid increase in fruit growing and market gardening. Kent had the largest area under orchards in the UK, comprising 53,844 acres, with a further 17,386 acres of soft ("*small*") fruit (Hewitt, 1926, quoting the Parliamentary Report on Fruit Culture, 1905). Cob nuts were significant in some areas and there was extensive vegetable growing, particularly in the North and on Thanet, requiring containers to transport produce to point of sale. FitzRandolph and Hay (1926a) reported hoop making to bind barrel staves together was still a substantial industry, with an estimated 20 million used annually, prior to the First World War[143]. In Kent the large cement works around Medway and the breweries tended to employ direct labour at the works for cooperage (FitzRandolph and Hay, 1926a, page 106); hooped barrels were used for transporting many products including jam, gunpowder, sulphur and fish.

It is difficult to consider the coppice industry in isolation from other agricultural activities. Farming requires a lot of labour in summer and at harvest time, so a portfolio career including coppice work in the winter months is likely to have been common; this continues today with a continuum between full time specialist coppice workers and agricultural workers who move to relatively unskilled coppice work in slack times. Garrad (1954) recorded agricultural wages in Kent as around 18/- a six day week in 1912, with a 60 hour week in summer and 54 hours in winter.

---

[142] Import restrictions led to relatively stability about 20,000 acres during the 1960s after which the rise in popularity of lager combined with hop downy mildew and *Verticillium* wilt diseases, account for a decline to around 3,000 acres by 2003 for further information see http://www.kentishfare.co.uk/media/foodtrails/_Hops___Downs_EBro.pdf accessed 12/4/10

[143] 1914-18

The beginning of the 20th century was the heyday of the wealthier and grander country estates. Although affected by the agricultural depression many were virtually self- sufficient with their own tenant farms, sawmills and – importantly – land agents or factors responsible for strategic management, including standing underwood sales. Many have comprehensive archives of sales, prices paid and details of the cutters (for example Mereworth, Kent, and Cowdray Park, Sussex). Roberts (1999) emphasises the rise in sporting value of woodlands at the beginning of the century, following the launch of the double-barrelled shotgun in 1880 (Edwards, 2008). This is corroborated by Hardy, who in the introduction to *The Woodlanders*, described a decline in coppicing with gamekeeping emerging as an alternative employment (Hardy, 1912, reprinted 1974).

Prospecting for coal in Kent began in 1857 and mining started at Shakespeare Cliff, Dover, in 1904. By 1919 coal was mined at Chislet, Snowdown, Betteshanger and Tilmanstone. The East Kent coalfields continued until 1989 when the last, the Betteshanger Colliery, closed[144]. Pit props were in demand with some favouring larch (*Larix decidua*) which was said to groan under pressure warning of imminent collapse (Hardy, 1912), although this is also said of chestnut (interview 27).

The falling interest in home grown timber, combined with landowner focus on shooting, resulted in ten Parliamentary Inquiries between 1885 and 1915 highlighting the danger of relying on timber imports (Roberts, 1999). This was realised in the First World War, when Kent, via the Sandwich war cargo harbour was the supply-line for the army in France and Belgium (House, 1965).

[144] http://www.dover.gov.uk/kentcoal/intro.asp accessed 8/8/09

The Forestry Commission was set up immediately after the war, in 1919, to ensure future self sufficiency in timber[145], buying up woodland, planting fast growing conifer crops, often replacing coppiced broadleaved woodland[146] (Bannister, 2005) and encouraging landowners to do the same.

6.6.1 The Agricultural Depression and Rural Policy

The economic effects of the agricultural depression on rural society, and particularly de-population, had led to the Small Holders and Allotments Act of 1903[147] and the Development Fund Act of 1909 to support agricultural education and research (Ernle, 1961). Rural depopulation was a key concern and the situation of rural industries began to emerge promoted by, for example, John Green of the Rural League in the magazine *Rural World*. The situation was exacerbated by the War. Dewey (1987) records that prior to the introduction of reserved occupations, about a third of the agricultural workforce[148] had volunteered for active service. Although recruiting officers were instructed not to sign up skilled workers low farm wages and casual status were an incentive to join up. It is estimated that in excess of 8 million soldiers were killed in the war, with millions more returning home disabled[149]. Woodsmen and gamekeepers had volunteered in high numbers, with drastic consequences for the rural workforce.

The Selborne Committee into post war policy reported in 1917 and identified that increased agricultural output was dependent on retaining an adequate workforce. It was identified in resettlement plans that this was not purely a function of wages but that rural life needed to be as attractive as an urban lifestyle, so village

[145] The Board of Agriculture set up a Home-Grown Timber Committee in 1915, to organise timber supplies and establish sawmills. The Acland Committee in 1917, advised setting up an independent national Forestry Commission to promote afforestation on strategic grounds. This was the foundation of the Forestry Act (1919) which set up the Forestry Commission in September 1919
[146] Many of the woods are now the focus of PAWs restoration programs
[147] The origin of the County farms which were offered for rent, and a response to the call for "*three acres and a cow*" and the earlier Chartist Land Plan.
[148] This was have included those engaged in seasonal woodland work
[149] See http://uktv.co.uk/yesterday/item/aid/528001 accessed 12/4/10

industries and lifestyles became an integral part of rural policy (Brassley, 2004 and 2006). The Etty report of 1918 into basketry and the contemporaneous study by Kny into European rural industries led to calls for a Rural Industries Association, realised with the creation of the Rural Industries Bureau in 1921[150].

The Agricultural Economics Research Institute, Oxford, received a grant from the Rural Development Fund for initial research which was carried out by Kathleen Woods (1921) in an area of fifty square miles around Oxford and a section of the book is dedicated to *Rural Industries in relation to social problems*, identifying parental finances as limiting uptake of apprenticeships. Woods concluded that higher standards of work and pay, capital, improved woodland management, flexible organisation, exchange of trade information and a mechanism for placing products in an appropriate market place were key issues and that more, and better, housing was required. Higher prices were paid for standing underwood close to railway stations and, commenting on the unwillingness of landowners to allow access to woods managed for game, suggested shooting should be restricted to those most distant from the stations. The inter-relationship between agricultural and woodland work is demonstrated by the payment of harvest overtime as a lump sum just before the November underwood sales[151]. Woods' emphasis on woodland management may reflect the extreme pressure exerted on the resource by war demand; half the timber used in 1917 was home grown, compared with just 10% in 1913 (Roberts, 1999). The Timber Reconstruction Committee, followed by the setting up of the Forestry Commission in 1919, was charged with addressing this situation (House, 1965).

[150] This was set up by the Ministry of Agriculture with funding from the Development Commission. Its aim was to develop rural industries by providing technical advice and assistance to country workshops. It produced booklets, reports and the quarterly magazine, *Rural Industries*. It merged with the Rural Industries Loan Fund in 1968 to create the Council for Small Industries in Rural Areas (CoSIRA). In 1988 the Development Commission and CoSIRA merged to create the Rural Development Commission. Records are held at the Public Records Office, Kew and in other archives, including Dartington Hall.

[151] In another part of the book Woods records that just £1 was paid up-front with the balance collected when the produce was sold. This is the only example of this known to the author; in the South East immediate payment in full is the standard practice

In the aftermath of the war many large estates were broken up, partly as many landowners and their heirs were lost in the fighting, but also due to increases in taxation, as the Government tried to recoup their finances[152]. This disrupted long term plans and traditional practices of woodland management. Rackham (1986) refers to the social upheaval between the wars suggesting that about a quarter of England changed ownership during this period (page 93); Brassley re-iterated this fact adding that this was the period of greatest change since the dissolution of the monasteries (2006). The basis for this statement and the extent to which it is true, particularly of Kent, is unclear, as many estates remain.

6.6.2 The Rural Crafts Survey of the early 1920s

Woods' pilot study of the rural industries around Oxford (1921) was followed by a much wider survey, again funded by the Rural Development Fund and carried out on behalf of the Oxford Agricultural Economic Research Institute. This was published in four volumes of which three, FitzRandolph and Hay (1926a and 1926b) and Jones (1927) have been extensively used as source documents[153]. Brassley reviewed the background to this survey setting it within the context of rural social policy rather than, as sometimes thought, isolated research (2004 and 2006).

Rural industries were defined as:

> "…*small industries carried out in country districts, dependant either upon some local supply of raw material or some local demand for the finished product, and being of the nature of craft-work, rather than of machine-production, although even in small workshops some labour saving machinery is being introduced for certain processes"*
>
> (FitzRandolph and Hay, 1926a, Introduction, page B)

[152] Estate Duty was first imposed in 1894; see www.taxworld.org for details accessed 5/11/10
[153] Volume III, *The Decorative Crafts and Rural Potteries*, by the same authors, contains little pertinent material

The terms of reference, set out by the Development Commission in 1919, were for the survey to investigate:

1. *" the reason for industries being in particular locations (raw materials, labour, local markets for finished products*
2. *organisation – individual production, workshops, small factories – and also for the purchase/selling of materials and products*
3. *economic and social aspects; the link to agricultural work and the impact on the livelihoods of agricultural workers*
4. *potential for development of existing industries and for new enterprise (within the context of competition, at home and abroad)"*

(FitzRandolph and Hay, 1926a, page vi-vii)

The timber and underwood trades were found to be the largest single group and Volume 1 of the four-part series is dedicated to these. FitzRandolph and Hay (1926a) declared chestnut to be the most valuable coppice wood, so it was being actively planted in the South East in the 1920s. Hazel was described as "*not half as valuable as chestnut*" (FitzRandolph and Hay, 1926a, page 88), but was more common, providing small pliable rods for weaving both baskets and wattle hurdles, although the most widespread use was found to be for hoops[154]. In the 1920s many thousands of chestnut hoops were being imported from France, along with Dutch ones made of willow which were cheaper than those made locally. French hoops were desirable as the faster growth and shorter coppice cycle than in the UK meant the hoops were less likely to have knots or to break. Labour costs were low as women and children were employed in France, and sea transport was cheap, especially as hoops sometimes travelled as ballast. Despite this chestnut hoop makers were recorded at Billingshurst, Haselemere and Tonbridge (FitzRandolph and Hay, 1926a). The importance of this industry is demonstrated by records of several hundred men employed (indicating full-time) in Kent, Surrey and Sussex in the early 1920s. In West Sussex hoop making was found as an add-on to other work, prompting consideration of the relatively new position of those with many strings to their bows versus specialists.

[154] These were also, at this time, made from other species e.g. chestnut, ash, oak, willow and birch.

Lack of organisation, in terms of co-operatives or trade associations was contrasted with the situation on the continent which enabled the purchase of all the hoops required in one order, whereas buying English hoops involved contacting many individual small producers, as there were few hoop merchants. This is illustrated by a large pottery in Dorset that sold its products in barrels but sourced imported hoops from Hull, incurring transport costs, despite being in a hazel producing area. Some hoop makers interviewed by FitzRandolph and Hay were positive about forming groups, but others felt "*the Sussex character*" would make formal co-operation impossible as none would stick to agreements. This was put down to cunning stupidity rather than conscious dishonesty, with the authors commenting the same sentiment was found across the South East[155]. In contrast there was a Crate Makers and Coopers Association in Staffordshire, that gave buyers information on the business reputations of members, presumably a forerunner of the credit check. The authors reflected that the "*secretive woodlanders*" would be shocked if they realised this, and that if friendly relations could be established with the woodlanders of the South East this would be the most effective way of evening out the fluctuations in trade.

Charcoal production was reviewed. In Cumbria burning was completed by early November, when the weather precluded living in the woods. Traditional methods and organisation, usually involving three family members, were observed but prices were below pre-war levels. In Shropshire workers were no longer prepared to do the overnight watch, while in Kent and Sussex[156] burning was carried out all year round. Few in the South described themselves as charcoal burners but this was combined with other woodland and farm work. Customs such as hut building had been lost in the South, and the burners often worked alone. Little charcoal production was observed in other parts of the country.

[155] Thirsk (1987) refers to regional differences in character suggesting that, in the Civil War, the Parliamentarians were associated with woodland and the Royalists with downland. She also refers to the "distinctive social structure and mental attitudes of the inhabitant of forests.

[156] Midhurst was described as the centre of the industry and on one estate there a hut of "*almost the same prehistoric pattern*" as in the Lake District was seen (page123).

The markets for charcoal were varied. Charcoal made in the Lake District was used for steel smelting at Blackbarrow, although in the early 1920s production exceeded demand (and ceased in the 1930s). The output from around Midhurst went to London for tin smelting; other widespread markets were laundries that used charcoal to give irons an even temperature, biscuit making, poultry food, artist's crayons and in medicines. It was also the basis of the black gunpowder, used for blasting, although for "*special*" (sporting and military) gunpowder, dogwood (*Cornus sanguinea*) charcoal was required (Howkins, 1994; Wheaton, 2002). In Kent charcoal was mixed with anthracite for drying hops in the oast houses. FitzRandolph and Hay (1926a) observed that this was produced by hop garden workers. Another account of hop growing in Kent in the 1920s describes the charcoal burner visiting the farm in summer to char wood previously collected into piles, known as petts. The resultant charcoal was then mixed with arsenic free Welsh coal, collected from the local station (Tipples, 2009). Charcoal manufacture in chemical retorts, producing wood alcohol as an additional product was also described by FitzRandolph and Hay (1926a).

Tool handles were produced across the whole country with stale engines[157] used in places. Some, such as those for pitchforks had to be particularly strong and were known as fork-stales. Rake ware was a huge industry with a Warwickshire firm recorded as producing 1,400 dozen annually in the pre-War period although production had been in decline since. Specific mention is made of rake works in Smarden[158], where all material was cleft and hand worked, although many were, by this time, being made in mills using sawn material (FitzRandolph and Hay, 1926a). Northern rakes, used on stony ground, required reinforcing with one or two bows whereas the southern ones had a split stale or shaft. Surrey rake makers are recorded as earning more than those in Sussex.

[157] Once described to the author as giant pencil sharpeners, for making smooth cylinders
[158] Near Ashford, Kent

A Rake Makers Association had been formed during the War, to raise awareness of the impact of large mills combined with imports. The researchers found that, as with many of the underwood trades, seasonality was an issue with demand for rakes high at hay making time. A cycle was described with peaks in demand leading to import of foreign rakes and local makers responding with increased production. The following year over-supply would force the price down and the consequence would be a reduction in production. The Association members, if unable to meet an order themselves could, in theory, have passed it onto others locally. Many rake makers apparently refused to join as they were reluctant to be bound by price agreements. The temptation to under-cut when short of money, despite this being detrimental in the long term, was (and is) a real issue for those without resources (FitzRandolph and Hay, 1926a).

Brush wood brooms or 'besoms' were made of heather or birch twigs by farm workers in bad weather, but this was also a full time speciality craft, particularly on upland moors, which supplied the industrial northern cities, and on the lowland heaths. The organisation of the latter group, the "*broom squires*" is detailed by FitzRandolph and Hay (1926a). Active marketing was observed with besoms hawked by a family member acting as a commercial traveller both selling and getting orders. One entrepreneur had hired a van to take besoms further afield.

Walking stick making was observed in Surrey[159]. Each outlet required a mixed selection of sticks and it was suggested that, if the Surrey stick makers could get together and each specialised in one type they could jointly employ a traveller to work on their behalf, reducing costs and increasing profit margins. The fact that this didn't happen was attributed to the desire for independence overriding the commercial advantage (FitzRandolph and Hay, 1926a).

[159] There is still active walking stick cutting in the Haslemere area although these are exported to Germany for bending and finishing (S. Homewood pers. com; interview 29) and sales of standing three year old stick chestnut were included in some auction catalogues until recently.

The woven hazel hurdle makers interviewed reported hard times since the war due to increase in price of the raw material despite the selling price remaining below pre-war levels. To make a living they had to make other items and sell firewood i.e. become less specialised (FitzRandolph and Hay, 1926a).

The conclusions reached by FitzRandolph and Hay were that those engaged in the underwood trades across the whole country were experiencing problems in accessing markets and keeping their outlets. The researchers suggested that this could not be addressed by individuals, but only if each separate industry had some kind of central organisation, leaving the workers free to focus on production. The prerequisite was that the workers should acknowledge this for themselves, and recognise the potential advantages of such co-operation. They went on to say:

> *"One practical enthusiast ……will achieve more in the direction of the rehabilitation of the rural industries than a County Council sub committee can do in years of inquiries and the formulation of schemes"*

Fluctuations in demand, foreign imports and consumer pressure were all combining to keep prices at pre-war levels, while no action was being taken to improve working conditions, reduce the hard work and address the lack of demand for some products (FitzRandolph and Hay, 1926a). Accountability of woodland owners is also mentioned, referring to their unwillingness to repair roads, replace old stocks and maintain the quality of standing coppice, while still expecting high prices for standing underwood.

Foreign competition was a widespread concern. Consistently high quantities of oak bark were imported for the tanning industry in the pre-war period (FitzRandolph and Hay, 1926a), as well as turned oak wheel spokes from Russia and chip baskets for transporting fruit, imported from Sweden, Belgium and Holland. A Dutch firm set up in Maidstone hiring containers to transport produce to and from Covent Garden (FitzRandolph and Hay, 1926b). Foreign producers had the advantage of cheap raw material and labour, specialised production and, significantly, large scale marketing organisations that used home workers. These

factors were combined with cheap sea transport to East and South East England. Low prices, in some cases, were attributed to the use of convicts and reformatory inmates for production[160] and resulted in repeated demands for import tariffs, for example on foreign baskets (FitzRandolph and Hay, 1926b).

FitzRandolph and Hay referred to the distinction between specialists, focusing on one, or a narrow range of products, and the generalists who may produce an extraordinary number as *"the outstanding feature of the underwood industries*" (1926a, page 128) in comparison to other rural activities. This had two important aspects; it made traditional apprenticeships complex and the specialists are dependent on suitable material. FitzRandolph and Hay found dealers selling prepared material to specialists at a premium, with the rubbish going as firewood[161]. The "*general conditions and prospects*" for the underwood industries were reviewed and the following overall conclusions drawn:

- Lack of young workers because earning a living was hard and wages poor. The existing workers continued as they were too old to find easier, more profitable work
- Apprenticeships were seen as old fashioned and five to seven years considered unnecessarily long
- Craft work was not valued and the difference between hand cleft and sawn products was not recognised
- The most flourishing industries were found in the most isolated locations
- There was resistance to modern methods of organisation

[160] There are rumours that convict labour is currently (2010) keeping the price of Polish hurdles low (e.g. interview 49).
[161] Some specialists still allow their off-cuts to be collected by firewood merchants for no charge (interviews 19 and 20).

The overall conclusion was that there could be no effective development in the woodland industries until the existing craftsmen had been assisted[162] to solve their most pressing problems (FitzRandolph and Hay, 1926a).

The survey carried out by FitzRandolph and Hay in the early 1920s is a valuable record. It is startling to see how much of the industry in the South East has survived virtually unchanged, and how many of the issues of the 1920s remain current.

6.7 The later 1920s and 1930s

It was not only the woodland industries that were experiencing difficulties at this time. Bailey (1996) suggested that the interwar period saw significant change in local administration with the emergence of rural planners, the voluntary services, and the semi-governmental agencies, a trend that mitigated against the tradition of self help in the countryside. He confirmed the view of FitzRandolph and Hay (1926a) that national bodies were unable to reflect the local situation for small rural businesses, illustrating this by the regional variations in working methods and diversity of products (Bailey, 1966).

As top fruit replaced hops in the South East, and demand for hop poles fell, financial impacts were felt by landowners, who had routinely sold standing underwood, as well as by the coppice workers. Kemsley mill, built between 1923 and 1925 by Edward Lloyd, had, at that time, the largest machines in the world producing newsprint from wood pulp. This was taken over by Bowaters in 1936, increasing output and diversifying into card and fine paper products[163]. For 60 years, until 1989, when the operations were split between St Regis and UK Paper,

[162] This despite the earlier assertion that any initiative must originate with the workers themselves
[163] http://www.stregis.co.uk/section/30/1/42 accessed 10/11/09

this remained a significant market for pulp wood. In combination with pit props[164] for coal mines, this comprised a 'just acceptable' market for low grade coppice wood. This, combined with the value-added products, underpinned the livelihoods of workers in Kent (Roberts, 1999; interviews 4, 17 and 27). Hewitt (1926) records that Dartford Creek received large consignments of wood pulp from Scandinavia and Canada and in addition Ridham Dock, nearer to the mill, had 300 steamers a year unloading wood pulp in the early 1920s. This suggests locally grown coppice was not the only raw material used by the paper industry.

In the 1930s woods were considered unprofitable and, as well as fast growing conifers poplar (*Populus* spp) was planted for veneer logs, matches, punetts[165] and crates (Roberts, 1999). A different perspective was given by Hiley (1931), then the Forestry Commission Conservator for the South East. In a publication entitled *Improvement of Woodlands* he expressed regret that broadleaves were being considered less profitable than conifers as hardwoods were the basis of the traditional woodland industries. He praised those landowners who were working with local craftsmen and introducing modern organisation and conditions to use their home grown timber profitably (Hiley, 1931).This suggests not merely the continuation of coppicing but the active involvement of some landowners in maintaining the market for standing underwood.

The Land Utilisation Survey[166] of 1936 found Kent to have 98,240 acres of woodland, equivalent to 10.1% of the land area; West Sussex 14.9%, East Sussex 14.2%, Surrey 14.1% Hampshire 12.2%, while the rest of England averaged 5.7%. This clearly demonstrates the South East to have been the most wooded region at this time (Garrad, 1954). The woodlands of Kent were unique as three quarters was described as coppice and two thirds as coppice with standards. Only 9% was classified as high forest; a far lower proportion than in any other county. The state of the coppiced woodlands was described as generally unfavourable, with some

[164] Locally known as mining bars
[165] Also known as chips
[166] Available at the Land of Britain website http://riga.iso.port.ac.uk/django_projects/home/ last accessed 19/9/11

having degenerated into rabbit infested scrubland. This was due in part to the extent of harvesting during the First World War and these were being reclaimed with grants from the Ministry of Agriculture's Marginal Production Scheme (Garrad, 1954). Garrad provides some detail on chestnut woods, describing them as divided into cants and cut on a rotation of between 8 and 16 years by local hurdle or spile makers in winter, combining this with buying an orchard of cherries[167] or other fruit to pick[168] and sell in the summer. Remnants of this pattern are still seen today (e.g. interview 41). The introduction of anthracite and closed stoves had replaced charcoal for hop drying although a little was used to light the sulphur used to bleach hops and prevent the dried leaf smell. Charcoal was still used in water filters and to make blacking[169], gunpowder, medicated biscuits, tarmac and wood alcohol, with the active charcoal burning period being between March and September. Garrad considers lack of demand for hop poles and charcoal combined to have accounted for increasing use of woods as game reserves rather than direct sources of revenue for the owners, although small farm woodlands remained important for firewood and fencing material.

Labour issues were discussed by Garrad (1954). In the national survey Kent had twice the number of casual labourers than any other county, despite its relatively small size[170]. The number rose from 5,400 in June 1921 to 7,400 in the same month in 1932, with a peak in September, coinciding with the hop and fruit harvests. In the 1920s the workforce was predominantly male but during and after the Second World War two thirds were women. Garrad comments on changes in hop growing. In 1835 these were grown in 263 Kent parishes, totalling 25,740 acres, by 1900 the area had risen to 31,514 acres. By 1914 this had dropped back to 22,626 acres falling again to 10,460 acres in 1939[171] (Garrad, 1954).

[167] These ripen in June and July, earlier than other top fruit
[168] The author remembers the selling of fruit on the tree in the case of plums
[169] Shoe polish? Or an ingredient in stove black perhaps
[170] Norfolk for example is one and a half times bigger than Kent
[171] The Kent acreage rose slightly to 12,374 in 1952 (Garrad, 1954)

In addition to the woodland industries producing utilitarian items for use in farm, home and garden, there was an upsurge in interest in the artist craftsman. Brassley (2006) describes the dichotomy between these, who were producing for the luxury market and commanding high prices, and the traditional workers although some of the latter were adapting to new market opportunities. This was not restricted to the woodland crafts but extended to others, such as potters, and many had private incomes and/or patrons, such the Elmhirsts who supported many artist/craftsmen at Dartington Hall[172], which they founded as an experiment in rural regeneration. Nostalgia for the old traditional ways that were being swept away by modernism was expressed by such authors as George Sturt who wrote *The Wheelwright's Shop* and bemoaned the diversification of coach builders into the motor trade, and Walter *Rose*, author of *The Village Carpenter*. Gertrude Jekyll, famous for her many books on garden design, glorified the rural cottage garden romanticising the way of life of simple villagers. This was a reflection of the dramatic changes that were taking place in many aspects of life during this period.

In the 1930s a survey was conducted to determine if funding from the Rural Industries Bureau was still required to enable the Rural Community Councils to continue delivering training and support for crafts in rural areas. A need was identified and courses, particularly in hazel hurdle making, were conducted adapting from the traditional agricultural use to service the needs of gardens and, according to Brassley, for wind breaks on South African fruit farms (2006).

6.8 The Second World War and the Post War Years

As in the First World War this period had a dramatic effect on the woodland industries. The level of activity in the woods is demonstrated by the size of the labour force, rising from less than 15,000 in September 1939 to a peak of over 73,000 in 1943. The pattern of able-bodied woodland workers joining up was repeated; a new workforce comprising conscientious objectors, prisoners of war

[172] This, now a Charitable Trust, is still a significant player in the arts, craft and education, see http://www.dartington.org/about, last accessed 19/9/11

and the Women's Timber Corps replaced them (House, 1965). In 1942 it was announced that 1,800 acres needed to be felled each week to service the urgent requirement for pit props to maintain coal production; this caused pre-mature felling of many conifers (Roberts, 1999).

Wood was required for many war-specific purposes such as the wooded frames for the Mosquito fighter planes and for constructing mine sweepers as metal boats would have magnetically attracted mines (Howkins, 2003). Some woodland products, such as turnery, experienced a revival during the war years. Charcoal was in demand for use in gas masks as well as in the manufacture of chemicals and parachute silk (Collins, 2004). Woods (1949) provides the detail that this was, by this time, being made in movable ring kilns rather than by traditional production methods. The army required vast quantities of tent poles and pegs. Tabor (2005) estimates 50 million tent pegs were used in the Second World War and, while these are most commonly made from ash, Woods (1949) records self-sown beech being used in the Chilterns and includes a photograph of a worker filing the notch to ensure that the pegs would not cause guy ropes to fray. This author also refers to a revival in hoop making as gunpowder could not be transported in barrels with metal bands as these could have caused sparks and premature ignition.

A vast amount of wired chestnut paling, in 6ft rolls, was carried by tanks so they could lay temporary trackways when needed (Roberts, 1999; House, 1965). The extent to which this affected the woodlands in the South East is illustrated by the comment made by Lord Kingsdown, of Torry Hill, still the largest chestnut plantation owner in Kent, to the effect that there was nothing left (quoted by Roberts, 1999). Some of the older workers, particularly from the family groups confirm this (e.g. interview 12).

Figure 6.1 Tank with paling for creating trackways (taken from House, 1953)

The National Farm Survey, 1941-43, sometimes referred to as "*the second Domesday*" did not cover woodland (Short et al., 2000). However by the end of the war British woodlands had been stripped almost bare, with an estimated 254,000 acres (103,000 hectares) cut since 1939 (Garrard, 1954).

Fuel wood demand was great in some areas and it commanded a high price (Woods, 1949). Edlin (1973) commented that the revival of charcoal burning and faggot making during war time fuel shortages was not sustained into the post war period. Electrification of rural areas was significant; by 1941 35% of Kent farms had electricity, compared with 30% for England as a whole. These were not necessarily on the mains but had private generators, all had light but only two thirds had power as well (Garrad, 1954). This enabled wider use of machinery and powered tools in village workshops.

In the immediate post-war period a similar situation was found as after the previous one, namely shortage of both young male labour and of quality raw material. In response the Forestry Commission introduced the Dedication Scheme in 1947, to try to restore the timber resource. Coppicing continued, particularly on the larger

estates, where there was a history of managing chestnut as a crop, so despite the financial incentives offered these resisted the advice to over plant with conifers. Chestnut walking stick making was still practised, particularly around Chiddingfold, Surrey, in this period, probably reflecting an increase in the number of disabled service personnel and war wounded (Edlin, 1973).

Edlin reviewed woodland crafts in Britain in the 1940s (1973). He noted that research in this area was difficult as few craftsmen advertised in any way but rely on their reputation to secure work (a fact equally true today). Few active craftsmen were located and these were restricted to the Furness area of Lancashire, the Forest of Dean, the Chilterns and the Wealds of Kent, Surrey and Sussex. Edlin considered the chestnut industry as outstanding among the underwood industries as it had been given "*a new lease of life*" by the increased use of paling fencing. Cleft chestnut was found being used for many purposes including fencing, hurdles, ladder rungs and barrel staves, with some small material being used for trugs and sheep feeding troughs. The methods of making cleft chestnut fencing described and illustrated photographically by Edlin remain the same today (2011). Damage to the built environment through bombing and subsequent fires had significantly reduced the housing stock. The chestnut industry remained buoyant reflecting the demand for both building site fencing and to divide gardens as re-construction gathered pace[173] (Mitchell, 1988). Chestnut paling was also in demand for snow fencing and during road building, although the resumption of imports reduced demand for home grown timber in general.

In 1957 the Zuckerman Report rescinded the priority for a strategic reserve of timber, paving the way for an increasing appreciation of broadleaves over fast growing conifers. The Forestry Commission carried out research into the growth and yield of sweet chestnut in 1955 (Ashdown, 1974). In 1968 Barrington, Forestry Commission Conservator for the South East, suggested chestnut was the only hardwood that remained economically viable (Barrington, 1968).

[173] The figures for both local authority and private house building failed to reach the scale of construction seen in the 1930s but were significant for several decades (for details see Mitchell, 1988, page 392)

Changes in agricultural policy, which aimed to achieve greater self-sufficiency in food supply, have been well-documented (e.g. Harvey, 1998). The effect on woodlands was dramatic. On one hand the Forestry Commission was buying woodlands and clearing them to plant conifers (Rackham, 1986) while on the other farmers were being given grants to grub them out to increase the area of agriculturally productive land (Harvey, 1998). According to the Woodland Trust almost 50% of the ancient woodland[174] that had survived into the 1930s was lost, either by removal or by over planting[175]. Marion Shoard, in her highly influential book *The Theft of the Countryside* described woodlands as "*bulldozed away by the agricultural revolution*" and quoted from the Nature Conservancy Council's annual report for 1979, which considered the existence of semi-natural broadleaf woodland outside nature reserves to be seriously threatened in many parts of Britain (quoted in Shoard, 1980, page 48). Those woods that remained did so because they were either too difficult to convert, due to slope or soil, or were more highly valued as commercially worked coppice, as game cover, for aesthetic reasons or for some combination of these attributes.

The increased efficiency in agriculture had social aspects with fewer people employed on the land (e.g. Adams, 1996). This reduced potential for seasonal farm work combined with winter coppicing and other activities such as tan barking in early summer. In April 1967 Lord Collison, General Secretary of the National Union of Agricultural Workers, expressed concern regarding continued rural depopulation and the annual loss of around 30,000 workers. He suggested that the dramatic rise in productivity, from the introduction of new machinery and scientific approaches, was unlikely to continue. Agricultural wages of £15 for a 51 hour week were compared to the £20/10/- for 45 hours offered in industry (Fuller, 1997). War-time demand, reduction in the area of woodland, and coniferisation all reduced the amount of available coppice. This, combined with less seasonal farm

[174] Defined as that established as present in 1600
[175] For more information see http://www.woodlandtrust.org.uk/en/why-woods-matter/what-are-they/decline/Pages/decline.aspx accessed 5/11/10

work, would have made it more difficult to earn a living, even before factoring in the effect of modern materials such as plastics being used in place of wood.

Working methods in the woods continued virtually unchanged, with hazel cut with billhooks and larger coppice, such as chestnut, with axes (interview 17 proudly showed the author his axe). Mechanical water-cooled saws for tree felling (rather than processing) emerged in the 1920s but the first that could be handled by a single operator was not made until the 1950s[176]. The early chainsaws were heavy and noisy and became more widely used during the 1960s, although de-limbing was still done with an axe. As these were used for longer periods many operators developed white finger, a serious circulatory disorder, caused by vibration. Modifications to reduce this were followed in the 1970s by automatic chain brakes. There were many accidents, and these still occur today[177]. Two Kent dealers, Stuart Dawes[178] and George Stevens[179], held evening training sessions to encourage cutters to engage with the new technology; these were attended by the local doctor, who gave first aid advice (interviews 17, 26 and 29). Older workers report that landowners resisted this new technology, taking the view that motorised cutting would damage the coppice stools and the re-growth. The Forestry Commission was last to permit chainsaws to be used on their land (interview 29). Lighter saws with improved safety features and highly developed personal protective equipment[180] are now standard requirements (although the use of protective clothing is still resisted by some).

[176] A summary history of chainsaws is available at http://www.stihl-chainsaw-guide.com/petrol-chainsaw.html, accessed 5/4/10
[177] The most recent fatality of a very experienced and well respected chestnut post and rail cutter occurred in summer 2010
[178] Then operating from Challock, now at Chilham
[179] Then in Rodmersham still operating, now in Sittingbourne
[180] Known as PPE

6.9 The 1970s

By this time chainsaws were becoming common, although horses were still used for extraction, for example in Kings Wood, Challock[181] (interviews 17 and 19). It might be assumed that this increased profit but it also raised costs. The first saws cost £89, at a time when cutters were earning £30 an acre (interview 29). They increased speed of cutting three-fold, but only lasted for about 5 acres (interview 29, corroborated by several others). They were heavy, difficult to use and reduced output for a considerable time so were only being taken up by the 'young bloods' (interview 19, corroborated by 17). However output was increased in the 1970s due to both increased efficiency and rise in demand for pale fencing, particularly from local authorities (interview 30). Sussex post and rail also increased dramatically (interview 23), attributed by some (e.g. interview 29) to recreational horse ownership.

In 1968 the Rural Industries Bureau had merged with the Rural Industries Loan Fund to form the Council for Small Industries in Rural Areas (CoSIRA). These were defined as those with less than twenty workers and CoSIRA had a particular focus on businesses located in development areas and/or with export potential (Design Magazine, 1968). The Rural Industries Bureau had, as previously described, been active in delivering training in hurdle making throughout the 1930s and this continued with CoSIRA playing an active role in the 1970s hazel revival (Collins, 2004).

There is little evidence of support for the chestnut sector until about 1970, reflecting the increased interest in chestnut fencing[182] at this time. CoSIRA estimated market demand to be for 2,000 acres a year, which required around 30,000 acres of coppice to be managed on a rotation of between 12 and 17 years[183]. The total number of men engaged full time in cutting and processing

[181] Owned and managed by the Forestry Commission
[182] Undated papers provided by Steve Homewood who, as the proprietor of a well-established fencing company, was involved in the research
[183] These calculations were based on an estimated resource of 49,261 acres (c. 20,500 ha) of chestnut, three quarters of which was in Kent and Sussex

chestnut was estimated to be at least 660 (CoSIRA undated, c.1970). An analysis of pale manufacture was carried out, covering felling, grading and processing. The results are summarised in Table 6.4 below. While the figures are interesting no reference is made to quality issues, although the time involved in grading must be dependent on this.

Table 6.4. Operational analysis of pale manufacture (adapted from CoSIRA, undated, c.1970)

FELLING	%
Clear stool	2
Fell poles	3
De-limb, burn and stack	27
Grade posts/pulp	2
Sub-total	34%
PRODUCTION	
Crosscut and haul (or haul and crosscut)	14
Peeling	14
Cleaving	16
Clean, point, bundle	16
Haul to yard (or remove to store)	6
Sub-total	66%
Total	100%

Only one report has been located detailing research into the chestnut industry in this period, viz *An Economic Appraisal of Coppice Chestnut as a Form of Land-use in Kent* (Ashdown, 1974). This aimed to assess the role of chestnut in a forest economy, which at that time, was based almost exclusively on fast growing softwoods. The extent of Kent's coppice resource in the early 1970s is given as

around 20,000 acres (c.8333 hectares) although it is not clear if this refers exclusively to chestnut. Ashdown compared Kings Wood, Challock ("*good quality*") and Bedgebury ("*not so good*"), both owned and managed by the Forestry Commission (and so may not be typical examples). These had been retained, rather than over planted with conifers, because underwood sales were well-established before purchase by the Forestry Commission and had remained profitable[184] (Bannister and Bartlett, 2008). Ashdown (1974) carried out an analysis of auction records back to 1957, and showed prices had more than doubled. The greatest increase was observed between 1970 and 1973, although it is impossible to determine whether this is a real rise reflecting increased interest or merely a function of the very rapid inflation of this time (Collard and Dellasy, 2003).

Ashdown (1974) interviewed cutters who were using axes[185] and grading as they worked, selecting out posts, poles[186] and pales. The latter were bound into bundles of 25 and were typically 4ft 6" long. The price was calculated by the bundle foot, as is still the case. The issue of quality, related to stool spacing, edaphic conditions and aspect, and the effect of these on yield, was considered by Ashdown. He found cutters competed for the cants they expected to make the greatest profit from, with the greatest skill being estimating the proportion of value added products compared to the by-product (firewood or pulp) that each parcel would yield. He carried out an analysis, based on the prices given below for finished products; the results are shown in Table 6.5 on the following page

posts	12.5p each
poles	£80 per 100 (these would now be called rails)
pales	60p per bundle[187] (of 25)
pulp	£4.50 a ton

[184] The entire collection of catalogues produced by the Forestry Commission for these woods dating from the 1920s to the 1990 have been studied and scanned as an archive by the author
[185] Interviewee 17 showed me the axe he was using in Kings Wood around this time, although he did not recollect Ashdown and his research.
[186] Equivalent to what would now be called rails
[187] Presumably 4'6" pales as Ashdown early gives this length as the norm

Table 6.5. Conversion Returns from 1 acre

Based on quality as indicated by price paid (Ashdown, 1974)

PRODUCTS	Standing timber price					
	£250 per acre		£150 per acre		£50 per acre	
Posts	2000	£ 250.00	1500	£ 187.00	1000	£ 125.00
Poles	200	£ 160.00	100	£ 80.00	50	£ 40.00
Pales	1000 bundles	£ 600.00	750 bundles	£ 450.00	500 bundles	£ 300.00
Pulp	15 tons	£ 67.50	18 tons	£ 82.00	25 tons	£ 112.50
Total revenue		£1077.50		£ 799.00		£ 577.50
Cutting cost		-£ 90.00		-£ 80.00		-£ 70.00
Net revenue		£ 87.50		£ 719.00		£ 507.50

Ashdown concluded that there was unpredictability and risk inherent in the auction system. The price realised by individual cants was affected by factors such as local shortages of good fencing material, access and travel costs. The imperative was to maintain supplies to satisfy customers. Ashdown quoted the owner of a fencing firm who, during the winter of 1973/74, found sourcing chestnut so difficult that he had to import pales from France to meet demand[188]. Electrically powered wiring machines were introduced by Elvedon Engineering in the 1970s. These, the most commonly seen today, roll the fencing as it is wired, dramatically increasing speed of production. 126 rolls a day is apparently the record (interview 30) although the astute comment was made that the size of the market remained the same. An example is shown in Figure 6.2, on the following page.

[188] In the early 2000s the 'Capercaille Challenge', a grant scheme operated by the Forestry Commission and Scottish Natural Heritage had to do likewise.

Figure 6.2 Pneumatic wiring machine

The growing interest in the coppice crafts in the 1970s reflected the emerging environmental agenda with a rise in back-to-the-land initiatives and increased interest in craft and natural products (e.g. Schumacher, 1973; Seymour, 1976). This was exemplified by the television series *The Good Life*, first shown in 1975[189]. The effects of increased agricultural efficiency on the wider environment, particularly the effect of pesticides was reported by Rachel Carson in her book *Silent Spring* (1962) and government agencies, such as the Forestry Commission were developing a wider remit, and the Nature Conservancy was active in raising awareness of the importance of lowland woodlands for wildlife.

The newly elected Conservative government published a housing bill in December 1979. This included the right for council house tenants to buy their homes, an initiative hailed by Michael Heseltine, Secretary of State for the Environment at that time, as "*one of the most important social revolutions of the century*"[190]. About 42% of the population at that time lived in council owned housing (Harris, 2008)

[189] For more information see http://www.bbc.co.uk/comedy/goodlife/, accessed 16/4/10
[190] http://www.guardian.co.uk/society/2008/sep/30/housing.houseprices, accessed 20/4/10

and this right-to-buy, combined with the reduction in tied housing [191] and the rise in second home ownership, with Londoners buying second homes for weekend use, increased rural housing costs. While this reversed the establish trend of rural depopulation these factors resulted in many who had grown up in rural areas being forced to move into nearby towns, increasing travel distance and cost for those working in the countryside. This is still a serious issue, as revealed by the survey carried out (by the author) in the High Weald in 2008[192]. In several interviews older workers explained that current earnings cannot be compared to those when overheads, notably housing costs, were low (e.g. interview 4). The firewood market was affected by the rolling out of mains gas into rural areas as North Sea production came on line during the 1980s[193].

The emerging environmental agenda had disadvantages for coppice workers, with nature conservation concerns severely reducing the cutting season, making it difficult for processors to maintain supply. Publicity over the destruction of tropical rainforests led to the "*new rural*" second home-owners regarding coppicing as environmentally damaging, rather than as a beneficial traditional practice.

There is a little information on the annual area cut or the numbers working in the woods. In the late 1970s and early 1980s one of the two chainsaw dealers in East Kent was supporting (i.e. training in chainsaw use and selling and servicing saws) at least 180 cutting groups in east Kent and he suggests that a similar number would have been supported by George Stevens, making around 360 groups active on the woods of the Downs and surrounding areas. Each group would have consisted of between four and six people; the minimum was two cutting, one burning up and one loading. Pale and rail makers often made up the other members of the group and the waste (or by-product) went as pulp to the Kemsley mill (interview 29). Mining bars were also being cut at this time (interview 27).

[191] Free or low cost housing provided for workers by farms and estates, reduced by The Agricultural Holdings Acts, of 1986, followed by that of 1995
[192] For full report see http://www.highweald.org/home/research/83-housing-needs-survey-of-rural-workers-in-the-weald.html, accessed 3/1/20011
[193] For more information see http://www.abdn.ac.uk/oillives/about/nsoghist.shtml, accessed 17/4/10

England joined the European Union in 1973. Health and Safety legislation and Public Liability Insurance, combined with the requirements of organisations such as the agencies, local authorities and NGOs, became an added burden for coppice cutters. This increased their costs and encouraged them to move away from working sites in these ownerships. The difference between these and private woodlands is demonstrated by a survey, from the late 1970s and early 1980s, that found more than 70% of woodland estate owners to have received no grant aid. A further study, carried out by Firn Crichton Roberts, concluded grants needed to reflect more closely the woodland owner's objectives (Grayson, 1993).

6.10 The 1980s

The political climate of the 1980s was markedly different to that of the 1970s with the emergence of Thatcherite Conservatism and focus on short-term measures of success. Watson (2010) analysed the effect of three decades of neo-liberalism on fruit and vegetable markets concluding that these worked against the development of long term relationships based on trust and an understanding of trading partner's needs and how they can best be met. This is equally applicable to the coppice section, which traditionally functioned as extended family businesses. Father-son combinations provided continuity within the woodlands, cutting during the winter, with many of the less specialist moving to agricultural[194] work, particularly fruit and hop harvesting, in summer. While improved agricultural efficiency reduced the need for casuals there are reports of farming families turning to woodland work in the winter, producing firewood and fencing material for sale as well as their own use (interview 4).

Expectations changed as higher wages and better working conditions were becoming common across a wide range of semi-skilled jobs. Recruitment to the coppice industry is thought to have declined in response (Betts and Claridge, 1994). However, this view may not be entirely accurate, as earnings from paling

[194] Some say building work as well, but no evidence of this has been found for the chestnut workers

production[195] is said to have achieved about 50% more than the alternatives. However, the time needed to develop the speed required to achieve this level of earning may have discouraged anyone who had not been practicing since early childhood, as was the case for those in family groups (e.g. interview 4). The auction prices indicate competition for quality raw material but, although this was good for the landowners, it reduced profit margins.

The views of the Government agencies were changing. In 1968 Barrington, Forestry Commission Conservator for the South East, had expressed the view that growing hardwoods other than chestnut cost money and that those woodland owners who did this should receive public thanks on aesthetic grounds. Almost twenty years later, the Forestry Commission's issuing of the Broadleaves Policy (1985) reversed their previous agenda of planting conifers, often on semi-natural habitat, and of "*enriching*" ancient woodlands (Wilson, 2007).

The environmental agenda continued to gain momentum during the 1980s, with increasing public awareness of landscape, ecology[196], water quality[197] issues as well as recreation (see, for example, Shoad,1980) and global warming (Grayson, 1993). The high impact in Britain, compared to other European countries, is attributed to the visible impact of agricultural intensification combined with the lower numbers actively involved in the countryside (Lowe, 1996). This divide between *nature* and *landscape* was reflected in the separate remits of the Nature Conservancy and the three Countryside Agencies[198] (these were merged in 1990[199]). CoSIRA withdrew from the craft sector from the mid-1980s, becoming the Rural Development Commission, with the remit of providing business advice for rural micro-businesses passing to the Countryside Commission (Collins, 2004).

[195] The classification of pale making as un skilled or a best semi-skilled is made by those who have not tried to do it – it is much more difficult than it appears
[196] By the mid 1970s, the total membership of the Wildlife Trusts had risen to 100,000 and the number of Nature Reserves to 850 covering almost 60,000 acres.
[197] E.g. Upland conifer planting and acidification
[198] The Countryside Commission, Countryside Council for Wales and Scottish Natural Heritage
[199] Countryside Agency; English Nature and more recently Natural England

The amalgamation of farms to increase efficiency made farmhouses and converted redundant farm buildings available for those seeking a more rural lifestyle. The number swelled and these non-farming landowners were[200] both articulate and vocal. The potential conflicts between those trying to live off, and those living in, the countryside affected woodlands and the forestry agenda as well as agricultural interests. The global agenda was encapsulated in the Bruntland report, *Our Common Future*, produced in 1987, which formulated the following definition for sustainable development, which remains in current use:

> "…d*evelopment that meets the needs of the present without compromising the ability of future generations to meet their own needs*[201]*".*

The Wildlife and Countryside Act of 1981 consolidated previous national legislation to implement the Berne Convention[202] and the Birds Directive[203]. Plants and animals of concern were listed on Schedule 5 and 8 respectively and these included species thought to be associated with coppiced woodlands such as the common (or hazel) dormouse (*Muscardinus avellanarius*) and the nightingale *(Luscinia megarhynchos).* A quick search of older books does not associate either with woodland, but with hedgerows (e.g. Duncan and Duncan, 1961; Johns, 1885). Plant and animal species, the *biodiversity*, varies with both local conditions and management history; ancient woodlands were increasingly recognised as important due to their continuity over time (e.g. Ratcliffe, 1977). George Peterken (1977; 1981) was influential in setting the conservation agenda by identifying the most important attributes of natural woodlands and listing the following priorities:

- Protection of rare or characteristic species
- Include a range of woodland/stand types
- Safeguarding particular stand structures
- Safeguarding specific management regimes

[200] And are still
[201] http://www.ace.mmu.ac.uk/eae/Sustainability/Older/Brundtland_Report.html, accessed 8/1/10
[202] Convention on the Conservation of European Wildlife and Natural Habitats
[203] Council Directive 79/409/EEC on the Conservation of Wild Birds

During the 1980s environmental organisations brought up woodlands to conserve – or even to save them – with the result that these became inaccessible (or unattractive) to the coppice industry. With other available coppice there was no incentive for cutters to work under the rigorous conditions these oranisations imposed, although this is likely to have encouraged the view that the industry was in decline. The extent of activity at this time is illustrated by the following quotation from a haulier:

> *"We used to deliver in 5000 tons a year into Kemsley mill, Bob (Kevin's dad) had a quota and would pay the cutters £18 per ton every Friday even if he was waiting for his money. Took three 20 ton loads in a day. When this shut could only do one load a day to Wales".*

He added that lorries are larger now and loads bigger so economics are different, fuel prices were discussed, he continued:

> *"(We) also used to go to Rendlesham Forest, Woodbridge, near Ipswich every day (originally took 4.5 hours each way; by the end 2.5 hours due to improved roads) collecting softwood to go into Kemsley for newsprint".*

(Interview 27)

The Great Storm of 1987 further raised awareness of woodlands and had an immediate effect on the market price for timber, as huge quantities were suddenly available across the South East. The longer-term impact was that processors, including saw mills, stockpiled and dropped out of regular purchasing. Able-bodied chainsaw operators were in demand for tree clearance, and the temptation of a quick buck attracted some to switch from coppice work to arboriculture/tree surgery. Interestingly, the effect on standing timber prices seems to have been negligible.

On Black Monday, October 19th, 1987, global stock markets lost record amounts in a single day[204], with dramatic effects on interest rates. The cost of all loans, including mortgages, escalated with serious impact on small businesses that depended on maintaining cash flow. Larger companies held on to money, maintaining their own financial balance, so the brunt was borne by smaller ones. This was exacerbated by the closure of the Kemsley mill in 1989, in response to pollution control legislation and rising demand for recycled paper (Roberts, 1999). While some consider this outlet paid enough to earn a living (John Drake, conference presentation, October 2010[205]; interview 4) this is disputed by others (interviews 19 and 29) who consider that no one could survive without making value-added products as well. The value of the mill is considered by many to have been that the hauliers with supply quotas also had the capital to pay cutters weekly. It was not merely an outlet for low-grade coppice product but a guaranteed quick cash return (e.g. interview 27)

6.11 The Post-1980 Decline

Coppice management had been widespread with specialist industries in the South and South East, with hazel (*Corylus avellana*) in the western and central parts, extending into West Sussex and chestnut (*Castanea sativa*) in Kent, Surrey and Sussex. Hazel workers focused on charcoal, thatching spars, hedge laying rods and woven products such as wattle hurdles; chestnut workers on harvesting long poles and cleft products, particularly fencing. Both produced low value firewood and, in the case of chestnut, pulp.

At the start of the 1980s the chestnut industry was thriving, partly due to the housing boom requiring paling fencing around building sites (Ball, 1994). However, coppice woodland management in general is thought to have suffered a significant decline during the 1980s and there was rising concern voiced by stakeholders,

[204] http://www.ft.com/indepth/blackmonday, accessed 25/4/10
[205] The full report is available at http://coppicegroup.wordpress.com/, accessed 10/12/10

from the government agencies to woodland owners (e.g. Betts and Claridge, 1994). To put this in context the coppice area[206] (in Britain) was estimated at 233,000ha in 1905, declining to 142,000ha by 1947, and 30,000ha in 1965. A rise to 40,000 ha by 1980 was attributed to pressure from conservation organisations (Peterken and Allison, 1989) who reviewed changes in the wider countryside arguing that these increased the value, based on rarity, of actively coppiced woodlands. This stimulated local authorities and conservation organisations to purchase woodlands to save them (e.g. Roberts, 1999).

The upsurge of environmental consciousness was accompanied by interest in self-sufficiency (Seymour, 1976; Schumacher, 1973) which contributed to a revival in small-scale coppicing activity producing high value products rather than bulk commodities such as charcoal or palings. These new-wave coppicers just did not cut large enough areas to prevent the decline that became apparent in the 1980s and led to the plethora of support initiatives and attempts at market development that have been initiated since the late 1980s and have continued to the present.

6.12 The last decade of the 20th Century

Woodland rose on the agendas of local authorities, government agencies and the general public as the Rio Earth Summit of 1992 led to Local Agenda 21 initiatives, with local authorities charged by central government to identify the environmental agendas for their specific areas. Concurrently Biodiversity Action Plans (BAPs) were formulated. The Kent BAP prioritised species associated with coppice and set targets to increase the area coppiced by 50% in 10 years, and 75% in 50 years (Kent Biodiversity Action Plan Partnership 1997, page 22). Statistics relating to woodland area and composition are far from simple; it has been calculated that about 70% of the sweet chestnut coppice in South East England is in Kent; most is privately owned with only about 37ha on Forestry Enterprise sites (Forestry

[206] The problems of statistics for coppice, with variation in the criteria, particularly for chestnut which remains in rotation for decades, should be borne in mind.

Commission, undated c.1983; Dannet, 1991). The county breakdown is shown in Table 6.6 below.

Table 6.6 Chestnut Areas in the South East by County (after Dannet, 1991)

COUNTY	AREA (Ha)
Kent	12,544
East Sussex	3,349
Surrey	Dannet gives no value for this county
West Sussex	1,393
Total SE England	17,286

Dannet (1991) calculated the potential yield from the chestnut resource, the first of the plethora of reports focusing on this aspect, and this was used as the basis for the emerging market based solutions to the perceived coppice 'problem'.

Table 6.7 Potential annual yield calculations from the chestnut resource (Dannet, 1991)

COUNTY	AREA (Ha)	YIELD (tons) 15 year rotation	YIELD (tons) 20 year rotation
Kent	12,544	66,900	100,400
East Sussex	3,349	17,900	26,800
West Sussex	1,393	7,400	11,100
Total SE England	17,286	92,200	138,300

Chestnut comprises about half of all the coppice woodland in Kent, and about a quarter of the county's woodland resource. The Phase 1 Habitat Survey (Kent County Council, 1994) carried out in the early 1990s recorded some 7,828 hectares (64%) of chestnut as "*recently coppiced*" compared to 55% of total coppice, although how this was defined is unclear.

Table 6.8 Coppice in Kent from the Habitat Survey (Kent Ccounty Council 1994)

WOODLAND CATEGORY	**CALCULATIONS FROM HABITAT SURVEY GIS**		
	Total area (Ha)	% of all coppice	% of all woodland
Sweet chestnut coppice	12,110	54	25
Recent coppice	12,174	55	25
Ancient semi-natural woodland	20,837		43
Ancient replanted woodland	8,058		17
All ancient woodland	28,895		60

This suggests the situation in the early 1990s, particularly for chestnut in Kent, was not as dire as had generally been assumed. The Forestry Commission Census, carried out in 1997 (Forest Research, 1999), painted a different picture indicating a dramatic decline in area coppiced, shown in Table 6.9.

Table 6.9 Coppice in Kent

(Source * Dannet 1991; all other figures Forest Research 1999[207])

TOTAL COPPICE IN KENT (hectares)	1947	1980	1997
Total woodland	41511	42664	37210
Total sweet chestnut*		12,544	
Total coppice	27213	17914	9437
Coppice as % of total woodland	65.6	42.0	25.4

This implies Kent's coppice woodlands have declined by over 60% in the last fifty years, to 16.7% of the 1947 figure. Similar trends have been identified in other south-eastern counties, with the area in Surrey falling by more than 50% (Surrey County Council, 2007). This is not only of concern for the rural economy, but also for the impacts on wildlife and the landscape. The Forestry Commission report includes the caveat that the methodology used was different to that used previously, so census results are not comparable (page 24). In addition the data are intended to provide an overview of the national resource, and are based on classical forest inventory methodology (e.g. Bright, 2001). The application to county level requires caution as the relationship between coppice area and active management is not simple. Rotation depends on the end-product; chestnut cycles vary as follows:

3 years	walking sticks
11 – 15 years	palings
25 – 40	post and rail crops
45+	post and rail and planking

Shingles, also known as shakes, used as roofing tiles[208] can come out of the last two categories, firewood and pulp from material of any age. This means that chestnut coppice can not be assumed to be unmanaged if stood for well over

[207] NB the total area of woodland was revised upwards in later Forestry Commission reports
[208] Seen on many church spires, such as at Doddington, near Faversham in Kent, as these have a steep pitch

twenty years, in contrast to hazel coppice, where the crop rapidly looses value if over-stood. Some coppicing was being carried out for biodiversity and amenity purposes by conservation organisations such as Kent Wildlife Trust, English Nature[209] and an increasing number of small woodland owners. In many cases the product was not marketed, but burnt on site, or stacked as habitat piles. Chestnut saw logs were still commanding a consistently good price, usually for export to northern Spain and Portugal for furniture manufacture (Derek Morgan, pers comm.). Some owners[210] altered their strategy to storing coppice (i.e. thinning poles to grow on in response to this market.

6.13 The early 2000s

By 2000 prices for standing crops had fallen below £300 an acre for quality paling chestnut, with a maximum of £500 for post and rail crops with sales arranged by private contract rather than auctions (Angela Hirst and Mike Bax pers. com.). The price for finished pales had fallen relative to overheads, throughout the previous decade, and at the beginning of the century was hovering around 75p per bundle foot. Forestry Stewardship Council[211] (FSC) certification was emerging as an important issue, with large potential clientssuch as the Environment Agency and local authorities requiring this in their revised procurement policies. Many woods, particularly those owned by the Forestry Commission and NGOs such as the Woodland Trust, RSPB and the National Trust, have achieved FSC certification. However, for products to carry the FSC logo, not only the source woodland has to be certified, but the processor/s must also have chain-of-custody certification; an additional cost[212]

[209] So named at this time; now Natural England
[210] including the Forestry Commission at Kings Wood, Challock
[211] Forestry Stewardship Council http://www.fsc.org/, accessed 25/4/10
[212] To date only one chestnut processing business, Tory Hill Chestnut Fencing has achieved this

The imperative of conserving Ancient Woodlands as a cultural and natural resource (e.g. DEFRA and the Forestry Commission, 2005) became established in the early 2000s, with a review of changes in broadleaved woodland since 1947 suggesting that new planting had masked the loss of established woodland in the Forestry Commission census (Hopkins and Kirby, 2007). These authors also highlighted the ongoing problems of atmospheric nitrogen pollution[213], climate change and non-native alien species, such as *Rhododendron ponticum*, on the structure and composition of woodlands. Change in ownership and the impact of this on management was also causing concern, particularly in Kent where the rise in woodland sales and lotting[214] was attributed to lack of other commercial markets (Land Use Consultants, 2007).

The emerging urgency of the climate agenda in the new millennium was heralded the potential saviour of the woodland industries (Forestry Commission, 2004a). This was increasingly apparent in publications (e.g. Forestry Commission, 2006; Bannister, 2007). Wood fuel reports abounded identifying the potential of coppice woodlands to respond, if markets materialised (e.g. Grayson, 2006). The potential is indisputable although the impact - and economic viability - of using chestnut, as a biomass fuel is unclear[215].

The Confederation of European Paper Industries (CEPI) have expressed concern as wood for paper production is now imported from outside the EC as a direct result of the financial incentives for biomass burning (Anon, 2010a). It is suggested that subsidies should be subject to strategic environmental impact assessment to identify environmentally harmful effects as a matter of urgency.

---

[213] This form of pollution causes eutrophication and disrupts the competitive relationships between species

[214] the division of woodlands into small parcels sold individually, often for recreational use

[215] In 2009 Nick Sandford, SEEDA Biomass Champion for the South East, reported he had been offered £300 an acre for standing paling quality chestnut, but was unable to accept this as he needed it for chip to feed his boiler (also funded by SEEDA). In 2010 the author was approached by three enterprises revisiting this in Kent alone, actively exploring the potential to access funding to set up large-scale wood burning installations on the basis of available harvestable raw material. It is interesting that the reports focus on extent and potential yield while failing to investigate how much of the resource is currently harvested and the existing domestic firewood production

A report by McKinsey Business Consultants, produced in 2007, estimating that achieving the 20% by 2020 target for renewable energy could produce a supply-gap equivalent to the current manufacturing demand for wood is cited as evidence. The available – or potential – workforce is arguably as important as the woodland resource. The Review of the Crafts in the English Countryside (Collins, 2004) distinguished between the professionals and the hobbyists, casual, part time and seasonal workers, with the additional classification of workers being from either the new or old traditions (Collins, 2004, page 88). The importance of training for long-term sustainability and development is identified, with the recommendation that this should be overseen by the Sector Skills Councils[216]. The profiles for the workers, mainly in Central and South England, given by Collins (2004) are significantly different from those found in Kent (Bartlett and Rossney, 2007), probably accounting for the very low response rate from this group to the National survey.

Collins summarises the workforce as having peaked in the mid 19th century at over 25,000 falling to around 1,200 in 1960 and bottoming out at about 550 in the mid 1970s (2004, page 85). It is difficult to accurately assess numbers as many woodland workers keep a low profile, tend not join groups and are often portfolio-workers. Those belonging to the new tradition, who may have made a lifestyle decision to leave other professions to work in the woods, are easiest to engage and usually willing to share their opinions. These are generally regarded with suspicion - if not downright hostility - by the traditional group, who are less romantic about woodlands and, despite enjoying working in woods, see it simply as their job.

The preceding sections have shown that, over the course of time the hazel and chestnut industries have waxed and waned in response to changing markets. This is evidenced by numerous detailed historical studies of specific woodlands (e.g. Rackham, 1990; Rackham, 1986; Peterken, 1993b; Wheaten, 2002; Bannister and Bartlett, 2005). Despite this, they have remained a significant component of the economy, society and culture of Kent, Surrey and the Sussexes

[216] For the land based sector this would be LANTRA

CHAPTER 7 THE 20th CENTURY DECLINE IN COPPICING

Doom and gloom about the state of the coppice industry is not new; in the late 1800s coppicing was considered to be "*on the wane*" (Fuller and Warren, 1993, page 4). Thomas Hardy, writing in 1912, said the livelihoods of the "copse workers" he had described twenty years earlier, in his novel *The Woodlanders*, had virtually disappeared with many moving to game keeping and conifer planting (Hardy, 1912, reprinted 1974). FitzRandolph and Hay (1926) were not optimistic about the future for the underwood trades.

The 20th century decline refers to a post Second World War phenomenon, and is based on the various Forestry Commission Censuses. The problems associated with comparing these statistics have been alluded to previously and are clearly stated by Harmer and Howe:

> "*Direct comparisons between the surveys cannot be made for a variety of reasons including differences in methodology, changes in definitions of woodland categories assessed and sizes of woodland surveyed*"
>
> (2003, page 4):

Further, the 1947 Forestry Commission census category of "*Coppice and unproductive woodlands"* is usually interpreted simply, but inaccurately, as coppice (Edlin, 1970, page 136). During both World Wars woods were over-harvested (e.g. Peterken, 1993b; Roberts, 1999) and much of the workforce was lost. The Forestry Commission response was to replace broadleaved, predominantly coppiced woodland, with conifers. This reduced the potential for coppice management even if the wooded area remained the same. Traditional markets disappeared with substitution of modern materials and processes; under-supply was possibly a contributory factor. Only fencing held its value. Contemporary accounts confirm that by 1980 large areas of coppice had been "*abandoned*", with Harmer and Howe calculating a decline of 90% over the 20th century (2003, page 3).

The definition of active coppice is fraught; hazel is considered to remain commercially viable[217] for as few as two years, while chestnut still has added-value at 80+ years (South East Coppice Conference report[218], page 12). Thus, it is difficult to describe chestnut coppice as either abandoned or neglected. Significantly in the early 1990s, 64% of chestnut and 55% of mixed species woodland in Kent was described as recently coppiced (Kent County Council, 1994).

Some landowners were undoubtedly finding it more difficult to sell standing underwood. Older workers report having decamped to woods whose owners imposed fewer restrictions (e.g. interviews 15 and 17) with some describing the state of the Forestry Commission's woodlands as "*disgraceful*" (interview 23). Income is required throughout the year. The reduction in seasonal farm work, which had traditionally supplemented winter cutting by a progression through cherries, soft fruit, hay making, corn harvest, hops, apples and pears, made earning a living more difficult[219].

Despite references to a decline in coppice in the early 20th century (e.g. Hardy, 1912, reprinted 1974; FitzRandolph and Hay, 1926a) it was not until the late 1980s and early 1990s that this was acknowledged by the government agencies[220].

7.1 The broad base for concern

Concern regarding the decline in coppicing spread beyond the traditional forestry/woodland management remit and was expressed with respect to landowner incomes, rural employment, biodiversity and landscape change, sustainability/local purchasing of timber and wood products and cultural heritage. Once this wide perspective had emerged the focus changed, with English Nature

[217] Although this is commonly said, it is still commercially viable when overstood for both charcoal and firewood, although these products are not as profitable as hurdle rods and gads
[218] http://coppicegroup.files.wordpress.com/2010/11/2010-south-east-coppice-conference-report.pdf
[219] Some continue to work in this way, others have substituted summer garden work
[220] The Forestry Commission, English Nature and the Countryside Agency

(now Natural England), in conjunction with nature conservation NGOs, raising concerns about the potential effect on wildlife. This gained momentum with Species Action Plans (SAPs, part of the Biodiversity Action Planning process) formulated for woodland species including Pearl-bordered Fritillary (*Boloria euphrosyne*), Heath Fritillary (*Mellicta athalia*), Serotine bat (*Eptesicus serotinus*), Nightingale (*Luscinia megarhyncos*), Dormouse (*Muscardinus avellanarius*), Silver-Spotted Skipper (*Hesperia comma*) and Early Gentian (*Gentianella anglica*) (Kent Biodiversity Action Plan Steering Group, 1997). These were all thought to be strongly associated with coppice management, so targets were set to increase this.

The woods with greatest conservation interest were not those managed commercially[221] but tended to be of mixed species that had escaped improvement either because they were valued for other reasons or were difficult to work due to, for example, inaccessibility. The change from horse and cart to tractor and forwarder required better tracks and roadsides to stack for collection by lorry. Winter mud is a well-known problem in the Weald; the effect of flints, common on the Downs, on tractor tyres is also a problem (interview 20).

Membership of conservation organisations rose exponentially during the 1980s[222]. Despite the importance of coppice management for BAP priority species, woodland workers, like farmers, have been (and are) seen by some conservationists as desecrators, rather than stewards of the countryside. Coppicing on nature conservation sites is often carried out by volunteers, as professional cutters tend not to want to work on these sites. Some conservation organisations, notably the Woodland Trust, employ trained foresters, but difficulty in getting their coppice cut has led to this management option being taken out of their management plans (interview 33). The conditions imposed by conservation organisations make

[221] Profitable productive coppice would not have been readily offered for sale
[222] In 1982 Kent Wildlife Trust, then known as the Kent Trust for Nature Conservation, had one member of staff; it now has more than 50.

earning a living difficult[223]. In 1993 George Peterken suggested that conservation would be on a more secure footing if it directly involved the coppice industry and was carried out economically (Peterken, 1993a).

7.2 A theoretical analysis

Coppice woodland management is not natural but the product of the interaction of people with trees over a very long time (e.g. Rackham, 1986; 2003). The discipline of sociology, and specifically the Sociology of Scientific Knowledge (or SSK) takes a constructivist approach to analysing perceived environmental problems. Irwin (2001) suggests that:

> *"The "facts" of environmental matters do not speak for themselves: instead, they are actively created and interpreted. ..... Statements about the natural world represent social and institutional constructions"*
>
> Irwin (2001, pages 73-74)

On this basis the epistemology[224] of the coppice decline and the interpretation of this as a "*problem*" requiring an active solution needs more extensive examination. The evidence for the decline appears to have been centred on the views of the Forestry Commission, derived from their census data, combined with the concerns of nature conservation organisations and some landowners.

Public loss of faith in science, particularly the ability to address environmental problems, was evidenced by the green or environmental movement and this led to questioning the validity of scientific claims. Publication of books, such as Carson's *Silent Spring* (1962) and Shoard's *The Theft of the Countryside* (1980), raised concerns about the impact of agricultural intensification on the (quasi) natural world[225]. The claims of these authors, based on their view of reality, was very

[223] An example was given by a cutter who had to remove all cut material from a Woodland Trust site before summer, meaning double handling as it had to be taken to an alternative site for seasoning before he could process and sell it for firewood (interview 6)
[224] The truth behind the assumption and the justification for it
[225] And now with *Silent Summer: the State of Wildlife in Britain and Ireland* (MacLean, 2010)

different to that of the farmers who were following the advice of government departments to increase efficiency and ensure food security (e.g. Bonham-Carter, 1971; Harvey, 1998). For one of these alternative views to emerge as a problem that needed to be addressed required others to engage with it and lobby for change. For an *issue* to translate into a *problem* requires assembling facts, presenting these coherently, and successfully refuting counter-arguments. The process by which some issues become problems, are acknowledged by decision makers and then move towards a solution, has been summarised by Hannigan (1995, see Irwin, 2001) as a six step process. This is demonstrated in Table 7.1, below, using agricultural intensification as an example.

Table 7.1 Hannigan's process applied to agricultural intensification

1	Scientific authority for and validation of claims	Government agenda for efficiency and modernisation of agriculture
2	The existence of "*popularisers*" bridging environmentalism and science	e.g. Carson and Shoard, Friends of the Earth (FOE) and nature conservation organisations
3	Media attention framing the problem as novel and important	Achieved
4	The dramatisation of the problem in symbolic and visual terms	Achieved
5	Economic incentives for taking positive action	Revision of capital grants, reform of the CAP. Punitive legislation
6	The emergence of an institutional sponsor to ensure both legitimacy and continuity	e.g. The NCC[226], English Nature and Natural England; also the Environment Agency and DEFRA

[226] Nature Conservancy Council

The process in this example is clear. Steps 2, 3, and 4 assemble the evidence and identifying the negative impacts on wildlife and the wider countryside associated with the modernisation of agriculture in the post War period. This led to initiatives such as FWAG[227] working to maximise environmental benefits in the context of profitable land management.

Applying the same de-constructivist framework to the coppice issue requires consideration of the nature and scope of knowledge, the basis for it and identification of any limitations it may have. Fundamental to this is addressing the following questions:

- What is knowledge?
- How is it acquired?
- What do people know?
- How do we know what we know?

(Irwin, 2001)

The Forestry Commission census data, combined with the decline of some coppice related wildlife (e.g. Ratcliffe, 1977; Buckley, 1992), provides step 1 in Hannigan's typology. The resurgence in heritage crafts and greenwood working of the 1970s and 1980s could contribute to step 2, but the extent to which step 3 has been realised and influenced 4[228] and 5 is debatable. The engagement of the public and non-expert groups with the coppice issue has been limited and complicated by the growing awareness of the need to preserve trees and woods, the result of successful lobbying against the countryside change (see Table 7.1, above) combined with the plight of tropical rain forests. It is an interesting paradox that, at the same time as loss of semi-natural habitat and protests over tree felling was being reported by the media, concern over lack of coppicing was being voiced by the institutional groups.

[227] The Farming and Wildlife Advisory Group
[228] Kent Wildlife Trust's use of the Heath Fritillary butterfly (*Mellicta athalia),* formerly known as the woodman's follower, as the rationale for re-introducing coppicing could be cited an example of step 4, "*dramatising the problem in symbolic terms*" (Hodgeson et al., 2009).

Coppice cutting can be (and is) interpreted as environmental destruction, particularly by those from an urban background. The historical evidence, particularly regarding chestnut, does not suggest the decline to be a result of market failure but rather that there was continued activity. However, despite this, the Forestry Commission emerged as the sponsor, aligning with local authorities, nature conservation organisations and government agencies to promote new markets as the solution to the coppice problem. The situation in Kent was thought to be particularly acute as the Kemsley mill closed to pulp in 1989, with the nearest alternative outlet being Chepstow, a round trip of 400 miles. This increased haulage costs from £4 to £14 a ton (Porritt, 1995; interview 27).

The Forestry Commission, South East hosted a conference, *New Markets for Old Wood*' in 1994 (Betts and Claridge, 1994); there is no evidence that either coppice workers or businesses were represented among the delegates. The intension of this event was to explore new markets that could be stimulated to address the decline but not all the speakers felt this to be appropriate. The existence of viable products and markets was pointed out[229] and the value of reports, based on extent

[229] The opportunity to market through the South East Marketing Development Group (SEMDEV) was indentifies, exploiting information technology to facilitate co-ordination and databases, combined with government commitment to renewable fuels and public concern about tropical hardwood increasing interest in locally grown material (page 5). Tony Penrose (page 9) quoted Dannett (1991) stating only about an eighth of the resource was harvested, the rest being be uneconomic to work with large machinery (page 11). The need for a realistic assessment of the cost of bringing the resource to market and to ensure workers were well paid was emphasised. The Development Manager of British Steel, identified the opportunity to increase the market in building and construction. Research by Lindsay Marketing Services predicted an expansion of the garden furniture market from £250million to £320 million by 1996. Mike Henderson, St Regis, said low-grade hardwood had a bright future as paper and particle board feedstock if there was continuity of supply identifying weather and conservation constraints, as restricting extraction. Good contractors faced over complex specifications, lack of a grading premium, poor working conditions, vandalism of equipment, high costs of safety equipment, certification, insurance, machinery problems and continuity of work. He concluded *"Stop chasing moonbeams. The wheel is alive, well and working in a mill near you".* Personal use of firewood and fencing was encouraged (page 63) and it was

and annual increment but ignoring impediments to commercial harvesting questioned (e.g. Thirkettle and Henderson, in Betts and Claridge, 1994). Vince Thirkettle, the Forestry Commission lead on coppice[230], pointed out that the closure of the Kemsley mill, combined with the loss of the mining outlet in Kent should have resulted in over supply but the reverse was the case, with shortages evident. There was discussion of co-operatives which have been found to work well in Europe, although it was felt these wouldn't work in the South East. This was an interesting parallel to the findings of FitzRandolph and Hay (1926a; 1926b), although it was pointed out there was significant collaboration between workers and that a formal structure is not necessarily required.

Neither the evidence attributing decline in coppicing to market failure nor the basis for market-based solutions is clear. The policy context of the 1980s, with the swing in the Forestry Commission's agenda from production forestry to broadleaved woodlands for wildlife and recreation (1985), and their new alignment with conservation organisations may have facilitated the apparent conceptual leap between steps 1 and 5 in Hannigan's model, leading to the assumption that the solution to the coppice problem was (and still is) incentives for market development. A contributory factor may also be that the agencies consider coppice as a single woodland management technique. In fact the way it is practiced and the factors affecting livelihoods can be distinctively different, as demonstrated by the specialised hazel and chestnut sectors, both operating in the South East, and outlined in the following sections.

concluded there were buoyant existing markets which were suffering under-supply as well as several potential new ones. .

[230] Shortly after this Vince was moved and replaced by Andy Mason (who retired in April 2010)

7.3 The Hazel Based Coppice Sector

The hazel industry is based on the production of pliable rods from short rotation coppice, usually between 5 and 8 years old[231], depending on edaphic conditions, aspect and stool spacing. After this it is less pliable so only useful for charcoal or firewood, lower value products, and is described as over stood. Neglected or even derelict and standing coppice does not sell well, particularly if there is little competition for material. In the 1980s Hampshire County Council highlighted the increase in neglected coppices despite the demand for thatching material and attributed this to the decline in demand for fuel wood and the seasonality of hurdle making[232] (Colebourne, 1983). In response a grant of 50% of the cost of the first cut[233] was introduced in 1985 and applied to 500 hectares in the subsequent ten years (Hampshire County Council, 1995). In 1987 woodland owners were surveyed to determine the area of hazel coppice and the proportion which was 'in cycle'. This revealed that, of the 1,600 hectares recorded as actively managed in 1947 only 450 remained in cycle, with about 130 hectares being restored under the grant scheme (Hampshire County Council, 1990). Watkinson (1994) identified discrepancies between Hampshire County Council's figure of 6,500 hectares of hazel coppice and the Forestry Commission's total of 400 hectares for this county. He commented that the Forestry Commission's figure of just 1 hectare of hazel in Devon was a mystery to the hurdle makers there! A decade later the Forestry Commission Inventory[234] recorded 211 hectares in Hampshire and described this as a drop from the 345 hectares recorded in 1995 (Forestry Commission, 2004b). These wide discrepancies are difficult to explain; possibly some refer exclusively to in cycle hazel[235]. An investigation into the markets for hurdles, thatching spars

[231] Some give the figure of 7 to 10, e.g. Colebourne (1983)
[232] Due to cut rods drying out HCC considered hurdle making to be a winter activity
[233] Hazel workers consider that two cuts are needed to achieve economic viability (e.g. interviews 3 and 9). This is corroborated by chestnut workers who claim the initial re-growth to have an outward curve in the butt end extending some distance up the pole (interview 29)
[234] The census is based on sampling to produce a national picture; this is not necessarily accurate at local level
[235] i.e. that which can be converted into added-value products , a condition maintained for only a few years after which hazel is regarded as over stood or neglected, utilisable only for charcoal or firewood (interview 34 seeks this for charcoal)

and hedgelaying material in the early 1990s recorded that more than 14,635 hurdles and 13,155,000 thatching spars were produced in 1993, the output of 222 skilled hazel workers and that demand exceeded supply by about 20% (Watkinson, 1994). This author records that auctions had ceased in 1961, with cutters expecting payment rather than buying standing coppice as a consequence of the grant scheme.

Court and Howe (1995) described the problem of Hampshire's hazel resource as the consequence of over-specialisation, with hazel encouraged over other broadleaved species. They raised concern that continuation of the decline in active coppicing would adversely affect wildlife and the countryside, illustrating the widening focus, encompassing biodiversity and aesthetics as well as the economic agenda**.**

The Wessex Coppice Group[236] (WCG) was launched in July 1995, to maximise rural employment and business opportunities, increase the area of quality coppice in rotation, sustain the landscape and ecological value of the resource, create new markets, and raise awareness of the product range[237]. A newsletter, *Hazel Matters*, was produced, a conference *The Hazel Revolution* held at West Dean in March 1997, and an apprenticeship scheme set up. A feasibility study for a South East Training Group was conducted in 2001[238]. Positive outcomes were reported[239] but the WCG ceased to function in the early 2000s, presumably when the funding ended. The statements made in the reports and newsletters do not paint a convincing picture of an industry in decline.

---

[236] The Coppice Agency proposed in *Hazel Coppice: Past, Present and Future* (Hampshire County Council,. 2nd Edition, 1995). This was supported by Sir David Attenborough and funded by Hampshire County Council, the Countryside Commission and the Forestry Commission,

[237] http://www.coppice.org.uk/index.html*,* accessed 8/11/09

[238] Based on the responses to a postal questionnaire returned by 61 people (17% of the 365 sent out) and a survey of training providers. The respondents had surprisingly high levels of educational achievement, to PhD level in several cases suggesting that they may not have been representative. The report is available at http://www.coppice.org.uk/SETraningStudy1.htm

[239] The WCG Strategic Plan, 1998-2001 recorded an 86% increase in business for craftsmen, profitability rising between 10 and 25%, turnover between 10 and 50% and production increasing between 20 and 50%. 27% of the businesses had taken on new staff in the previous year and around 50% had added new products to their portfolios

Contemporary information about the hazel industry was presented to the 2009 Cumbria Coppice Conference; with markets described as strong despite competition from imports and *"the 'born-again' early-retired with pension subsidies"* (Jameson and Howe 2009, page 25). Another presenter described the demand for hurdles outstripping supply (Jackson, 2009). Spar makers report a similar situation and regularly collaborate to make up orders (interview 9). The South East Coppice Conference in 2010 focused on the issues for the coppice industry, with the first day dedicated to hazel (Bartlett, 2011). Lack of quality raw material, deer browsing of re-growth and lack of attention to quality were the key issues raised by the hazel workers. Strong demand, despite competition from imported hurdles, was reported (e.g. Alan Waters, 2010; Andrew King, 2010).

The difficulty still being reported in accessing good quality material leads to the assumption that the restoration grant schemes have not achieved their objective and, although there is evidence of some co-operation (e.g. interview 9), greater collaboration to make up orders would seem to be desirable. Hazel workers are the majority in both the Hampshire Coppice Craftsmen's Group[240] and the Sussex and Surrey Coppice Group.

7.4 The Chestnut Coppice Industry

Chestnut is used for a wide range of products, made from different aged growth[241], so it remains economically viable for decades[242]. Calculations of the area of chestnut coppice vary, with Dannet (1991) suggesting an overall figure for the South East of 18,066 hectares and county areas[243] of 12,544 (Kent), 3,349 (East Sussex) and 1,393 (West Sussex). Lindsay Marketing Services gives 17,286

[240] Membership of this is in 2010, reported to be declining
[241] Begley (1962) investigated the growth and yield on a limited number of Forestry Commission sites
[242] Up to 80 years is reported for post and rail
[243] Detailed in Table 6.8 and 6.9, pages 92 and 93 respectively

hectares in the South East (1993) with the Forestry Commission suggesting some 16,000 hectares in Kent and East Sussex (Forestry Commission Research Division, 1996). Braden and Russell (2001) consider there is 18,788 hectares of chestnut in the UK with 96% in England and about 60% in Kent, East and West Sussex; all but 216 hectares are privately owned. Lockhart Garratt (2009) suggest these figures are an under-estimate, providing commentary on the methodology used for the National Inventory. The difference in opinion regarding whether this is coppice, coppice with standards or high forest will not be entered into; suffice to say there are no clear figures for the area of chestnut or its management status.

Considerable effort has been expended on calculating the potential yield from the chestnut resource (Dannet, 1991, Lindsay Marketing Services, 1993 and 1994, Forestry Commission Research Division, 1996, Clegg and Firn Crichton Roberts, 1998). Further reports have focused on estimating the potential for wood fuel (e.g. Grayson, 2006; West Sussex County Council, 2010) an exercise currently being repeated (e.g. by Estover Energy Ltd). This has become a lucrative industry for consultants but how useful can these yield calculations can be when growth rate is affected by many factors, as is economically viable harvesting and extraction? Most reports are based on incremental growth rates derived from experimental plots in King's Wood, Challock (e.g. Begley, 1962; Forestry Commission Research Division, 1996), referred to as good quality by Ashdown (1974) and highly rated for paling in the past (interviews 18, 19 and 27). Genetic research has shown chestnut to be very diverse so it is unlikely to perform predictably (Bradon and Russell, 2001).

The chestnut saw log market was buoyant in the late 1980s/early 1990s with Morgan's of Strood shipping these out to Spain (Derek Morgan, pers. comm.). Some owners reacted to publicity over the decline in coppice by 'storing' their coppice, i.e. reducing the number of stems per stool to grow on. This was done by the Forestry Commission in Kings Wood, Challock (Norman Day, pers comm.),

coinciding with flagging interest from cutters in working on Commission owned land because of the restrictions being imposed with increasing stringency (interview 29).

Traditionally the value-added markets operated alongside low value outlets for what the cutters refer to as "*rubbish*" but others call "*by-product*". The degree to which chestnut was important as wood fuel is debatable on two counts, firstly the high value for processing and secondly it spits, so can only be used in closed stoves. The chestnut industry was thought to have been dealt a final blow with the closure of the Kemsley mill in 1989[244] but this could only have affected Kent (Roberts, 1999), and realistically only the east of the county. Three major hauliers had supply contracts to this mill in the late 1980s; it has been suggested that it was the alacrity with which these paid that was the real benefit (e.g. interview 27, corroborated by many others). There are rumours that the mill struggled to get enough pulp, and of Bowaters approaching woodland owners with incentives for exclusive supply contracts (interview 28), and that they employed their own cutting team (this has been impossible to corroborate).

Chestnut paling was widely used in the post war period for site fencing, and by local authorities as snow fencing to prevent drifting onto roads. The introduction of Compulsory Competitive Tendering by the Conservative Government in the 1980s was designed to increase efficiency in local government spending (Boyne, 1998). The result was to push down the price – and quality – of paling to the extent that it was no longer fit for purpose, so alternatives, notably metal Herras fencing panels, were substituted, dramatically reducing the market. The Chestnut Manufacturer's Association was formed in response and this group, which still exists (in theory at least), instigated the production of a British Standard for chestnut paling fencing, BS 1722, Part 4, which remains the industry standard (interviews 23 and 29).

[244] This date is given as 1991 by some authors e.g. Dannet; workers say "*the end of the 1980s*"

The structure of the chestnut industry is complex, comprising informal groups and lone workers feeding their produce into a number of merchants (or middlemen) who service orders from the manufacturers. Most of these, during the 1980s and 1990s, were based in the Midlands or further north and required pales in bundles of 25 which they transported to their bases for wiring (rolls of finished fencing are bulky), in response to orders. They tended (and tend) to play the processors off against each other to force the price down, and so have a vested interest in discouraging communication, let alone co-operation, between them[245]. Cash flow is important; the small businesses and sole traders who make pales find it difficult to hold stocks, particularly as payment in advance is required for standing coppice (interviews 19 and 20). The manufacturers are equally unwilling to hold stock and want to maintain the status quo. This impasse is unlikely to be resolved unless there is a re-structuring of the well-established power relationships. Markets in 2011 remain buoyant for all the chestnut fencing products, with several groups having significant export markets (Poolman, 2009; Interviews 7,8,16, 17, 18, and 23). Torry Hill Chestnut Fencing has been awarded the contract to supply wired paling for the 2012 Olympics, estimated to be over 11 miles. There is an urgent demand for pale makers, with regular requests received for more, a call out for returners. Training for new entrants was begun in December 2010.

From this brief review, in the preceeding sections 7.3 and 7.4, it is difficult to see the basis for the assumption that new markets or marketing initiatives are required for either the hazel or the chestnut coppice sectors. Coppice woodland management is a small sub-set of forestry and an even smaller fraction of land management in the UK. It is surprising that the decline has attracted so much attention, rather being seen as market forces acting on an old fashioned and out-moded industry. The explanation is two-fold. Firstly, the wide constituency valuing the non-market benefits such as the wildlife, landscape, amenity and recreational aspects, and secondly the reduction in income experienced by influential landowners.

[245] In stark contrast to the weekly cash payments of £18 a ton from the Kemsley Mill (interview 27).

7.4.1 The impact of the decline on landowner income

The system of selling the right to cut a proscribed area of standing woodland within a specific time frame has a long history, with records dating back to 1356 (Rackham, 1995). Woodland managed on rotation provides the landowner with income each year, with the price achieved often at auction, depending on the quality (i.e. the potential profit when cut and processed) and the number of cutters competing to buy it. In the 20th century underwood auction sales, were commonly held in pubs across the South East and research into the prices achieved indicate a buoyant market for standing chestnut in the post war period, Records of the areas[246] put up for auction by the Forestry Commission since the 1920s have been collated by the author and indicate that:

- Sweet chestnut was the principal species auctioned
- Mixed species cants were not offered after WW2
- Sales from Bedgebury ceased in the early 1990s, but continued in King's Wood, which was considered to be better quality (e.g. Ashdown, 1974)

Unfortunately the prices realised are not recorded. In the late 1980s one estate was selling between 50 and 70 acres a year in auctions run by Mike Bax[247]. Three or four cutter groups, mostly pale makers, would compete for each cant (interview 21). The author has analysed data from the land agents who ran the underwood auctions in Kent and a summary is given in Table 7.2 on the following page. This demonstrates that, although the standing chestnut price remained relatively stable through the 1990s, the area sold at auction fell dramatically. Caution is required in interpretation as owners, particularly the larger estates, had begun to opt out of the auctions, instead selling directly to local cutters by private contract, so avoiding the auctioneer's premium.

[246] Principally Bedgebury and King's Wood, Challock
[247] The land agent specialising in woodland at Bax Standanden

Table 7.2 A summary of chestnut prices from the three principal auctioneers

	ACRES SOLD	AVERAGE PRICE ACRE^{-1}	REVENUE
1987[248]	191.39	£511.85	£97,963.44
1990	159.80	£325.78	£52,058.41
1993	80.97	£227.35	£18,408.49
1996	67.13	£238.12	£19,005.73
1997	67.81	£286.00	£19,393.66
1998	23.29	£288.00	£6,707.52
1999	17.60	£221.00	£3,889.60

The continued level of activity is demonstrated by the increase in pulp originating in Kent and sent to the St Regis Mill in Wales in the early 1990s[249] (Kent County Council, 1995). Kent Woodware Ltd[250], Hawkhurst, took vast quantities of birch (locally known as dolly wood) for turning until 2001, paying over the pulp price (interview 17). Despite this evidence of activity, landowner concern over the decline prompted feasibility studies into the viability of a bulk processing plant in the South East, on the basis of the need to replace the Kemsley mill outlet. This was discounted as not commercially viable (Forestry Commission/Clegg, Firn and Crichton Roberts, 1998).

[248] In 1987 the Great Storm not only flooded the firewood market but meant that many woods were physically impossible to access due to the fallen trees. The degree of devastation can be imagined from estimates that 28% of the standing volume of broadleaves and 69% of that for conifers were blown (unattributed, photocopy of Forestry Commission document)

[249] Mike Henderson, the chief buyer, claimed consignments of 25,000 tons in 1993, 28-30,000 tons in 1994 and predicted 35,000 tons for 1995

[250] The author photographed the massive stock piles at this factory, presumably now lost in an archive at Kent County Council. The factory was shipped in entireity to Russia.

Stricter health and safety conditions for workers, particularly certification of competency in chainsaw operation[251], compulsory wearing of personal protective equipment (PPE), and lone working restrictions were being enforced by the Forestry Commission, local authorities and nature conservation organisations. This led to older, uncertificated, workers retreating into privately owned woodlands with more understanding owners, contributing to the perception among the larger landowners that they had disappeared. All known sales since 2000 have been by private treaty, with prices for quality material of up to £300 an acre for paling and £500 for post and rail (Mike Bax, pers. comm.; Angela Hirst, pers. com). The prices in 2009/10 were similar, with £200 a rough standard, although figures of £350 (interview 19), £400 (interview 15) per acre and £500 for an acre and a half (interview 33) were reported.

It is entirely possibility that the decline in coppice management, at least in the South East and particularly of the chestnut industry, may have been exaggerated. The observed changes had multiple causes but were broadly similar to the boom-and-bust pattern apparent over the centuries. A wider view, incorporating the perspectives of all stakeholders would not only have identified changes in markets, but also the decline in coppice area, restriction of the working season, increased overheads, transport and housing costs, less summer farm work, insurance, legislation, public perceptions of tree cutting, lack of continuity and the breaking down of traditional relationships between workers and landowners. All of these combined to make it more difficult to earn a realistic living from coppicing.

[251] The National Proficiency Training Council ticket, similar to a bank card

CHAPTER 8 THE IMPACT OF THE DECLINE AND EFFORTS TO ADDRESS IT

How much the decline in active coppice matters in the larger sense is debatable, as it is merely an expression of the characteristic pattern seen over time. However, the context had changed dramatically. The post Second World War decline in extent, particularly of the ancient woodland resource[252] and the fragmentation of the woods that remain, increases the importance of continuing coppice management where it persists. Changes in the countryside over the last sixty years have included removal of hedgerows, reduction in the number of mature trees in the farmed landscape, increased field drainage, loss of ponds, isolation of grassland habitat fragments within woods, and fertiliser, pesticide and herbicide application that can cause eutrophication of woodland margins (Peterken and Allison, 1989). These are changes that have been – and still are – affecting woodland habitat potential, so increase the value of woodlands that remain, particularly those that are still coppiced, as this provides structural diversity and so a range of different habitats, within them.

The supposed decline spawned numerous support initiatives and interventions aimed to revitalise the industry. The drivers have not been solely commercial, (although some landowners were active lobbyists) but rather a reflection of the Forestry Commission's changing agenda, moving from production forestry towards biodiversity conservation (e.g. Evans, 1984) combined with recreation, access and landscape priorities (e.g. Grayson, 1993). Conservation organisations, such as the Woodland Trust and Wildlife Trusts, emerged in the 1970s, taking over woodlands to "*save*" them, but rapidly realising continuity of coppicing to be vital to maintain the wildlife interest. Peterken (1977; 1981) identified the conservation priorities for woodland as protecting rare or characteristic species, including a range of stand types, safeguarding particular stand structures, and maintaining specific management regimes.

[252] The growing awareness of the paramount importance of the ancient woodland resource led to the production of county inventories during the 1990s (e.g. Isaac and Reid, 1997), many of which were revised in the mid-2000s[252], reflecting advances in computer mapping technology.

The key driver to address the decline, then, seems to have been predicated on the recognition of the value of ancient woodlands, and on active coppicing for biodiversity. A more detailed rationale for this is given in the following sections.

8.1 The Values of Coppice Woodlands

8.1.1 Value for biodiversity

The main biodiversity concerns associated with coppice management have been, and continue to be, butterflies (Hopkins and Kirby, 2007), birds (Fuller et al., 2005) and dormice (Bright and Morris, 1992). Ancient woodlands, where most coppice is found, is accepted as being the most important for wildlife (e.g. DEFRA and the Forestry Commission, 2005). Specific advice on managing coppiced woodlands for wildlife was first produced by the JNCC[253] in the 1980s (2nd edition, Fuller and Warren, 1993), and this recommended the re-instatement of coppicing wherever possible. Books on this subject have been produced regularly, with Blakesley and Buckley (2010), a recent example.

Coppicing is not natural but mimics the natural disturbance events such as storms (windblow), lightning strike, fires and floods that would, in the distant past, have created an uneven-aged structure within the woodlands. As trees matured, decayed and fell, gaps would have opened in the canopy allowing light to reach the woodland floor, enabling herbs and grasses, followed by shrubs and young trees, to develop. Open areas would have persisted if grazed, although this does not happen to the same extent in non-intervention woodlands now as areas are smaller and there are fewer wild herbivores[254].

Coppicing and natural gap formation both increase diversity of age structure but are quite different in terms of functional ecology. The debate regarding what constitutes a gap in ecological terms has been reviewed by Evans and Barkham

[253] Joint Nature Conservancy Council, the Government body over overseeing conservation
[254] Although numbers of browsing deer are high in many areas

(1992). Coppice rotations are usually between 5 and 20 years, more frequent than natural disturbances, which have been calculated to occur at intervals between 50 to 200 years. Coppicing also has a fixed pattern, as opposed to being random and stochastic, so is not directly comparable to a natural woodland cycle. Re-growth from cut stools does not equate to re-generation from seed and, although the changes in structure occur regularly, they are within a narrow range[255] with little or no change in species composition (Peterken and Jones, 1989).

A further significant difference is that coppicing does not lead to the accumulation of the deadwood[256] important for saprophytic fungi and some rare invertebrates. Keith Kirby, Natural England's leading woodland expert considers this to be the richest, in terms of associated species, woodland habitat (WWF, 2004). In the 1980s about 30% of coppice was estimated to contain standards, usually of oak (*Quercus* spp.), (Crowther and Evans, 1984). As they approached maturity they would have included increasing amounts of dead wood and lack of a replacement strategy for these will reduce diversity in the long term (English Nature, 1994). Coppice workers favour simple coppice as shading from standards reduces roundwood quality[257]. The natural level of deadwood has been calculated and current recommendations are that 20-40% of wood cut and all fallen deadwood should be left on site, to raise the deadwood component in all managed forests to 20-30 m^3/ha by 2030 (Forestry Commission, 2002). It is difficult to see how this could be achieved in commercial coppice, particularly as many owners require sites to be left clear. Coppice stools themselves constitute specific microhabitats associated with their age and complexity (Forestry Authority, 1993).

Woodland dynamics tend to focus on canopy structure and gap creation although grazing, browsing, trampling, soil movement and digging are all natural disturbances, which impact woodland flora and fauna. Regular coppicing over centuries, with removal of the product, has almost certainly lowered nutrient levels. This may have reduced yields but contributed to the development of the natural

[255] Trees never become mature
[256] Unless felled material is left to rot in situ, as found on some conservation sites
[257] An issue discussed at length during the South East coppice conference

ancient woodland flora (Rackham, 1977). Characteristic coppice flowers such as bluebell (*Hyancinthoides non-scripta*) and wood anemone (*Anemome nemorosa*) flower before trees leaf, with later flowering species germinating when coppicing increases light, and persisting in the seed bank when stools re-grow and the canopy closes (Mitchell, 1992). Chestnut coppice usually closes in three years.

A number of charismatic species are associated with coppiced woodlands, notably dormice (*Muscardinus avellanarius*), nightingales (*Luscinia megarhynchos)* and several butterflies. While there is a tendency to focus on these the importance of maintaining the functional integrity the whole community of plants and animals, including soil micro-organisms, cannot be over emphasized. Dormice are European Protected Species (EPS), under the Habitats Directive[258], which was transposed into UK law by the Habitats Regulations in 1994; it is also a UK BAP[259] priority species. They are nocturnal arboreal mammals that hibernate at ground level, often in coppice stools, during the winter. They depend on a variety of food, including flowers, fruits, berries and insects throughout the summer and early autumn (Bright et al., 2006; PTES, 2010), so are particularly associated with actively coppiced woodlands in which scrub, often including brambles (*Rubus fruticosa*), grows vigorously following cutting. Once considered to be very rare they are increasingly found in a wide range of different habitats, especially in South East England. In August 2007 the Habitat Regulations were amended giving greater responsibility to woodland owners and workers to ensure no work either damages dormice or affects their ability to survive and breed. This has caused concern among coppice workers who are appreciative of dormice[260]. The Forestry Commission[261] advice proscribes cutting during June, July and the first half of August, giving the "*safe*" period as mid April to the end of May and again during

[258] Under the Habitats Directive (or more accurately Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora)
[259] Biodiversity Action Plan
[260] They probably see them far more often than ecologists do and there are regular reports of finding them, for example, in the pockets of coats hung on trees
[261] http://www.forestry.gov.uk/pdf/england-protectedspecies-dormouse.pdf/$FILE/england-protectedspecies-dormouse.pdf, accessed 12/11/10

September and most of October[262] with an alternative "*if necessary*" period from November to April; presumably to minimize risk to hibernating animals of vehicles and fires. It is difficult to see how coppicing could take place within these guidelines, particularly as the safe period for dormice coincides with the bird nesting season and all birds, their eggs and nests are protected[263].

All bats found in the UK are protected under European legislation[264], the Habitat Regulations and are BAP priority species. The Forestry Commission (2005b) have detailed management recommendations for bats, updated[265] in response to the 2007 amendments. There are few implications for coppice workers as only older trees are likely to be roosts. Bats are insectivorous so an uneven aged woodland structure with small open areas and edge habitat are important for foraging (Boye and Dietz, 2005; Greenaway and Hill, 2004).

The decline in woodland birds has received national attention. Fuller explored the relationship between this and changes in the age structure of woodlands since the 1970s, concluding it was only a contributory factor (2005). Symes and Currie (2005) provide details of the way coppice is used by various species and conclude all ages of re-growth to be important for some birds. The position of woodlands in the wider landscape is also important as it extends the foraging area for woodland birds (Radford and Bennett, 2007).

Badgers (*Meles meles*), protected by the Badger Act of 1992[266], have increased in the UK in contrast to the significant decline observed in the Netherlands and attributed to the loss of small woodlands (Van der Zee et al., 1992). These animals are nocturnal so unlikely to pose a problem to cutters.

---

[262] The PTES[262] advise cutting from November to the end of March as the best compromise for all woodland wildlife (2010). The author often finds young well into October and early November so the Forestry Commission guidelines do seem questionable.

[263] See http://www.naturalengland.org.uk/regions/south_east/ourwork/standingadvice/protectedspecies/standingadviceconsultation/legislation.aspx, accessed 8/11/10

[264] under the Habitats Directive

[265] http://www.forestry.gov.uk/pdf/england-protectedspecies-bats.pdf/$FILE/england-protectedspecies-bats.pdf, accessed 10/11/10

[266] http://www.legislation.gov.uk/ukpga/1992/51/contents, accessed 10/11/10

At the other end of the spectrum are deer which, far from needing protection, cause severe damage to coppice by browsing the young growth. Roe (*Capreolus capreolus*), fallow (*Dama dama*) and muntjac (*Muntiacus reevesi*) occur throughout most of the South East[267] with Sika (*Cervus nippon*) in some areas. Species have different feeding ecology but all find hazel (*Corylus avellana*) and birch (*Betula* spp) particularly palatable; chestnut is much less likely to be damaged[268]. The potentially devastating impact of grazing and browsing animals on coppice re-growth has long been acknowledged (Ratcliffe, 1992). Woodbanks and ditches can still be seen today; a poignant reminder of the effort expended[269] in the past to ensure that the valuable coppice re-growth was protected from grazing and browsing animals (Wheaton, 2002; Bannister, 1996; Bannister and Bartlett, 2005). While farm stock is now contained deer management by shooting is carried out, co-ordinated by the Deer Initiative[270], and coppice workers protectd re-growth with Tenax deer fencing that can be moved when coppice has grown out of their reach, combined with encouraging consumption of venison[271].

Sweet chestnut is thought to be less beneficial for wildlife than other tree species (e.g. Fuller, 1992) apparently based on its status as a non-native. Southwood (1981, quoted in Brandle and Brandle, 2001) suggested there was a relationship between the time trees had been established in the UK and the number of associated insect species. Oak (*Quercus* spp) has the greatest number. Although few species, and no notables[272], are uniquely dependent on chestnut; many generalists use it and other related species (e.g. *Fagaceae*). Diversity of insects is important to provide insectivores with food over an extended season but quantity, the overall insect productivity, is also vital; chestnut is neutral in this respect (Buckley and Howell, 2004).

[267] But not in East Kent, other than the occasional small group of roe
[268] Personal observation; corroborated in many interviews
[269] Wheaton (2002) has translated documents detailing the time, the number of men and the price paid for the woodbank created in 1234 to protect Thornden Wood, part of the Blean
[270] For more information see http://www.thedeerinitiative.co.uk/, accessed 25/9/11
[271] Venison is served at coppice events whenever possible. A convenient road casualty contributed to coppice week events in May 2011
[272] Species identified as priorities in the BAP

Actively coppiced woodlands, particularly if they contain mature standards, are highly valued for wildlife, but it is the regular change in habitat structure, rather than coppicing *per se* that is the important factor. Different species and groups exploit different stages of the coppice cycle so functional connection, enabling movement between cants to take place, should be maintained. Small areas cut regularly are of greater value than one-off cuts of larger areas (PTES, 2010). However some butterflies and moths are favoured by coppice while others are inhibited by lack of mature trees; the same is true for bats and birds. Value judgements are required even among taxa - if woodland is to be managed to for birds will this be for hole-nesters, spring migrants, residents or raptors? This is not the place for a philosophical discussion on environmental values but clearly European Protected Species are high on the agendas of the agencies and conservation organisations. During the late 1980s and 1990s the decline in dormice and woodland birds was attributed to the decline in coppicing. This has been revised, with alteration in woodland management considered a contributory factor along with others, as yet un-determined, but thought to include the impact of the increase in deer numbers (Forestry Commission, 2007; Harris and Yalden, 2008).

Meeting the requirements of all woodland species would necessitate complex management regimes. It seems inevitable that charismatic butterflies, dormice and birds that will continue to receive most attention, despite the fact that it is the diversity of plants and insect productivity[273] that underpins wildlife value. The use of flagship or umbrella species has been exploited to promote woodland management to benefit the greatest variety of wildlife (e.g. PTES, 2010). The public responds positively to charismatic species, although they include badgers, grey squirrels and deer in this category, a view not shared by landowners and coppice workers.

[273] In terms of variety of both species and biomass

8.1.2 Cultural Heritage

As well as being in England's most wooded region, Kent contains the greatest proportion of ancient semi-natural woodlands of any county (Forestry Commission, 2004a). As well as being important as wildlife habitats, these woods are significant for cultural heritage, with archaeological features providing evidence of past use (DEFRA and the Forestry Commission, 2005; Bannister and Bartlett, 2008; 2009). Interest in historical ecology has increased from the 1970s, perhaps as a result of the work of Oliver Rackham (e.g. 1976, 1986 and 2003).

Coppice management is directly linked to socio-economic changes and, in the past, was an integral part of the rural economy. Owners, usually farms or estates, used their woods for firewood and fencing and sold the standing crop to cutters and processors who sold on to the ultimate consumer. This provided a variety of local employment, with a long tradition of woodland work evident in some families, with sons following their fathers to work in the same wood, a pattern that has largely broken down in recent times although it is still evident in some areas, particularly in Kent. Booker and Tittensor (1992) compared the historical and cultural heritage value of West Dean Woods with that of nearby Chichester Cathedral, citing the discrepancy in investment in the two cultural resources. The authors argued that, while the cathedral served the spiritual needs of local people, the coppice woodland met fundamental physical needs, particularly for fuel. They concluded that, in order to justify tax-payers and/or conservation organisations funding the continuation of coppicing the social relevance of non-economic coppiced woodlands needed to be established. While the attributes of historical buildings, such as cathedrals, parish churches and tithe barns, as well as historic houses are recognised, those of ancient woodlands are less tangible and require interpretation in order for them to be more widely understood. This has been supported by the Local Heritage Initiative[274], which funded community based projects raising awareness of woodlands and communicating the heritage aspects

[274] A grant scheme run by the Countryside Agency now defunct; the author was an advisor for the LHI overseeing woodland archaeology projects in the South East

to a wider public (e.g. in the Blean, Bedgebury Forest and the Hampshire Coppice Craftsmen's Group), and a publication to encourage owners to explore the history of their woodland (Bannister and Bartlett, 2005). The continuing interest is evidenced by the South East Woodland Archaeology Forum, set up in 2008[275], and initiatives such as the Weald Forest Ridge Partnership, funded by the National Lottery[276].

The areas designated as Areas of Outstanding Natural Beauty (or AONBs) in the South East have particularly high levels of woodland cover and the cultural heritage aspects have been reviewed by Bannister (2007). These landscape designations are, as their name suggests, based on the idea of natural beauty that was central to the National Parks and Access to the Countryside Act of 1949[277]. This acknowledged that agriculture and forestry had produced the currently valued landscapes over time (Crofts, 2004), and the importance of the cultural dimension is highlighted in the European Landscape Convention, signed by the UK in 2006[278]. Landscape assessments specifically mention coppiced woodlands as central to local character in many instances (e.g. Babtie, 2004). Woodland heritage is further evidenced by surnames (Edlin, 1973), place names (Wallenberg, 1931 and 1934; Rackham, 1990, 1986 and 2003). It is also evident in the names of pubs, for example *The Woodman* (Ide Hill; Dartford; Swanley; Farnborough; Bexleyheath), *The Jolly Woodman* (Beckenham), *The Timber Bats* (Bodsham), *The Two Sawyers* (Brompton; Canterbury), *The Forester* (Deal; Sittingbourne), *The Forester's Arms* (Tunbridge Wells; Wouldham; Paddock Wood;Tonbridge), *The Wheelwrights Arms*

[275] See http://sewaf.org.uk/ accessed 15/11/10
[276] See http://www.wealddown.co.uk/Historic-Buildings-Conservation/Weald-Forest-Ridge-Landscape-Partnership/, accessed 10/9/10
[277] Available at http://www.legislation.gov.uk/ukpga/Geo6/12-13-14/97, accessed 10/9/10
[278] This states that *"'Landscape is defined as a zone or area as perceived by local people or visitors, whose visual features and character are the result of the action of natural and/or cultural (that is, human) factors. This definition reflects the idea that landscapes evolve through time, as a result of being acted upon by natural forces and human beings. It also underlines that a landscape forms a whole, whose natural and cultural components are taken together, not separately".* Chapter 1, Article 1, 38, of the European Landscape Convention available at http://conventions.coe.int/Treaty/en/reports/Html/176htm, accessed 21/11/10)

(Matfied), *The Charcoal Burner* (Sidcup), *The Coopers Arms* (Northfleet; Rochester) to name but a few reflecting woodland industries in Kent.

The 1960s green movement led to a surge of interest in the crafts and the rise of the new tradition of workers, many of them skilled craftsmen but operating on a part time or hobby basis[279]. This changed the public face of the industry with competitions for professional coppice workers, such as the pale making competitions held at Kent County Show into the 1990s[280], replaced by craft demonstrations. Often newly established pole lathers and hurdle makers were paid a fee, while also selling their products at craft and country fairs. This appealed to showman personalities and shifted the emphasis from professional skill in the industrial context, involving speed, throughput and consistent quality, to small-scale production of craft items and promotion of craft courses. It is easy to see how the traditional workforce became over-shadowed by these more visible new tradition workers, particularly in the eye of the agencies.

8.1.3 The woodland owner's perspective

Landowners, who were losing regular income from selling standing timber, were vocal in expressing concern about the decline in coppicing (e.g. McHardy in Betts and Claridge, 1994; Clegg, 1994). Changes in land ownership and the merging of farms into larger units created a new breed of non-farming woodland owner, particularly in the affluent South East. A survey of woodland owners in the parish of Bramley, Surrey, found virtually all enjoyed owning woodland, visited them regularly for walking or shooting but, rather than these being sources of income they required expenditure (Surrey Woodland Working Group, 2000). Harmer and Howe (2003) state the purpose of their book, *The Silviculture and Management of Coppice Woodland*' is to provide advice because managers are interested in producing marketable crops as well as conservation, amenity and landscape objectives.

[279] Known by some as 'hippy dippy part timers'
[280] Interviewee 17 won the cup several times; both Interviewees 1 and 2 had won prizes for their chain saw skills

The small pockets of woodland that persist as game coverts are likely to function ecologically in a similar way to former coppices. Wide rides, maintained for vehicular access, provide a mixture of grasses, herbs and low scrub, and connectivity between habitats (Peterken, 1992). Shoot managers coppice small areas, to provide low vegetation to shelter pheasants (*Phasianus colchicus)* from cold and wind, and as foraging areas (Bealey and Robertson, 1992). Woodland edges are important as breeding territories for males and for insect food. Negative impacts on native wildlife, particularly the predation of larval and adult butterflies, has been refuted by Draycott et al., (2008), who declared the impacts to be benign or even positive. Release pens should be sited in areas of low conservation value and stocking densities should not exceed 700 per hectare, equivalent to 300 per acre (Game Conservancy Trust, 2003). A report on game management, including deer, in the Cranbourne Chase and West Wiltshire Downs AONB, recommends "*conservation through wise resource use*" (Blake, 2007) and sees shooting as having future tourism potential; stalking currently contributes to the export income of several estates in Sussex (interview 3).

The multiple values of woodlands became the subject of a number of reports in the early 2000s, for example Land Use Consultants et al., (2002), and Selman and Powell (2003). These covered both actual and potential sources of revenue, the non-market benefits of woodland and the economic value of shooting. Incomes from woodlands were concluded to be considerable but that a diverse age structure, such as results from rotational coppicing, was essential to realise these.

8.1.4 The non-market benefits of coppiced woodland

The increasing awareness of the value of woods and forests over and above the commercial revenue gained momentum during the 1980s. This was fuelled by the backlash against the large-scale afforestation schemes, such as in the Flow

Country, Scotland[281] (Warren, 2000), and public awareness of the tax breaks for tree planting. Traditionally forestry was based on economic appraisals but including environmental cost–benefit analysis became increasingly important (Worrell, 1991) and the Forestry Commission hosted a conference on the non-market benefits of forestry in 1996 (Stewart-Roper and Park, 1996). The changes in the conservation paradigm reflected the impact of Agenda 21[282], followed by the Aarhus Convention[283], which combined to increase public participation in local environmental decision-making and require government agencies to justify their expenditure by delivering public benefits. Evaluating the decline in coppice woodland management should therefore be considered in the context of all the values, direct and indirect, that woodlands have to the general public, as well as to the established stakeholders. During the first decade of the 21st century the Ecosystem Services Approach[284] has become central to the policy agenda, requiring that woodlands are considered with respect to what they deliver for both humans and wildlife.

The South East Regional Forestry Framework, *Seeing the Woods for the Trees* (Forestry Commission, 2004a) cited research that estimated woodlands to be worth over £1 billion annually to the region. The potential impact of biodiversity loss and ecosystem degradation, recognised by conservationists for decades, has only recently gained wider acceptance. The Stern Report (2006[285]) highlighted the potential cost of failing to address environmental issues in the context of climate change; the same had been argued for global loss of biological diversity by the TEEB[286] study (Sukhadev, 2010) and further by the Lawton report[287] (2010). Woodlands deliver tangible benefits in terms of air and water quality, carbon

[281] Now the focus of grants to restore the original bog (Ross, 2006)
[282] The outcome of the Rio Earth Summit held in 1992
[283] See http://www.unece.org/env/pp/, accessed 15/11/10 for more information
[284] See http://www.DEFRA.gov.uk/environment/policy/natural-environ/ecosystems/index.htm, accessed 15/11/10for more information
[285] Available at http://www.publications.parliament.uk/pa/cm200708/cmselect/cmtreasy/231/231.pdf, accessed 10/9/10
[286] The Economics of Ecosystems and Biodiversity
[287] Making Space for Nature available at http://archive.DEFRA.gov.uk/environment/biodiversity/documents/201009space-for-nature.pdf, accessed 25/9/11

storage and soil erosion prevention, as well as wildlife, cultural heritage, access, recreation and amenity. The sustainable economic gain from rotational coppicing is beneficial, rather than damaging, to these attributes. The agricultural sector has successfully argued for direct payments in return for providing public benefits from farmland, but it seems unlikely that woodland owners will be receiving equivalent financial benefits in the near future[288]. Greater use of woodlands by the public was promoted by the Forestry Commission's Walkers Welcome[289] grant scheme which, prior to the CROW Act[290], made some private woods accessible in addition to those on the Public Rights of Way network. All Forestry Commission land is open access and there is increasing interest in outdoor exercise for health, with potential to contribute to combating the problems of obesity and coronary heart disease[291].

8.1.5 Wood fuel

The pendulum seems to have swung full circle with the Forestry Commission currently promoting bulk wood fuel markets to drive coppicing (2006), with AONBs (e.g. Surrey Hills Wood Fuel[292]) and local authorities (e.g. West Sussex County Council, 2010) following suit. The ancient woodlands of the south east are particularly sensitive, and the use of large scale forestry harvesting equipment, considered by many essential for wood fuel harvesting to be economically viable[293], is potentially damaging to both archaeology and wildlife. It can also impact on local recreational and amenity woodland use.

---

[288] Some Forestry Commission grants are available for woodland management; this currently includes part funding for constructing extraction tracks, reflecting the wood fuel agenda.
[289] PDF available http://www.forestry.gov.uk/pdf/walkerswelcome.pdf/$FILE/walkerswelcome.pdf, accessed 15/11/10 (but this scheme ceased some years ago)
[290] Countryside and Rights of Way Act 2000 available at http://www.opsi.gov.uk/acts/acts2000/ukpga_20000037_en_1 accessed 20/4/11
[291] for example Green Gyms, promoted by the British Trust for Conservation Volunteers (BTCV) and Natural England's Walking for Health initiatives see http://www.wfh.naturalengland.org.uk/uploads/documents/2335/NE%20W4H%20A3%20Poster%20Low%20Res%20P5.pdf, accessed 15/11/10
[292] For more information see http://www.surreyhillswoodfuel.org.uk/, accessed 22/4/11
[293] The price for chip wood, formerly known as pulp, in late 2010 was £16 at ton; £18 was paid in 1989 (interviews 23 and 27)

Different groups assign different values to coppiced woodlands, with some more effective than others in lobbying on behalf of their particular interest. The challenge is for the resource to deliver the full range of attributes for which it is valued.

8.2 Addressing the decline in coppicing

Coppice management depends on three things; a suitable woodland resource, available workers and consumers to purchase the products. The importance of this triangle and relationships between the elements has been considered in detail by Woods (1949), who suggested that foresters needed to understand these human elements as well as the science of growing trees. Effective communication along this supply chain, as well as between coppice workers and the wider stakeholders (the horizontal and vertical integration of environmental sociologists) is essential if the activity is to be maintained (e.g. Redclift and Woodgate, 2010; Roe and Elliott, 2010). Research into the decline of the chestnut industry in Greece explored the needs of owners, forest workers and processors as separate groups (Dawson, 2007) and demonstrated that, even when there is a common goal, integration between different stakeholders may be difficult to achieve. In order to understand the current situation the past efforts to address the coppice decline were explored by the author. These comprised a variety of initiatives, supported primarily by the agencies and local authorities, directed towards expansion of the area coppiced by developing markets, targeting specific locations and developing and, to a lesser extent, supporting the workforce.

8.2.1 Market Based Initiatives

Concern over markets is not new[294]. Recognition of the coppice decline in the late 1980s and 1990s led to a plethora of reports based on the premise that the previous markets had failed and that finding a new one, particularly for chestnut[295] roundwood, would provide the economic driver necessary to regenerate the industry, increase the area coppiced and deliver all the associated benefits (e.g. Dannet 1991, Lindsay Marketing Services (UK) Ltd., 1993 and 1994, Clegg, 1994; Clegg and Firn Crichton Roberts, 1998). In Europe chestnut is commonly used in construction and furniture making and rising interest in "*green*" building led to the development of chestnut finger jointing[296]. The rationale for initial funding was that this would provide a replacement market for low-grade roundwood that had previously gone to the Kemsley paper mill (Roberts, 1999). Despite the roadside price of £45 a ton there is no evidence that this has been realised[297]. The specification is exacting, with several cutters reporting they have had part loads rejected and payment delayed (e.g. interview 21). High Weald Design was set up in the 1990s, with financial support from the High Weald AONB Unit[298] and Kent, East Sussex and Surrey County Councils, to produce quality outdoor furniture from local material. This is still trading but remains a micro business, unlikely to impact on the area coppiced in the AONB. A similar project, with a more rustic approach,

[294] For example FitzRandolph and Hay (1926a, page 91) identified spasmodic markets and cheaper, often imported, substitutes as contributing to the neglect of woodlands and lack of quality raw material. They laid some blame firmly on the owners, suggesting they could recoup satisfactory returns by making improvements on their holdings

[295] Equivalent reports on markets for hazel products were also produced, e.g. Hampshire County Council, the Countryside Commission and Task Force Trees (1990) and Hampshire County Council (1995).

[296] This requires roundwood to be cut into uniform pieces then reassembled, using glulam technology. The research and development phase benefited from public funding with the products first used in the construction of the Woodland Enterprise Centre, Flimwell, East Sussex (See http://www.woodnet.org.uk/wec/, accessed 10/1210), also grant aided with the intention of it becoming a centre to stimulate woodland management. Glulam chestnut has subsequently featured in other high profile projects (see http://www.in-wood.co.uk/, accessed 10/12/10) and window frames are being developed (Grayson, 2006)

[297] To put the price in context £40 a ton was being paid for graded pale wood in 2009-10 (interview 8) with ungraded mixed species pulp lengths delivered in from less than 2 miles achieving £21 (interview 21), with the same product to another merchant getting £30 a ton from a 3 mile radius (interview 5). None were found to be supplying this outlet but while there are rumours of material being brought in from Gloucestershire and the Forest of Dean

[298] Area of Outstanding Natural Beauty see http://www.highweald.org/, accessed 10/12/10

was based at the Rare Breeds Centre, Woodchurch, Kent. Despite INTERREG[299] and considerable County Council and local authority funding this did not outlive the funded period. There is still interest in growing chestnut standards for timber, particularly with anticipated changes in climate (Lockhart Garratt, 2009).

Strengthening the connection between producers and potential customers has been the rationale for several initiatives including Weald WoodNet's Woodlots[300], a directory and news sheet on woodland products, similar to the national Eco-lots[301]. The Small Woods Association set up a web directory of coppice workers and products[302] but this has not been maintained and has created problems with small orders from distant customers (e.g. interview 3). The Wessex Coppice Group marketing initiative experienced similar problems, with promotion that generated orders that could not be met (see also Jackson, 2009).

Charcoal[303] is made from overstood hazel (interview 34) and mixed species coppice (e.g. interview 14). Bioregional Charcoal[304] was set up in 1992 when Pooran Desai became aware that 98% of barbecue charcoal used in the UK was imported, often from unsustainably managed sources. A rolling meeting of Britain's charcoal burners, held in Cambridge, Cumbria and Sussex, took place in November 1993, reportedly attended by 60-65% of the workforce[305]. The individual influences of the Coppice Association, which has first produced and distributed charcoal bags, and the Bio-Regional initiative on charcoal production are indistinguishable but combined they focused producers on quality control and

[299] A European transfrontier funding stream
[300] http://www.woodnet.org.uk/woodlots/, accessed 10/12/10
[301] http://www.ecolots.co.uk/, accessed 10/12/10
[302] http://www.coppice-products.co.uk/, accessed 1/11/09
[303] This is not produced from chestnut in the South East, although is in Herefordshire (interview 45)
[304] The concept was for a network of producers, using standardized packaging and quality control, with a central co-ordinator relaying orders to the nearest charcoal producer. This would enable small producers to access large scale outlets, such as B&Q and Homebase. Initial success led to this being extended to bagged firewood but charcoal makers have dropped out as their local markets have increased and this, combined with small orders, has made delivery time uneconomic (interview 14). A supplier in Kent was asked to deliver bagged firewood to Glasgow in 2009 (interview 21). Bio-Regional paid the transport costs but this does suggest the network is not working effectively
[305] Scrutiny of the list suggests that many were actually agency employees rather than workers

packaging, enabling them to access new local markets, such as farm shops and garages, for themselves (e.g. interviews 3, 14 and 22).

Firewood has always been a regular outlet for low-grade coppice roundwood, although chestnut is only suitable for burning in closed stoves. Demand varies according to the weather and fluctuations in other energy prices and is greatest in rural areas. Traditionally sold by the load, marketing small nets of logs, often through garages and farm shops, has developed with much higher profit (e.g. interviews 5, 14 and 21).

Wood as the potential feedstock for electricity generation spawned a number of initiatives in the 1990s, with the combined aim of exploiting the non-fossil fuel obligation (NOFFO), a DTI[306] initiative, as well as promoting coppice management[307]. The failure of the Arbour project in Yorkshire, based on short rotation coppice (willow planted under contract on farmland), probably contributed to the effective parking of this option but the impetus generated, and optimism about likely success, effectively prevented owners from considering either options or the importance of the existing markets. Despite these failures the potential of large-scale outlets for woodfuel are still regularly promoted in the farming press (e.g. Surman, 2009).

Current concerns around climate change have led to increased promotion of wood fuel as being carbon neutral (Forestry Commission, 2006) with proliferation of reports on the potential resource in the South East (e.g. Alker et al., 2006; Grayson, 2006; West Sussex County Council, 2010) accompanied by capital/infrastructure grant schemes to promote pilot projects[308].

[306] Department of Trade and Industry

[307] Kent woodland owners, led by Keith Leharne, spent two years (and a lot of money) developing a proposal for a 5 megawatt generating station requiring 60,000 tons of coppiced wood annually. Despite in-principle agreement from Canterbury City Council the project failed to receive NOFFO funding. This caused considerable consternation among the 200 landowners who had pledged woodland, not least because three short rotation coppice projects were funded (Porritt, 1995)

[308] For example, Torry Hill Estate (South East Farmer, May 2009). Nick Sandford, manager of Godington Park estate, the location of another pilot installation, was given the role of South East Biomass Champion (See http://www.gos.gov.uk/497648/docs/169206/848193/Nick_Sandford.pdf, accessed 10/12/10)

A Forestry Commission statement on the potential for the South East, dated December 2010, suggests there to be an annual resource of about 500,000 tonnes, enough to heat around 45,000 homes[309].

Wood fuel marketing websites abound. The Log Pile[310], run by the National Energy Foundation, provides information on stoves, as well as fuel suppliers and can be searched by product, and by postcode. The Biomass Energy Centre runs a similar site[311]. Surrey Hills Woodfuel[312] was set up to promote production and consumption of wood in and around the Surrey Hills AONB.

Interpreting information about wood fuel requires caution. It may be coppiced product derived from broadleaved woodland although as a bulk commodity it may equally originate from short rotation coppice[313], conifer thinning or arboricultural arisings[314]. Coppicing in ancient woodlands is the least cost effective option for producing bulk woodfuel. The existing sales of logs, evident from cards in local shops and advertisements in parish magazines, needs to be factored in to any realistic estimate of the potential to expand wood fuel production, particularly as a driver to increase coppicing. The most recent report found to consider this was that by Levy et al. (1996). Despite the environmental arguments for using wood fuel there is no evidence that even the most green of customers will ignore cost (Pitcher, 2007).

[309] Source http://www.forestry.gov.uk/forestry/INFD-7D6FN7 accessed 10/12/10
[310] In 2009 seven log suppliers were listed for Kent each paying £23 per annum http://www.nef.org.uk/logpile/, accessed 9/12/09
[311] With free listings and seventeen suppliers in Kent http://www.biomassenergycentre.org.uk/portal/page?_pageid=77,241182and_dad=portaland_schema =PORTAL#Kent, accessed 10/12/10
[312] This lists 26 log suppliers, 3 for chip, 1 for pellets and 3 for kindling http://www.surreyhillswoodfuel.org.uk/, accessed 9/12/09
[313] For example, the Bioenergy Coppice Producer Group set up under DEFRA's Energy Crops scheme by TV Energy in 2003 see [313] http://www.tvbioenergy-coppice.co.uk/, accessed 10/12/10 for more information
[314] Contractors may otherwise have to pay for disposal of this (Keys, 2001)

Cumbria Broadleaves was set up in 1991 and a report *New Markets for Coppice Woodland Products*[315] produced by Clark Mactavish (undated). This organisation has been replaced by Cumbria Woodlands[316], which has commissioned several reports, for example, into the potential for garden furniture, in conjunction with marketing students from Cumbria University. In 2006 the Forestry Commission, with the Countryside Agency and Small Woods Association, published two marketing guides, one targeting woodland owners (2006a), the other wood product producers (2006b). The penetration achieved is unclear; none of the coppice workers interviewed had come across them.

Geoff Sinclair, of the Woodland Trust, set up the Allotment Forestry Project to replace the use of imported bamboo in gardens with local poles. This has been taken over by the Greenwood Trust who launched National Bean Pole Week[317] in 2008. Coppice workers, other than those selling at farmer's markets, remain highly skeptical and see this as an insignificant market (Jameson and Howe, 2009). A new use for pales emerged in 2002. The Capercaille Conservation Challenge Fund was set up by the Forestry Commission with Scottish Natural Heritage, to encourage woodland owners to buy pales to attach to deer fencing[318]. This made fences visible to capercaille (*Tetrao urogallus*) and black grouse (*Tetrao tetrix*), among the most threatened birds in the UK, to reduce the tendency of these birds to fly straight into wire fences, breaking their necks. A guidance note was produced (Trout et al., 2001) and, despite initial problems with pales having to be

[315] This suggested turning coppice stools into ornamental tables (page 7) and, despite mentioning the Wildlife and Countryside Act, 1981, suggested there were 23 species of butterfly that could be traded as mounted specimens (page 23). Neither of these suggested 'new markets' could be considered appropriate, even without the legal aspects

[316] See http://www.cumbriawoodlands.co.uk/index.php?option=com_frontpageandItemid=1Introduction, accessed 10/12/10

[317] See http://www.beanpoles.org.uk, accessed 6/12/10; In 2009 this event was supported by gardening guru Monty Don, reportedly doubling the demand in some areas, and in 2011 by the RSPB Press release dated 21/4/11 available at http://www.rspb.org.uk/news/278253-traditional-coppicing-is-a-boost-to-bird-species, accessed 25/4/11

[318] This originated from the supply chain investigation, carried out by TDB and the author. See http://www.forestry.gov.uk/pdf/Fencing.pdf/$FILE/Fencing.pdf, accessed 2/3/09

imported from France to meet the timescale restrictions imposed by the grant scheme, pales are still, in 2011, being sold for this purpose.

The Forestry Framework for the South East (Forestry Commission, 2004a) aimed to promote the economic value of woodlands, and consider existing markets along with new ones. The objectives include:

- supporting innovation and entrepreneurship
- added-value processing and marketing of local woodland products
- promoting, supporting and expanding existing markets for woodland products
- promotion of a range of local products to buyers and specifiers in the public sector, big businesses and to architects
- suppliers developing the supply chain for wood as a source of renewable energy.

(Forestry Commission, 2004a)

8.2.2 Addressing the decline by encouraging management

A review of the literature was carried out into those management initiatives set up with the intention of addressing the decline in coppicing, from a variety of different perspectives. These are summarised in the following sections.

Concern over falling numbers of woodland butterflies, which comprise 60% of those found in the UK, was the basis for Butterfly Challenge grants. Only one, the purple emperor (*Apatura iris*), can survive in mature woodlands; the others require uneven aged structure. The most threatened group, the fritillaries, require early sucessional habitat[319], and to provide this the Forestry Commission, in conjunction with Butterfly Conservation, introduced a new Woodland Improvement Grant

[319] These had continued to thrive during the 1970s, probably in the early stages of plantations on previously coppiced sites, but declined dramatically in the 1980s and early 1990s as the trees became established (Warren et al.., 2001)

(or WIG), the Coppice for Butterflies Challenge, in 1996[320]. The aim was to kick-start coppicing, by providing a top-up to the standard woodland grants[321]. However, although subsequent butterfly surveys were carried out it is unclear whether this was evaluated and resulted in on-going coppicing, despite the acknowledgment that this was essential to sustain populations (Warren et al., 2001).

In 2006 another targeted WIG was offered, again focusing on butterflies, the South East Woodlands Project[322]. Posts were created for dedicated officers to encourage landowners to take up the enhanced e-WGS contribution of 80% towards coppicing and ride management, over a three year period[323]. The suggestion that local businesses should be involved, made by the author, was rejected and cutters came from Maidstone to cut in the Canterbury area, reducing the likelihood of continuation beyond the funded period.

Hazel restoration had been grant aided in Hampshire since the mid 1980s (Hampshire County Council, 1995 and 1990; see also page 106 of this document) to rectify the problems reported by workers in sourcing quality raw material by providing an incentive to woodland owners. West Sussex County Council also began offering top-up funding to add to that available from the Forestry Commission and this still continues, although on a limited basis (interview 3). The effectiveness of this strategy is open to doubt as, despite the fact that it has been applied in Hampshire for some twenty five years, lack of quality material remains the key issue for Hampshire hazel workers (Bartlett, 2011).

[320] Eight target areas were selected, including one in East Kent and another in the Southern High Weald (Warren et al.., 2001). The grant, meeting 100% of the cost of coppicing, was available over three years and 200 hectares were "*restored*" on 54 sites (Bulman, 2007)

[321] The standard Woodland Improvement Grant[321] could meet 50% of management costs aimed to contribute to Biodiversity Action Plan targets, which included coppicing for priority species (e.g. Kent Biodiversity Action Plan Steering Group, 1997). This was largely replaced by the England Woodland Grant Scheme (e-WGS) which emphasized the importance of ecosystem services (England Woodland Grant Scheme, 2009, see http://www.forestry.gov.uk/ewgs, accessed 13/1/10).

[322] Funded by the Heritage Lottery Fund and the Tubney Charitable Trust as well as agencies and local authorities see http://www.forestry.gov.uk/pdf/see-80-wigs-07-final.pdf/$FILE/see-80-wigs-07-final.pdf, accessed 8/5/10

[323] www.southeastwoodlands.org accessed 8/5/10

The rising concern about the decline in coppicing spawned a variety of projects in the 1990s[324], and a Woodland Initiatives Network was set up by the Small Woods Association in 1995. This created a register and commissioned a review of the effectiveness of these projects[325], which was repeated by Land Use Consultants in 2002. By this time there were more than 150 initiatives aiming to increase management, particularly of small woods, by providing advice, information, training and supply chain support. The review found the initiatives to be very different, reflecting local conditions, and the emphasis has shifted from a push apparaoch, focusing on landowners to one of increasing the demand – or pull - for products. Only two initiatives were described as working effectively with cutters and processors, namely the Wessex Coppice Group and the Kent project[326]. In the final analysis the report concluded that it was virtually impossible to carry out any meaningful evaluation as few were recording outputs or outcomes of their work, although it was acknowledged that the effectiveness of networking was difficult to quantify. A key problem for management initiatives was that, to avoid competition, they were precluded from commercial activity. This meant that funding, initially envisaged as pump-priming, continued to be required. The report recommended that funding of these initiatives should be tied into the delivery of Forestry Commission objectives, particularly the regional forestry frameworks[327], and that a co-ordinator should be appointed[328]. The many initiatives funded with the specific aim to increase the area of actively managed woodland have generally been developed outwith the coppice industry, by local authorities, conservation organisations and the Forestry Commission working together and appointing young, enthusiastic, staff who often have no experience of the land based sector or woodland. Of the coppice workers interviewed only Alan and Jo Waters, who

[324] For example, Anglia Woodnet which developed from the Anglia Woodland Project, described itself as the Woodland Business Agency, and produced '*A Guide to Funding for Woodland and Wood Processing Businesses in the East of England*, in 2002, with Forestry Commission funding. They ran a group FSC certification scheme but ceased activity when the funding ran out

[325] This was carried out by ERM/Canopy; it has not been possible to source a copy of the report

[326] Run by the author

[327] Generally known as REEFs, derived from regional expressions of the England Forestry strategy

[328] This last point was realized with the co-ordinator reporting that the woodland initiatives network was responsible for offering training to ensure skills were not lost and areas of coppiced woodland brought back into management (Pollard, 2006)

combine working hazel with demonstrating, were aware of the Woodland Initiatives Network. Local authority personnel, particularly countryside management project staff and NGOs are aware and some find the newsletter useful.

8.2.3 Coppice Associations

No review of attempts to address the decline in coppicing would be complete without consideration of the associations and groups that have formed (and dissolved) in recent times. Most material is unpublished and has been provided to the author in the form of printed newsletter by various past and current members. The problem of lack of co-operation among woodland workers was observed by FitzRandolph and Hay in the 1920s and, with the exception of the Chestnut Manufacturer's Association, this seems to have remained the case until the Coppice Association (CA) emerged in 1992. Richard Edwards, an agricultural economist working for the DTI[329] was asked to initiate this by the Forestry Commission, supported by the Rural Development Commission and the Countryside Commission (Richard Edwards, 2010, pers comm.). The aim was to set up an organisation to be "*run by coppice workers for coppice workers".* A regular newsletter was produced[330] and Dr George Peterken became the president. Membership rose to 450 by October 1995 but dropped back to 400 by August 1996, when regional groups[331] were beginning to be seen as the way forward.

[329] Department of Trade and Industry
[330] This continued up to August 1996; it was originally called the newsletter but entitled *Small Poles* from issue 6, November 1994
[331] A list of regional groups is given, including Wiltshire, Hampshire and Dorset; Wales; Middle England (based in Nottinghamshire); Cumbria and Lancashire; North Yorkshire; Sussex, Kent and Surrey; Cornwall; East Anglia; Scotland and Northumberland, with the suggestion that more regional groups could be set up

The newsletter covered a wide range of subjects[332] and specific themes that emerged were:

- Linking conservation and coppicing to revive the craft industry and combat the use of unskilled volunteer coppicers by conservation organisations, voiced by Dr George Peterken[333] .
- Charcoal co-operatives; the CA produced charcoal bags and boxes for fines (basically charcoal dust, for horticultural use[334]) and encouraged the setting up of the British Charcoal Group, which piloted sales at two Yorkshire B&Q stores. This seems to have been taken over by Bio-Regional and some problems emerged with the suggestion made that regional groups should order their own charcoal bags.
- The issue of product quality is evidenced by the setting up of a complaints procedure, with the undertaking that if any member's produce was not satisfactory, it would be replaced**,** although whether this obligation pertained to the CA or BCG is unclear.
- Governance and accountability issues are apparent in the last issues, with announcements that all members would be required to attend training (presumably in an attempt to address the quality issues) and trainers appointed. Richard Edwards tried (initially unsuccessfully) to resign in October 1995, declaring that coppice workers had put themselves in the spotlight so must take a responsible attitude. Anonymous articles began to appear in the newsletter, for example reporting some had joined merely to get charcoal bags, making the forceful comment *"that stops here and now"*. (Why this should be an issue is unclear - the culprits were presumably coppice workers).

332 Including NVQs, apprenticeships, charcoal, Lymes disease, woodland birds; deer, product prices, buying woodland as an education and training centre, gamekeeper-hurdle makers, qualifications overseen by coppice workers (citing the example of the Dry Stone Wall Association, who have their own qualification), the Bio-Regional approach, coppice training courses, quality issues and FSC[332] certification

[333] In conversation with the author in March 2010, George revealed that he had "*given up on coppice and woodlands"* now considering himself to be a grassland ecologist

[334] The compost company J Arthur Bowers was mentioned by name

- A national event, organised by the CA, had been so poorly attended that it was announced that the focus would move to regional events.
- A number of letters broached the difference between trade, producing saleable products, and hobby courses.

The final blow for the CA (or at least for Richard Edwards) seems to have been the apparent lack of interest in combining resources to meet an order, for 1000 hurdles, and the emergence of the Bio-Regional Charcoal Company. In August 1996 (volume II issue 3) the editorial stated:

> *"At the National level the Coppice Association is finished … at a regional level some groups are strong with members regularly attending meetings"*

It seems that, despite initial support and good intentions, the Coppice Association ran into difficulties relatively quickly, and the conclusion was reached that regionalisation was the only realistic way forward. It played a pivotal role in the early to mid 1990s, laying the foundations for the groups that emerged in its wake, perhaps falling victim to its own success. The author visited Richard Edwards, now running his own highly successful coppice business, in June 2010. In several detailed discussions he revealed that, in his opinion, the basic concept of a national association is flawed on two counts. Firstly, the industry really only exists in the South East and this has very different needs to those of the hobbyists and small scale ventures found in other parts of the UK. Secondly, only those at the part-time end of the spectrum get involved in meetings and activities so these are not representative. He still feels regional groups are the way forward and that, particularly with email, these should be able to communicate effectively and provide a national voice when so required. This perspective is particularly interesting as there are moves by the Wood Education Trust with the Coppice Association North West (2009) to form a new national association[335].

[335] This was discussed at the South East Coppice Conference, 2010, for the full report see http://coppicegroup.files.wordpress.com/2010/11/2010-south-east-coppice-conference-report.pdf, accessed 5/4/11

Regional groups that attribute their origin to the CA include Muintir na Coille, the Irish Coppice Association, formed in 1995 and the Coppice Association North West, formed in 1996. Most groups in the South developed after the Wessex Coppice Group folded, namely the Sussex and Surrey Coppice Group (in 1997), and the Dorset Coppice Group (1999). The Hampshire Coppice Craftsmen's Group was set up in 2003. The last two are supported by paid staff but, despite this, the Hampshire group in particular is losing members rapidly[336], suggesting the workers do not find it beneficial. The most active group is the Sussex and Surrey Coppice Group, which has almost 90 members[337] and holds various events[338] that increasingly attract coppicers from outside the area. The most successful, certainly in terms of longevity, is the Chestnut Manufacturers Association, dating from around 1960, and involving the main fencing producers. It was set up as a trade association to address a specific problem, namely the decline in the quality of paling fencing as the price was forced down[339]. The group achieved their objective of establishing a British Standard, BS 1722, part 4: Cleft Chestnut Pale Fencing, to maintain standards and jointly produced a promotional leaflet. No meetings are held but those involved are in regular contact and trade with each other (i.e. collaborate) to meet orders.

8.2.4 Workforce Development.

Initial perceptions of the coppice decline resulted in the search for market-based solutions, a trend continuing with promotion of woodfuel (Forestry Commission, 2006). The importance of the workforce is acknowledged in policies and strategies, from European to local level, as reviewed briefly below.

[336] http://coppicegroup.files.wordpress.com/2010/11/2010-south-east-coppice-conference-report.pdf, accessed 5/4/11
[337] As of the Annual General Meeting August 2011
[338] For example Coppice week and the August traditional charcoal earthburn and the July Hands on Day at which members demonstrate their crafts, let others try their techniques and exchange information and expertise. This group also has an active google group and internet blog site
[339] As discussed on page 111 of this document

Forest-based and related industries make up 8% of the European Union's manufacturing base[340]. The European Landscape Convention[341], signed by the UK in February 2006, acknowledges the importance of forestry and farming in creating and maintaining the landscape and requires all signatory states to promote training in these areas (Article 6, section B). The EU Forest Industries Action Plan, based on the Lisbon Strategy[342], likewise identifies vocational training and life long learning as priorities[343].

Keepers of Time, the joint Forestry Commission and DEFRA Statement of Policy for England's Ancient and Native Woodland (2005), includes the priority to increase the number of jobs that are either directly or indirectly associated with native, particularly ancient, woodland. In 2007 the National Strategy for England's Trees, Woods and Forests (Forestry Commission, 2007a) replaced the England Forestry Strategy[344] (Forestry Commission, 1998a) and highlighted the need to improve the competitiveness of woodland businesses. It identified that this would require viable businesses in both woodland management and processing that had the expertise and capacity to ensure operations delivered public benefits as well as business profitability. Further, it stated that government policies would be developed to support skills development and knowledge transfer in the sector. The need for a skilled workforce to harvest wood fuel is specifically mentioned, along with the access agenda that requires arboricultural experts to ensure damaged and diseased trees are made safe.

The Regional Expressions of the England Forestry Strategy (the REEFS) acknowledge the very different situations and circumstances of woodlands across England. The Regional Forestry Framework (as these became known) for the South East (Forestry Commission, 2004a) identified specific skills and training as priorities, referring to the ageing workforce and lack of new entrants, the cost of

[340] http://ec.europa.eu/enterprise/forest_based/index_en.html, accessed 2/9/09
[341] http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm, accessed 2/9/09
[342] The outcome of the High-level Group on Competitiveness, Energy and the Environment and Sustainable Forest-based Industries
[343] http://ec.europa.eu/enterprise/forest_based/edu_skills_en.html, accessed 2/9/09
[344] Known as the four planks

training[345], and the problem of increased legislation for small businesses. The importance of retaining and developing the woodland workforce is acknowledged, with housing and insurances costs specifically mentioned as issues for the existing workforce (Forestry Commission, 2004a, page 35).

The Regional Economic Strategy 2006-2016, for the South East (SEEDA, 2005) noted the need for skills development and training in the region and that SEEDA[346] had a key role in delivering the Rural Development Programme 2007-2013[347] . Priority areas for this included enhancing the countryside, making agriculture and forestry more competitive and sustainable by focusing on skills, knowledge transfer and innovation, and enhancing opportunities in rural areas, targeting support to those that need it most[348].

At a more local level the CROW Act[349] gave increasing importance to the Areas of Outstanding Natural Beauty[350], designated for their landscapes. Continuation of the traditional woodland management is fundamental to maintaining landscape quality and the public benefits derived from them. The High Weald Area of Outstanding Natural Beauty[351], characterised by the ancient woodland that covers 25% of the land area (Bannister, 2007) has a management plan[352] that envisages this as being managed to maximize its wildlife, landscape and historical value and that this will be supported by traditional woodland management activity supplying local markets. It has targets to increase the output of sustainably produced timber and underwood and the number of skilled coppice workers (OW4).

[345] Acknowledging piece or contract work rather than wage labour means that this involves foregoing income as well as paying for the training
[346] South East Economic Development Agency
[347] The regional expression of the Rural Development Plan for England
[348] http://www.seeda.co.uk/rdpe/docs/rdpe-rip-4-4-08.doc, accessed 2/9/09
[349] Countryside and Rights of Way Act 2000, available at http://www.opsi.gov.uk/acts/acts2000/ukpga_20000037_en_1, accessed 5/5/09
[350] http://www.DEFRA.gov.uk/wildlife-countryside/cl/index.htm, accessed10/10/10
[351] http://www.highweald.org/, accessed 8/11/09
[352] http://www.highweald.org/uploads/woodland.pdf, accessed 8/11/09

The Surrey Hills Area of Outstanding Natural Beauty[353] with 40% woodland cover (Bannister, 2007) acknowledges lack of management as a problem in the Management Plan (2004–2009), with a commitment to secure funding to rectify this and to provide training in countryside skills. The Kent Downs Area of Outstanding Natural Beauty[354] has less woodland, 20%, but still significantly more than the 11% for Kent as a whole (Bannister, 2007). The management plan[355] states that continuation of traditional coppicing is vital for landscape and biodiversity conservation, and identifies the barriers to this as poor incentives, from both markets and grant schemes, and that new markets are required, specifically mentioning that the paper pulp outlet is no longer viable. The visions of all these AONBs reflect the value attached to coppiced woodlands but despite these fine words, the mechanisms by which they intend to achieve their objectives and the extent to which they are engaged with the coppice industry are unclear.

The counties of Kent, Surrey and both East and West Sussex, all have various strategic documents that acknowledge the importance of woodlands and the need for these to be managed in order to deliver public goods and ecosystem services, as well as to maintain rural livelihoods. The Kent Biodiversity Action Plan estimated 40% of woodland and scrub to be unmanaged and outlined a Habitat Action Plan (or HAP) with specific targets to increase the area coppiced (Kent Biodiversity Action Plan Partnership, 1997). A decade later the revised BAP has the more moderate aim of encouraging positive management such as coppicing[356]. The Surrey Woodlands Study[357] is a detailed review of the resource and the current issues affecting it, stressing the fact that Surrey is England's most wooded county but also acknowledging that the woodlands were not well managed. The area coppiced had fallen by 90% in the last fifty years, and that stimulating demand for products, training more workers and ensuring they could achieve a reasonable standard of living, was required (section 51). In contrast to the other strategic

[353] http://www.surreyhills.org/, accessed 8/11/09
[354] http://www.kentdowns.org.uk/, accessed 23/11/09
[355] http://www.kentdowns.org.uk/PDF/Management%20plan%202004final4.pdf, accessed 23/11/09
[356] http://www.kentbap.org.uk/habitats/view/?hap=156. accessed 25/4/10
[357] Written by the author on behalf of Surrey County Council and presented at *The Future of Surrey's Landscape and Woodlands – 10 years on* 18/10/07

documents this had an action plan that posed questions[358] for consideration by stakeholders before deciding on final solutions.

Clearly then, awareness of woodlands and the importance of management are currently high on agendas from European to local level, with the acknowledgement of coppicing as an important management practice in the South East. It is interesting to note that, despite all of these public sector organisations, supported by NGOs, acknowledging the importance of woodland, voicing concerns over the decline in coppicing and expressing the desire to continue traditional management, there is little evidence of the involvement of either the private woodland owners or woodland workers. While some of the larger estates may well have felt it politic to keep quiet on the basis that this would maximise the opportunity to access financial support should this became available[359] these were certainly maintaining coppicing, selling standing underwood and in close contact with woodland workers (for example Mereworth, Torry Hill, Doddington Place and Godington Park in Kent; Cowdray and West Dean in Sussex).

8.2.5 Training in the Coppice Sector

The preceding overview has clearly established the importance attributed to training and workforce development as a mechanism of stimulating woodland management, by the public sector in the South East. Historically coppice workers undertook apprenticeships, either formal or informal, or joined family members, learning on the job. Traditional apprenticeships could be up to seven years long (Kightly, 1984), although some felt three years were enough to learn, the remainder being pay-back for the time and trouble taken by the master (FitzRandolph and Hay, 1926a). Apprentices (or more probably their parents) paid to be indentured, initially receiving little pay until they developed some proficiency.

[358] These included How can we best address the lack of woodland workers and ensure sustainable livelihoods for woodland workers? And what are the best ways of securing appropriate training or apprenticeships? (Section 88)
[359] Some have certainly benefited greatly – discussed in section 8.2.6, page 148

In the 1920s this was blamed for the lack of new entrants. This was, to some extent, addressed by the introduction of pay scales in the 1920s, although this led to complaints from craftsmen who were required to pay the full adult wage at age twenty one, despite these youths still being slower and less useful than older men (FitzRandolph and Hay, 1926a). Basket makers went further reporting these rates effectively priced English goods out of the market and encouraged cheaper imports (FitzRandolph and Hay, 1926b). These authors suggested that training could be delivered by instructors rather than depending on apprenticeships, as was developed by CoSIRA (Woods, 1949).

The Bill Hogarth Memorial Apprenticeship Trust (BHMAT) was set up in February 2000, with the intention of continuing the coppicing skills of the last surviving coppice worker in the Lake District, in the aftermath of his death a year earlier. A National Coppice Training Conference was held in 2002[360] with the organisation granted charitable status in April 2003[361]. Several three year apprenticeships, each costing £25,000, with a bursary of £3000 a year, training and equipment provided to the trainees, were set up. These were intended as models for training across the coppice industry with the aim of boosting worker numbers and so the area of actively managed woodlands[362]. In 2005/6 the National Coppice Apprenticeship was established as a partnership between the Green Wood Centre (GWC) and BHMAT, with funding from the Ernest Cook Trust. Prospective candidates must pay to attend a familiarisation course[363], No information is available on the outcome of this scheme although one trainee who dropped out of a BHMAT apprenticeship was interviewed, as well as the craftsman to whom they were apprenticed. Both felt they had had little support from the organisers and that this had put a strain on their relationship (interviews 3 and 9).

A number of coppice businesses in the South East have expressed frank amazement at the figures involved in the apprenticeship scheme and cannot

[360] http://initiatives.smallwoods.org.uk/index.php?link=directory.phpandid=2013, accessed 10/12/10
[361] http://www.coppiceapprentice.org.uk/, accessed 5/5/10
[362] www.coppiceapprenticeship.org.uk accessed 5/5/10
[363] 55 attended in both 2006 and 2007. All received an *Introduction to Coppicing* certificate with four recruited as apprentices in 2006 and five in 2007.

understand why a charitable trust is required when there are already training schemes and a set minimum wage for apprentices (e.g. interview 7 and 16). At the 2010 conference, comments were made that coppicing is an industry not a charity, and other students generally pay for their education[364]. This may reflect the divide between the old and new traditions; the former working independent of grants, while the later are accustomed to benefitting from them. There are many training courses relevant to the coppice and woodland industries, ranging from one-off events to structured college courses in forestry and woodland/countryside management. Some join the coppice industry by these routes, but the family tradition of on the job learning still exists today (discussed in Chapters 9 and 10, to follow).

Increasing the skills of those already active in the industry has received less attention, perhaps because this is more challenging. Research begun while the author was the County Woodland Officer for Kent revealed that many coppicers functioned in small groups isolated both from each other and information about advances in equipment and techniques. This led to representatives from the Forestry Commission's Technical Development Branch, Scotland, visiting Kent and observing cutters and processors in their work places. The author, with the TDB officers, produced a report, *The Operational Aspects of the Sweet Chestnut Industry*, identifying ways in which coppice harvesting could be made more efficient, so increasing both workers' incomes and the overall area cut. The findings from this report were fed back to stakeholders on the 4th June 2001 with separate workshops, facilitating feedback and discussion, held with the chestnut growers, including land agents[365], the buyers and manufacturers[366] and the

[364] See http://coppicegroup.files.wordpress.com/2010/11/2010-south-east-coppice-conference-report.pdf, accessed 5/5/10

[365] At the Larkfield Priory Hotel, Maidstone, in the morning. The growers and agents had a strong desire to maintain the coppice in cycle, received limited direct income from coppice, were prepared to accept less tidy sites if this ensured coppice was cut and to accept cutting during the growing season, valued the cutters and were prepared to make sites available for cutter training.

[366] At the same venue in the afternoon.. The manufacturers claimed that the market for sweet chestnut fencing was strong but limited by the supply of cleft pales, the quality of the product must

cutters[367], so they could all speak freely. These were run in focus group format and facilitated by the author to stimulate issues, from the perspective of each group, to be raised and collated. A seminar, to relay these messages to the agency stakeholders, including local authorities, SEEDA, the Countryside Agency, English Nature, DEFRA, Business Link, the Woodland Trust and the Forestry Commission, was held at Bewl Water on Thursday 26th July, 2001. These agreed resources should be focused on facilitating use of wood as a renewable fuel, providing training to enhance efficiency and health and safety awareness of existing coppice workers, support of new entrants, completing operational research[368], developing more efficient manual handling systems and demonstrations of new developments and best-practice to all stakeholders. A summary of the workshops and the recommendations were fed back to everyone involved by post.

A direct result of this process was the development of the Coppice Harvesting Efficiency course involving the recommendations for modern felling site organisation. This was demonstrated at the Weald Wood Fair and more than ninety active coppice workers have requested and completed this training. It is

---

be maintained. Some users, such as local authorities, feel sweet chestnut fencing is potentially dangerous and that competition was reducing the opportunity for them to pay more for pales

[367] At 7pm, the function room of the Dog and Bear Hotel, the Square, Lenham, chosen as this had been used for underwood auctions. The cutters and processors felt the price of less than £1 per bundle foot is not enough to make a living; little demand for the off-cuts, sold in the past to the Kemsley pulp mill; poor quality chestnut coppice is left uncut as up to 2/3rds may be off-cuts; lack of alternative markets allows the manufactures to dictate the price; the pulp market used to provide a backstop in cash flow terms, coppice working is a hand-to-mouth business where there is virtually no capital to invest in modern specialist machinery, the majority of cutters have long family history of coppice working; the skill base is readily transferable to mixed coppice; the market for cleft rails is strong but cutters need high quality sites. There is an appreciation that training may increase production but it must appreciate the intricacies of coppice work, cutters cannot afford to lose time and/or pay for training, the opportunities for mechanised harvesting of sweet chestnut coppice for the cleft paling market to be very limited

[368] Into the volume of material available in the South East, concentrating on a practical estimate of what is likely to be available on a regular basis, and acknowledging this is likely to much less that the actual volume grown, the costs of harvesting, extraction and conversion and low cost machinery for coppice working

still[369] attracting candidates, who consistently refuse to return the hand tools introduced, preferring to buy these from the trainer rather than returning to working without them. Research carried out by the author[370] has revealed that coppice workers in the South East have been disadvantaged by lack of accessible training. It has built on the training delivered over the previous decade and good working relationships developed with key contacts in the industry. The sources of funding obtained to deliver training that woodland workers wanted and needed, as evidenced by the popularity of these, in an accessible environment are reviewed in Bartlett and Rossney (2007). Few had first aid training but this course, run solely for this group[371], has been extremely popular. Feedback on training is generally good and, despite initial reluctance most report enjoying socialising with others.

The view that many workers are effectively isolated and generally unaware of changing legislation as well as of new products, has been confirmed. One of the most significant findings has been that, contrary to the opinion of most woodland specialists in the agencies[372], coppice cutters are not "*a dying breed*" and that there are significant number of new recruits keen to carry on this work (detail is given in Chapter 9). This is in fundamental disagreement to the general view that the solution to under-management of coppice woodlands is new markets for coppice products that will pull in more workers. This strategy is unlikely to be effective unless combined with appropriate training to under-pin the supply chain.

8.2.6 Capital funding for the woodland sector

A few of the recent grants that have been available tor coppice workers, processors, woodland owners, and initiatives in the South East, are reviewed below.

[369] December 2010
[370] Carried out by the author since the mid 1990s, no funding has been received for the research element although this underpins the funding bids
[371] who were unwilling to attend either Red Cross or St John's Ambulance courses
[372] Forestry Commission, English Nature/Natural England

The Rural Development Programme for England (RDPE), delivered by SEEDA[373], provided funding for businesses to invest in capital equipment for woodland management, processing or adding value to products. Torry Hill Fencing received 50% of the cost of a new building in recognition of the potential for new rural jobs (South East Farmer, 2009; Poolman, 2009) and similar awards have been made to several biomass heating installations. The SEEDA Rural Team was disbanded in January 2010 with staff made redundant, so further funding from this source is unlikely (Jeremy Bolas, pers. comm.). LEADER funding aims to support similar projects, at a smaller scale and in defined geographical areas of which there are 14 in the South East[374].

The South East Woodland and Timber Fund (SEWTF) supported purchase of capital equipment outside the LEADER area. This scheme lasted for three years up to September 2009 again offering 50% of costs. A total of £250,000 was awarded under this scheme[375], but it was not accessible to many coppice businesses as they simply did not have the capital to match the grant, or the capacity to raise it. Although purchase of second hand equipment was eligible the time taken to process applications meant purchases could not be secured (interview 23). Some businesses with estate backing received funding for equipment such as forwarders (interview 22), although many, including one chartered surveyor, found the forms challenging and that the conditions imposed made it impossible for them to apply (e.g. interviews 19, 21 and 23).

Each AONB has a Sustainable Development Fund (SDF). The High Weald AONB SDF has successfully underwritten two apprenticeships (Dave Rossney, pers. comm.) with the Surrey Hills AONB SDF supporting both Surrey Hills Wood Fuel (James Little, pers. comm.) and Surrey Hills Charcoal (John Sinclair, pers. comm). An application to the Kent Downs SDF to part fund a training course was rejected (interview 15).

[373] South East England Development Agency
[374] Details at http://www.seeda.org.uk/rdpe/leader/, accessed 2/10/10
[375] See http://www.forestry.gov.uk/forestry/INFD-77WCHV, accessed 10/12/10

This section has reviewed the wide range of approaches taken to address the coppice problem. Many have been short lived, ending when the funding ran out. The problem remains, as demonstrated in policies and strategies at national, regional and local level, although the focus has shifted to include the workforce, training and development rather than solely on creating new markets.

Although most support initiatives have been set up with the best of intentions, most seem to have been formulated with no involvement of – or consultation with – full-time coppice workers, despite the central role this group plays in achieving sustainable woodland management. A long-term realistic view acknowledging the importance of sustainable livelihoods for woodland workers and addressing the issues is vital if the area coppiced is to be maintained and expanded.

CHAPTER 9 RESULTS OF RESEARCH

9.1 Interviews

In-depth interviews were carried out with 50 key stakeholders in the industry, as described in Chapter 5. While these cannot be reported, as they were conducted on the understanding that anonymity would be strictly preserved a list giving location and role is given in Table 5.1, on page 29, and reference is made to these in the text throughout this document.

9.2 Investigation into the area of woodland coppiced

The results of the voluntary coppice surveys, including the initial pilot, are shown in Figures 9.1 and 9.2, below.

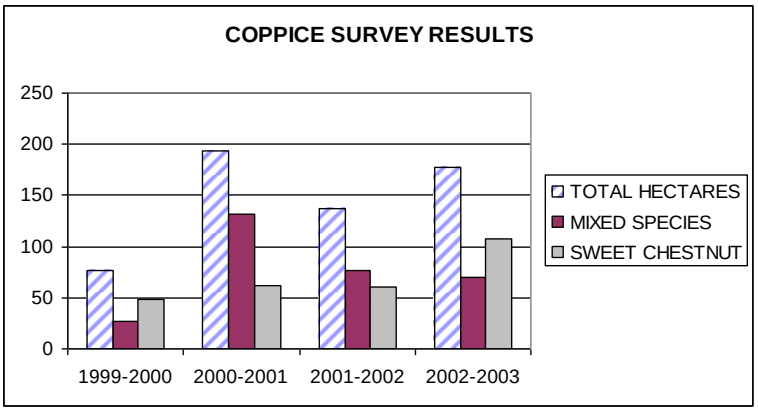

Figure 9.1 Kent Coppice survey results 2000-2003 (1999-2000 was a pilot)

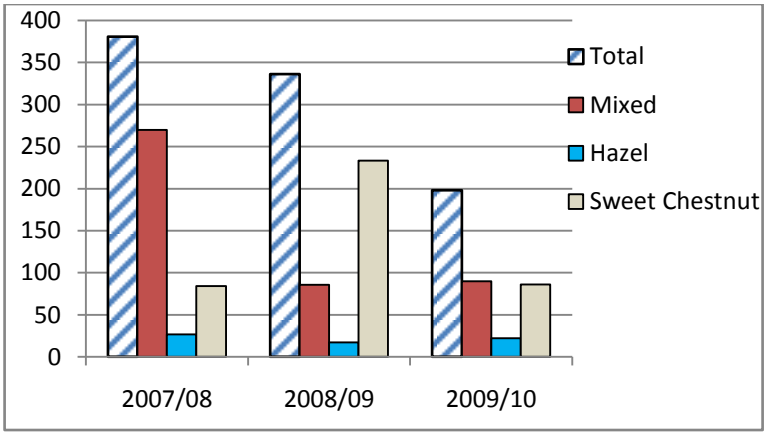

Figure 9.2 South East Coppice survey results 2007-2010 in hectares

The voluntary survey of areas coppiced within a specific twelve month period was carried out twice, each survey lasting three years, and these took place five years apart. The number of records submitted and the number who got involved in the second survey is shown in Table 9.1.

Table 9.1 the number of records submitted and recorders involved

YEAR	RECORDS	RECORDERS
2007/08	149	103
2008/09	151	84
2009/10	81	54

In the second survey, 2007-2010 responses were received from beyond Kent. The distribution of the records of active coppice across the South East derived from this survey is shown graphically using GIS in Figure 9.3 below.

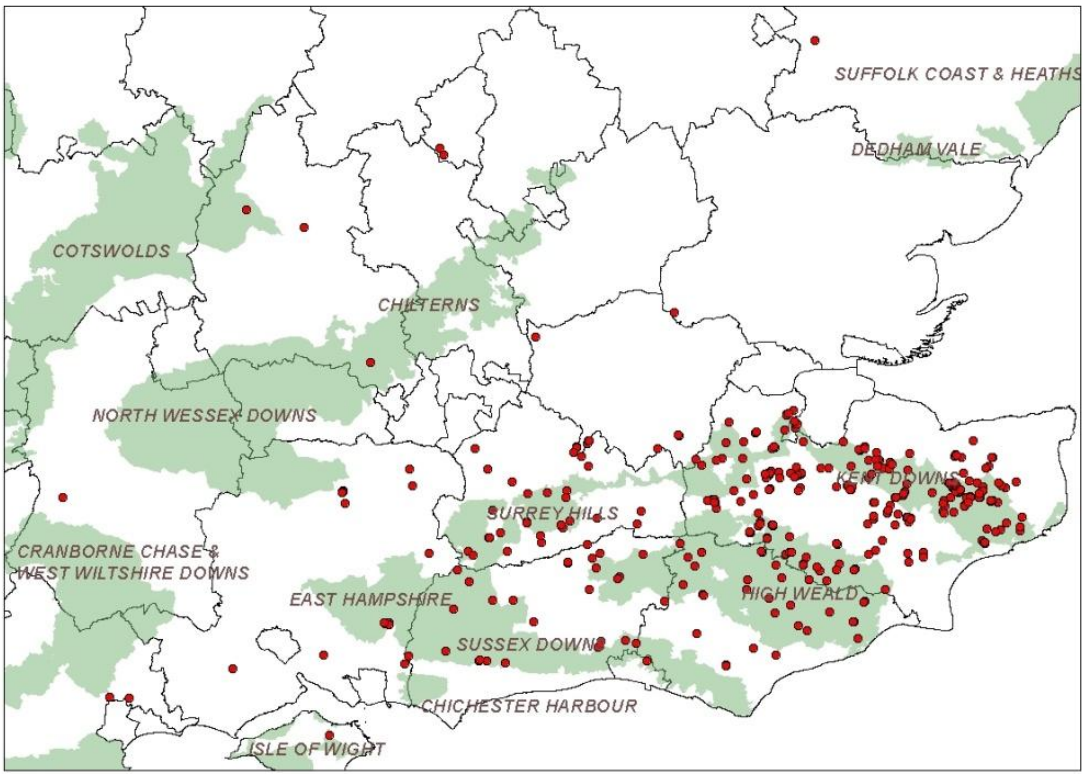

Figure 9.3 The distribution of active coppice 2007-2010

Analysis of the records submitted showed that the majority, over 75%, refer to sites in Kent. This is shown in Figure 9.4 below.

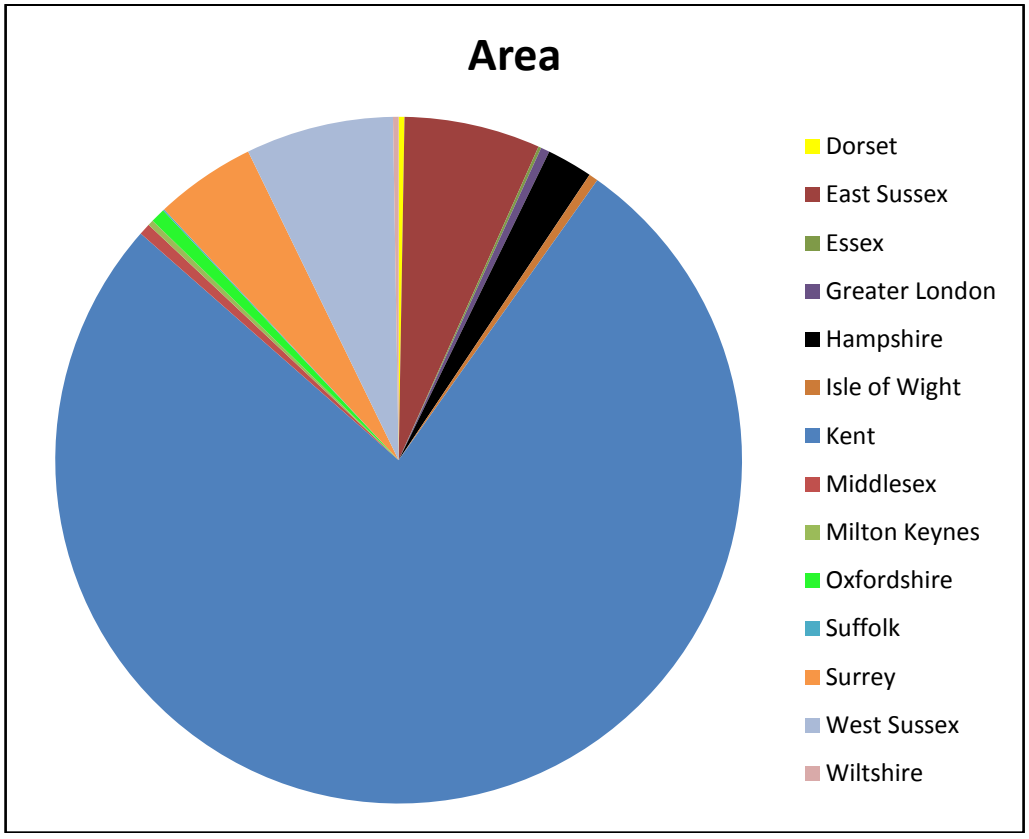

Figure 9.4 Distribution of survey sites by county

Further analysis was carried out to determine the relative proportion of different species harvested in the records submitted. This is shown in Figures 9.5, 9.6 and 9.7, on the following page.

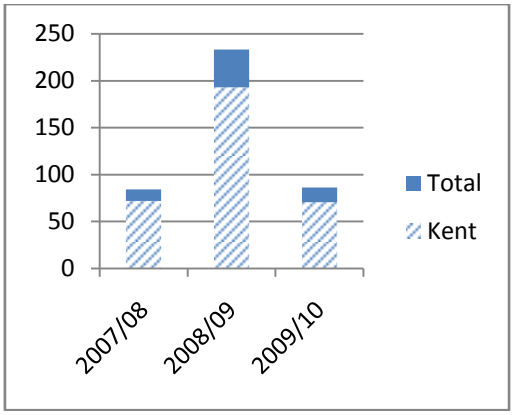

Figure 9.5 Proportion of chestnut in Kent

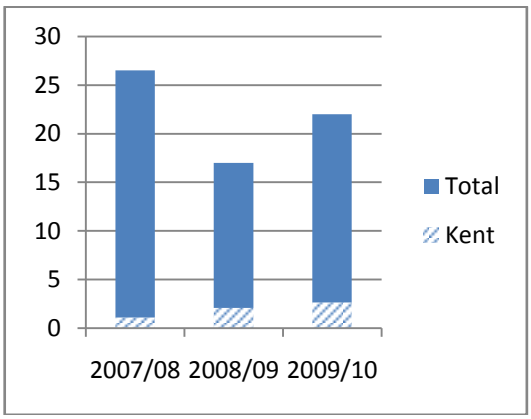

Figure 9.6 Proportion of hazel in Kent

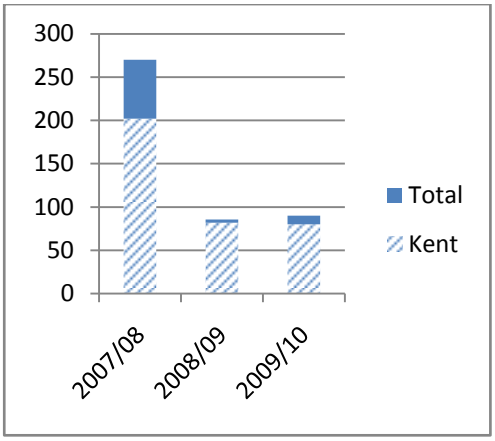

Figure 9.7 Proportion of mixed coppice in Kent

These show that the majority of the chestnut and mixed species records were in Kent but that most of the hazel ones were outside this county.

The first survey, restricted to Kent, did not include the category hazel as very little of this species is found in the county other than as a component of mixed coppice. The figures for chestnut compared to mixed coppice (including hazel) in all the records submitted for sites in Kent are shown in Table 9.2, below.

Table 9.2 Coppice Survey Results for Kent
(all figures are hectares)

	CHESTNUT	MIXED	ALL COPPICE
1999/00	48.99	27.08	76.07
2000/01	61.98	131.78	193.76
2001/02	61.51	75.68	137.19
2002/03	104.50	68.90	174.30
2007/08	71.90	202.00	274.90
2008/09	193.00	80.40	275.00
2009/10	70.50	77.30	150.40

9.3 Research into the Coppice Workforce

The data collection questionnaire, attached as Appendix 2, was used at every face-to-face opportunity from September 2008 to October 2009 and 205 were completed. When analysis was undertaken eighteen were identified as having recently joined the industry. In order to ensure a representative sample of established workers these were taken out and analysed separately, leaving 186 respondents, eleven female and the remainder male.

9.3.1 Age of the workers

The respondents were asked for their date (or year) of birth rather than for their age as this enabled comparison when data were collected over a period of time. The range in age is shown graphically in Figure 9.8, on the following page.

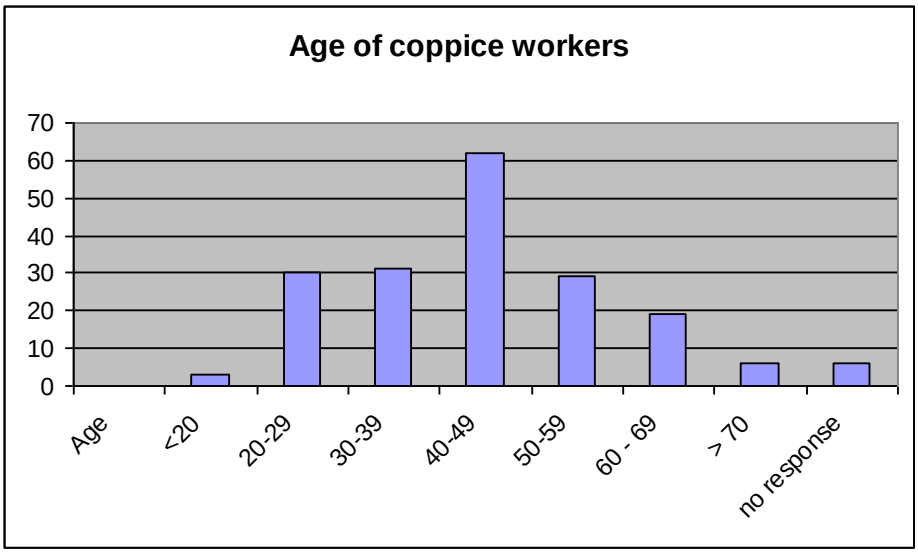

Figure 9.8 Age calculated from date of birth

The age of the workers was analysed in relation to the species cut; the results are shown in Table 9.3 below.

Table 9.3 Age of workers and species cut

AGE	TOTAL	CHESTNUT ONLY	HAZEL ONLY	MIXED SPECIES	DON'T CUT
<20	3	0	0	2	1
20-29	30	6	0	21	3
0-39	31	9	2	18	2
40-49	62	13	2	44	3
50-59	29	10	1	16	2
60 - 69	19	5	4	8	2
> 70	6	0	0	3	3
No response	6	3	0	1	2
TOTALS	186	46	9	113	18

9.3.2 Location

The questionnaire asked workers to provide their home address[376]. These were sorted by county, and the distribution is shown in Table 9.4 below.

Table 9.4 Location based on respondent's home address

COUNTY	NUMBER	%
Dorset	2	1.5
East Sussex	39	23.1
Hants	9	4.8
Kent	102	54.8
London	2	1.5
Surrey	16	8.6
West Sussex	21	11.3
No reply	1	

This clearly shows that the majority[377] – over 50% - of the respondents lived in Kent, with over 20% in East Sussex. The length of residence at the same address is shown in Table 9.5 below (18 did not respond)

Table 9.5 Length of residence at the same address

YEARS OF RESIDENCE	NUMBER OF RESPONSES
<5	45
5 – 9	34
10 – 19	36
20 – 29	34
30 – 39	12
40 – 49	2
50 – 59	3
> 60	2

[376] One did not give a full address
[377] Caution is required in interpretation as the author is well known in Kent; this may have resulted in a greater proportion of the coppice workers being willing to provide information

9.3.3 Length of time in the industry

Respondents were asked how long they had been working in the industry. This is illustrated in Figure 9.9, below. Nineteen did not respond. The results clearly show that a number have joined recently, although all those with less than three years experience have been separated out and classified as new entrants.

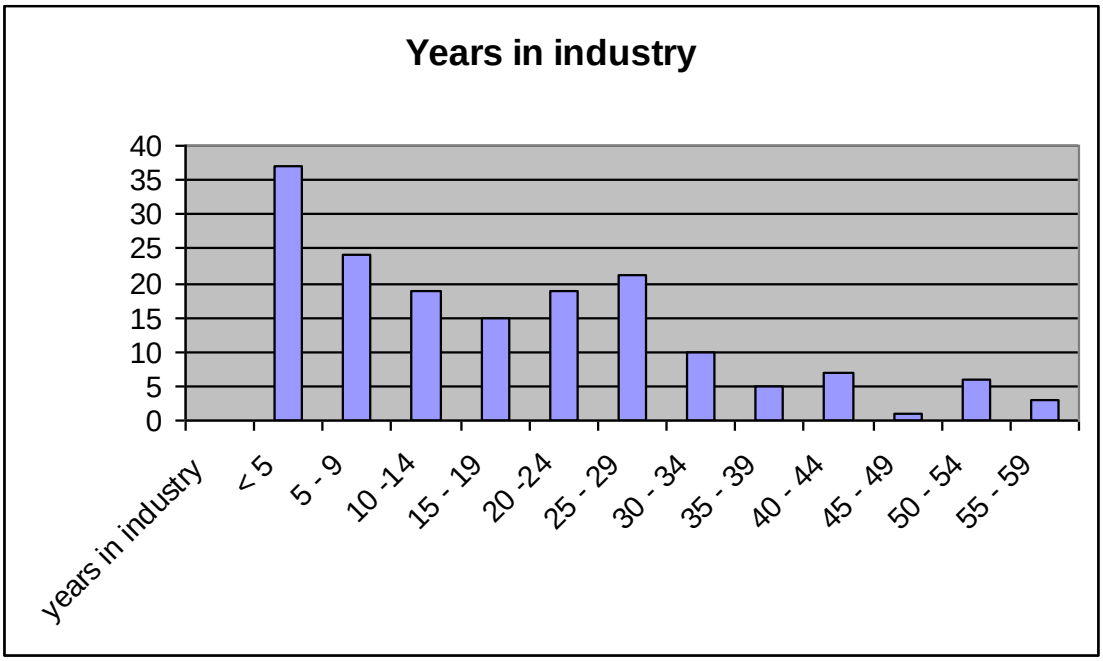

Figure 9.9 Years working in the industry

9.3.4 The reason for joining this industry:

The responses given to the question asking the reason for joined the coppice industry are given in Table 9.6 below. The most frequent response was joining family, followed by various expressions of wanting to work out of doors.

Table 9.6 Reasons for joining the coppice industry

REASON FOR JOINING THE INDUSTRY	NUMBER
Family	46
Outdoors	22
Like/love it	15
No reply	14
Friends	14
Environment/al	13
Part of job	11
Own wood	10
Redundancy	9
Better than alternatives	6
Farming/country	5
Firewood	5
Training	3
Money	3
Ex-arboriculture/tree surgery	2
Post hurricane	1
Thought playing with chainsaws would be fun	1
Always fancied having a go	1
Vague interest and fell into it	1
Use for timber	1

9.3.5 The involvement of family members in the coppice sector

In total 80 or 43% of respondents had family members working in the coppice industry, as shown in Table 9.7, below. 6 did not respond to this question, 3 of whom worked chestnut. 6 of those with family in the industry were female.

Table 9.7 The number working in coppice with family members

FAMILY	CHESTNUT	OTHER
Yes	62	18*
No	63	38
No response	3	3

*Of these 7 did not give any information regarding species worked.

This indicates that about half of the chestnut coppicers were working with family members. A further analysis was carried out to determine where those working with family were based, as shown in table 9.8, below.

Table 9.8 The location of those working with family by county

COUNTY	TOTAL	WITH FAMILY	NUMBER WITH FAMILY EXPRESSED AS % OF TOTAL WITH FAMILY (80)
Dorset	2	0	
E Sussex	37	13	16.25
Hants	9	5	6.25
Kent	101	51	63.75
London	1	0	
Surrey	16	5	6.25
W Sussex	20	6	7.5
No reply		1	1.25

9.3.6 Self description

Respondents were asked how they would describe themselves, for several reasons. Collins (2004) refers to the "*Greenwood Trades*" and historically the term underwood industries was commonly used (e.g FitzRandolph and Hay, 1926; Woods, 1949). The author was aware that many contemporary workers do not see themselves as part of either group. This is borne out by the responses, listed in Table 9.9, below, that indicate most to see coppice work as part of forestry and woodland management.

Table 9.9 The descriptors the workers used referring to themselves

Coppice worker	45
Wood cutter/woodsman	29
Forestry	23
Fencing	18
No reply	12
Firewood	9
Woodland management	8
Charcoal burner/collier	7
Arboriculture/tree surgery	6
Agricultural	5
Pale maker	4
Green woodsman/worker	4
Conservation	4
Merchant	3
Wood reeve	2
Haulier	2
Hurdle maker	2
Timber	2
Outgoing, passionate and friendly	2
Basketry	1
Sawyer	1
Underwood	1
Walking sticks	1
Outgoing, hard worker	1
Contented	1
Outdoor type	1
Forest school	1
Trainer	1
Tool dealer	1
River restoration	1
Biomass	1

Many found this question difficult, perhaps because they are not used to seeing themselves as part of a group, and further that they may carryout a variety of tasks. There are sensitivities, as the established cutters, particularly in the family groups, do not want to be associated with those who they see as hobbyists. .

9.3.7 Whether they fell coppice or buy in cut material

Again, the basis for this question was asked to enable comparison to earlier surveys. Collins (2004) found that hazel hurdle makers in particular were dependent on buying in prepared material rather than cutting it themselves. 164 of the 174[378] who replied cut coppice, 34 both cut and bought in and 6 reported that they only bought ready felled material.

9.3.8 Annual area cut

A total of around 840 acres (equivalent to about 340 ha) was reported. Almost 243 acres (c 102ha) was pure chestnut, 22 acres (9.3ha) hazel and about 575 acres (c 228ha) was mixed species. 59 who gave their annual area for mixed species also said that they cut chestnut so the area of this may be under-represented.

9.3.9 Employment status

Those taking part in the questionnaire were asked whether they were employed or self-employed. The majority, 133, were in the latter category (although one person described themselves as in both categories).

Table 9.10 Employment status related to county.

COUNTY	SELF-EMPLOYED	EMPLOYED
Dorset	2	0
East Sussex	25	8
Hants	3	6
Kent	66	27
London	1	1
Surrey	16	0
West Sussex	19	2
no county identified	1	0

[378] 12 did not reply to this question

Table 9.10, on the preceeding page, shows that the proportion of employed to self-employed coppice workers is significantly higher in Kent and East Sussex than other counties. In all the other counties the majority of those taking part in this questionnaire were self-employed. A total of 37 were employers of other coppice workers. Of these 17 were in Kent, 7 in East Sussex, 5 in West Sussex and 4 each in Hampshire and Surrey. This topic was explored further, with conversations revealing that many workers collaborate when necessary rather than entering into contractual – or employment – arrangements. Six in Kent and one in West Sussex said they employed workers, on a part-time basis, when they needed them; and seven in Kent and one each in Hampshire and West Sussex, regularly collaborated with others. There was an understandable reticence around this issue among most of those questioned, despite assurances of confidentiality.

9.3.10 Woodland ownership

Ownership of 2433.5 acres (1013.4 ha) was recorded, as shown in Table 9.11 below. Removing the area in the ownership of large estates in Kent leaves 233.3 acres (97.2 ha) owned by those involved in the coppice industry in this county, still significantly more than in any other county.

Table 9.11 Woodland ownership

COUNTY	WOODLAND OWNERS	NUMBER NOT REVEALING AREA	TOTAL AREA (Acres)
Dorset	0	0	0.0
East Sussex	6	0	28.5
Hants	2	1	0.0
Kent	10	0	2329.8
London	0	0	0.0
Surrey	3	1	49.0
West Sussex	3	0	26.0
unknown	1	1	0.0

9.3.11 The principal coppice products

Respondents were asked to identify their main products and were not limited by number. The largest number, 126, produced firewood. Although it might be assumed that chip is a fuel product this is by no means always the case; at least three of the 10 who sold wood chip were marketing it as a horticultural mulch or play area surface. The second largest group, 111, produced fencing material, while 50 said they were selling a service.

Table 9.12 The principal coppice products related to county

COUNTY	FIREWOOD	CHIP	CHARCOAL	FENCING	THATCHING	HURDLES	RUSTIC	PULP	TIMBER	MILL	SERVICE	HEDGELAYING
Dorset	0	0	2	0	0	0	0	0	0	0	0	1
East Sussex	28	0	4	27	0	2	2	0	3	1	12	5
Hants	7	0	3	5	2	2	1	0	0	2	5	2
Kent	70	10	15	59	0	9	7	2	4	2	22	8
London	0	0	0	1	0	0	0	0	0	0	0	0
Surrey	10	0	6	8	3	2	5	0	1	1	7	5
West Sussex	11	0	7	11	5	6	5	0	2	0	4	8
TOTALS	**126**	**10**	**37**	**111**	**10**	***21**	**20**	**2**	**10**	**6**	**50**	**29**

* one additional respondent said they made hurdles in the past; hurdle making was not split into woven hazel or chestnut gate types.

9.3.12 Seasonal working and supplementary incomes

Most of the respondents worked throughout the year (162). 6 did not respond to this question and the 16 who only worked coppice for part of the year all did this during the winter. When this area was probed further by asking if they had any alternative or supplementary income a more complex situation emerged. 89 declared they did not have any other source of income, 8 had a pension, 21 declined to answer this question. The ways the others supplemented their earnings are listed in Table 9.13, below.

Table 9.13 Additional sources of income

NUMBER	SOURCE OF ADDITIONAL INCOME
16	Gardener
7	Farm maintenance
4	Building
3	Journalist; tree surgery
2	Carpenter; office admin/temping; outdoor instructor; plastering; timber framing; van and truck driver; two described their wives as "good earners"
3	Barman; biologist; bushcraft instructor; estate work; forest management; certification; Forest Schools; tool dealer; graphic design; timber sales; metal work; own a company; parish council; property investment; ranger duties; science technician; sculptor in wood; teacher; woodnet; web designer; work in pet shop

9.3.13 Distance travelled to work

Respondents were given the choice of giving the distance travelled as a round trip or their daily travel time. All gave mileage rather than time. This is shown, by county of residence, in Table 9.14, on the following page.

Table 9.14 Daily distance travelled to and from work (round trip)

DISTANCE TRAVELLED (Miles)								
County	0 miles	<5	5 - 9	10 - 19	20 - 29	30 - 39	40 - 49	> 50
Dorset	0	0	0		2	0		
E Sussex	4	3	4	6	9	1	1	2
Hants	0	3	1	1		3		
Kent	6	12	17	16	15	16	3	3
London	1	0	0	0		0		
Surrey	0	0	4	5	1	1		2
W Sussex	3	4	2	4	1	1	1	4
TOTAL	**14**	**22**	**28**	**32**	**28**	**22**	**5**	**11**

This indicates that 64, about a third of the respondents, work within 5 miles of their homes and 96, about half, within 10 miles. This degree of local working is of interest as there are areas where coppicing is a priority. The address locations of chestnut workers were plotted on GIS and the distribution of these in relation to the Areas of Outstanding Natural Beauty is shown in Figure 9.10.

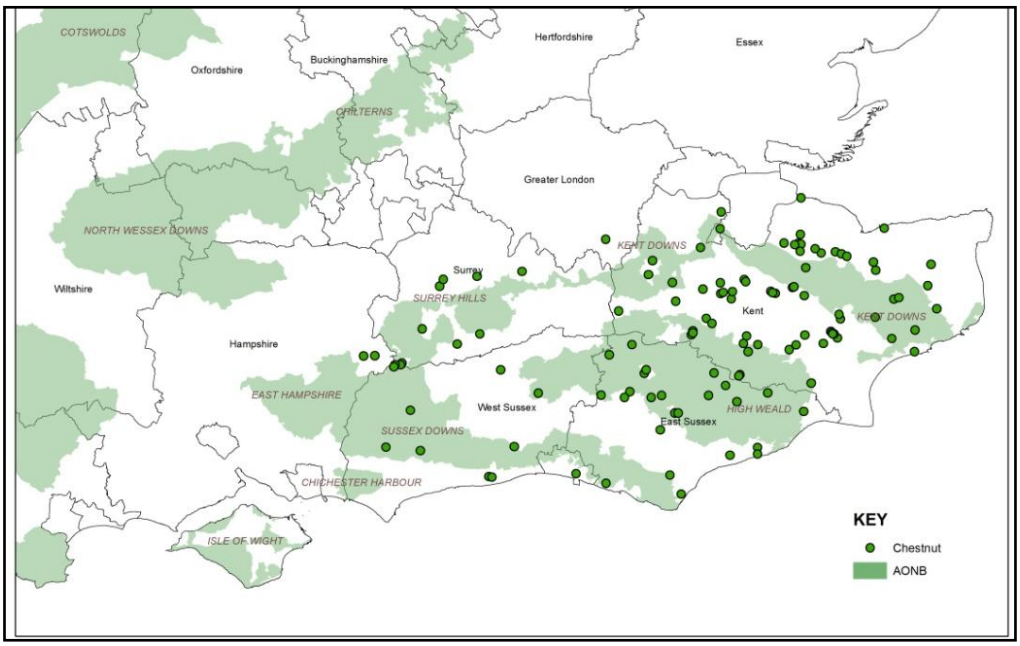

Figure 9.10 Location of chestnut workers in relation to the Areas of Outstanding Natural Beauty

9.3.14 Quality of material

Previous surveys, such as that conducted by Collins (2004) found that sourcing good quality raw material was a problem, so this question was asked for comparative purposes. 100 reported no problems, although 67 did; 19 did not reply to this question.

9.3.15 Earnings and business prospects

Respondents were not asked to disclose precise figures for their earnings but to indicate in which £5,000 band they fell. Only 23 were not willing to disclose their earnings and these are shown in Figure 9.11 below.

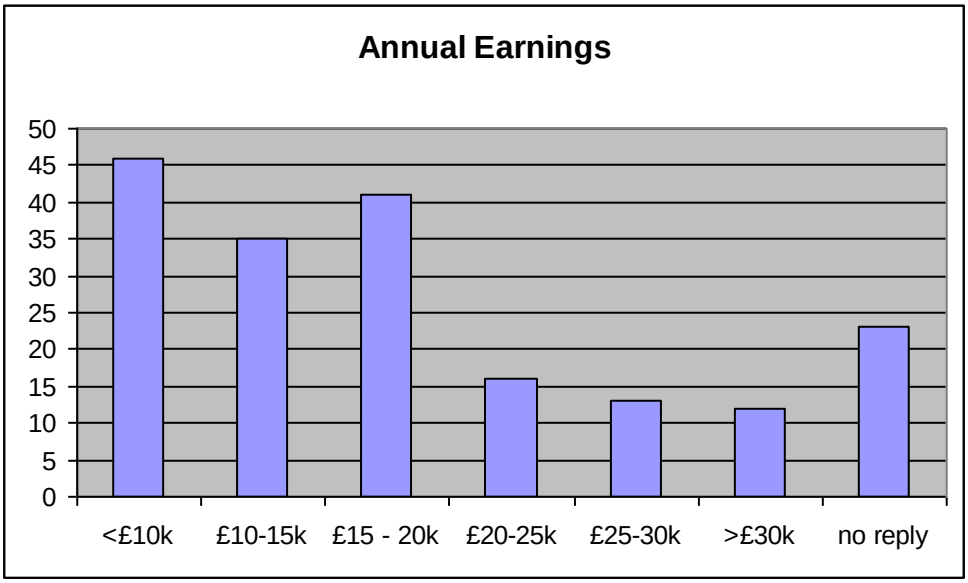

Figure 9.11 Annual Earnings

The largest group, almost 25%, reported earnings of less than £10,000 a year; 65% earned less than £20,000. 12 had an annual income of more than £30,000.

Questions followed about the current state of businesses and the perceived prospects. The first was whether the business was growing, declining or steady. 78 responded that it was growing, 79 that it was steady and 9 that it was declining. 20 did not respond.

The second question on this topic asked how earnings had changed compared to those in 2000, selected as a memorable year. Many respondents found this question rather difficult to answer, with 39 failing to reach any conclusion. Of the others 85 reported earnings had increased, 35 that they were about the same and 27 that they were less.

The third question focused on selling price. 98 said that this had gone up, 32 that it was the same and 10 that it had gone down. One replied that it had gone both up and down and 45 did not give a reply. Two of those who reported a fall quantified this at about 20%.

9.3.16 Method of selling products

131 of the 139 respondents to this question identified word of mouth as the principal method of selling their products (94%). For 74 respondents this was the only marketing method used. All the other respondents except one put this method as the second most important; the exception rated the Internet as most important, trade publications as second and word of mouth the third most important method of interacting with customers. More details are given in Table 9.15 below.

Table 9.15 Ranked methods of interacting with customers

	1st	2nd	3rd	4th	5th	TOTAL
1 word of mouth	131	7	1	0	0	139
2 local press	3	22	1	5	2	33
3 yellow pages	2	5	9	1	3	20
4 trade publications	1	7	8	6	7	29
5 the Internet	3	21	2	2	0	28

The majority who advertised in the local press used parish magazines rather than local papers although this was not quantified. The Internet was used by 28 respondents in total (20%), with 3 giving this as the most important selling method (2%). 1 only sold at shows and 1 depended on customers visiting.

The questionnaire then asked specific questions about degree of training, training requirements, the equipment and staff resources and requirements. These have not been analysed for the purpose of this thesis.

9.4 The new entrants

Information about the eighteen respondents who were taken out of the main sample is summarised in the following sections. These were all male and aged between 19 and 53, with the spread illustrated in Figure 9.13 below. It is clear that most were career changers rather that entering coppicing as their first job.

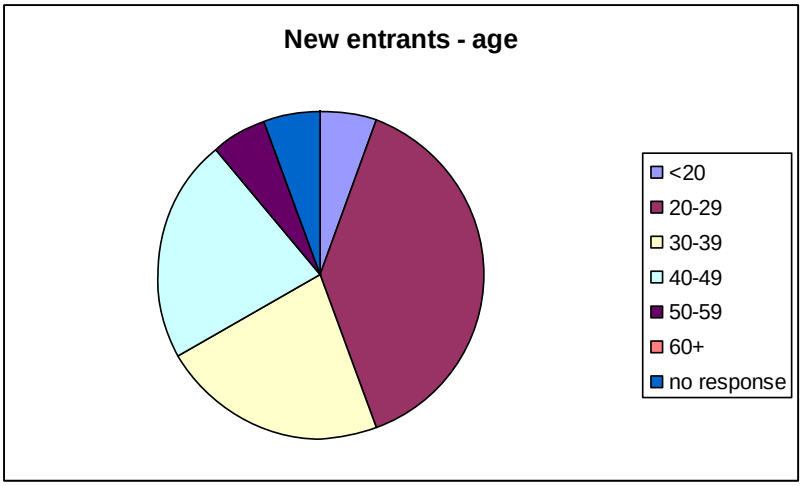

Figure 9.12 Age of the new entrants to the industry

Ten of this group were resident in Kent, 4 in East Sussex, 3 West Sussex and one was from Norfolk. Eight had been living at their current address for less than 5 years; 2 between 5 and 10 years; 4 more than 10 but less than 20; 1 for 21 years and 1 for 44 years. One did not want to reply to this question.

One had been working in the coppice industry for nearly 3 years, one for 2 years and eight for 1 year; the remaining eight had been in the industry for less than a year.

When questioned about their rationale for joining the industry, five mentioned they wanted a career change, three that sustainable lifestyle was their motive, two were joining friends, and one was joining family in the business. Two had attended courses, one owned woodland, and four did not reply.

Although one reported family connections as the principal reason for joining the industry four did have family members working in it. Most described themselves as coppice cutters, although one was a timber framer, one wires paling and another described himself as a processor. This question was open to misinterpretation; responses such as "*hard working and reliable*" and "*tall dark and handsome*" were given.

Some of the questions posed were difficult for this group, probably because they did not have such well established work patterns as those who had been working in the industry for longer. Nine identified themselves as chestnut workers, two that they worked hazel and a further two were focusing on mixed species. Nine were engaged in felling coppice, one was buying ready cut material and eight gave no response. It was difficult for them to give information on the average area they cut annually and concerns regarding compliance with HSE legislation may have exacerbated this. The majority, twelve, were self-employed and two were employed; the others did not respond. None reported having employees.

With respect to seasonal working twelve reported working all year round, two between October and March and four did not respond. Six had alternative or supplementary sources of income, two did gardening, one farm work and another one had rental income. The distance travelled to work ranged from 0 to 30 miles although ten did not respond, perhaps because this had not become established. There was the same problem in answering the question about sourcing good quality material, although seven reported no problem and one that there were some problems; the others did not respond.

The principal products were firewood and fencing, as shown in Figure 9.13, below.

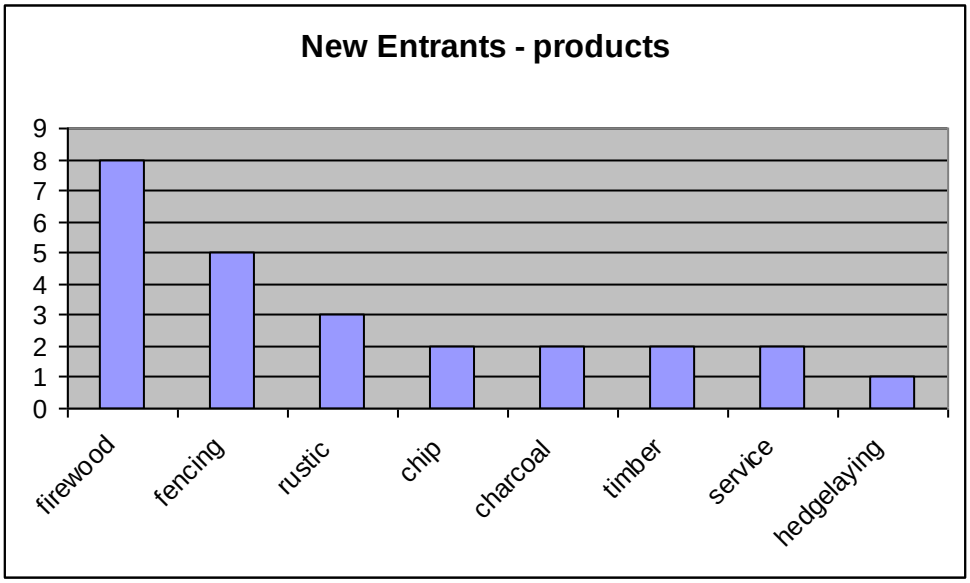

Figure 9.13 The products of the new entrant group

It was difficult for the new entrants to give any answers to the questions about earnings or business prospects. None were expecting to earn more that £20,000 a year and five were very positive about the growth of their business. All who responded to questioning about their method of interacting with potential customers were using word-of-mouth alone and were not considering any other means.

9.5 Focus Groups

Business analysis was carried out based on the LANTRA Skills Check model but implemented in a focus group format[379]. In total 46 businesses agreed to take part, 31 chestnut specialists, 9 who worked hazel and 6 who based their businesses on mixed species of hardwood. There were three separate events; the results of all have been combined.

[379] Formal permission was received from LANTRA to do this

9.5.1 SWOT[380] Analysis

The standard SWOT analysis focusses in turn on the strengths of a business, the weaknesses, and then the opportunities open to it followed by the threats it is experiencing. The participants were not restricted in the number of issues they identified. The results are recorded in the following tables (9.16, 9.17, 9.18 and 9.19).

Table 9.16 Business Strengths (two gave no response)

Product quality	21
Available wood; raw material	20
Good at job; experience knowledge skill; quality of work; flexible	20
Sustainably managing woods; low environmental impact; good for the environment	12
Demand for products; good customer base; reliable sales	7
Working with family	5
Enjoyment of work	4
Versatile material; local knowledge; good team of workers/work force	3
Sense of achievement; worthwhile; green product; low tech business; low capital; owners keen to support/part of estate so cushioned	2
Supplying firewood; lots of customers; getting product to customers; working outside; long established business; marketing bioregional; keeping promises; own small machinery; combine garden and woodland; freedom of woods; farmers markets; autonomy; tenacity; business up annually last 30 years; collateral so can stock pile products	1

[380] Strengths, Weaknesses, Opportunities and Threats

Table 9.17 Business Weaknesses (two gave no response)

Old machinery and equipment	7
Marketing	6
Lack of capital	5
Small business/lone working	5
Work yourself into ground hard work, labour-intensive health	4
Buying the right timber supply of material lack of quality material overstood coppice	4
Training - lack of	4
Competition	4
Lack of good labour; lack of money; legislation HSE; poor product prices; lack of young pale makers, and cutters	3
Financially vulnerable; lack of equipment; overheads - expensive of petrol; poor local market; unstable markets; need labour committed to job labour difficult to deal with	2
Non-capitalist; limited product range; lack of time; poor business sense; wont attract new workers; insurance; rely on goodwill of Surrey Wildlife Trust; limited production: sawmill site not permanent; long term planning; lack of customers; 75% to one customer; government turning woods to parks; not forth coming enough; not good at marketing; tax; low production volume; prefer working alone; knowing right price; weather; too much paperwork; local housing costs; time to get felling licenses; Bioregional contract for charcoal ; B&Q profit margins; no mains electricity in yard; perception low value; exchange rate; can't summer cut; price versus quality	1

Table 9.18 Opportunities for the Business (fourteen gave no response)

Large potential market; good markets - gardens; increasing markets	10
Growing log market; chip	4
Education/training; plenty of wood; range products; environmental concern; untreated hardwood	3
Making charcoal; make better use of rubbish; find way to use waste; FSC certification; regular work/regular income; promoting local products/ in-house marketing	2
Educate public; using woods for future; hazel baskets; lack of competition; environmentally good; need improved equipment; gardening work; sell good products; others going out of business; demand for home grown products; contracting out; countryside stewardship; trip to Slovakian woods; working for established firm; be positive, not negative; regulators need work experience	1

Table 9.19 Threats to the Business (two gave no response)

Insurance costs	17
Personal health or injury	13
Cheap imports	13
Competition from other workers/poor quality products/under cutting prices	12
Lack of labour (from cutters to pale makers)	11
Legislation and bureaucracy	8
Product price; uncertain markets; cash flow; softwood; lack of good material; lack of training	5
Machinery breakdown costs	4
Weather; security of woods to work in/poor communication between owners and cutters; Forestry Commission/government policy; no storage space	3
Cost of deer protection	2
Housing; age; supermarkets and garden centres; lack of public awareness; central heating; lack of marketing; price of wire; theft of cut wood	1

.

9.5.2 Coping with change

The participants were asked to think about external factors that were affecting their businesses, with these defined as those over which it was difficult to exert control. These are listed in Table 9.20, below.

Table 9.20 External factors affecting the business

Legislation; HSE (Health and Safety; Executive regulations); environmental; consumer	22
Insurance	8
Warm winters; global warming; climate change	8
Lack of workers	6
Interest rates; the economy; recession	6
Weather	6
Competition; competition from EU	5
Fuel prices diesel petrol overheads	4
Lack of coppice grants; sustainability of grants	3
Taxes	3
Awareness of green products; public opinion	3
The Euro exchange rate good as £ weak	2
Changing habitat management	2
FSC	2
Ban on CCA treatment	2
Local authority purchasing policies	2
Landowners reneging; relationship with landowners; high labour costs; high housing costs; price of palings; ISO 14001;2002; afford to live; falling firewood sales; rising distribution costs; fickleness of hazel products; changing markets; weather; plastic fencing; lack of public awareness; money given to some areas changing environmental standards; better work opportunities; grants to farmers for fencing; cheap imported stakes; weather; fashion; chip business expanding; wants to supply roundwood; weather affects charcoal/firewood; demand; customers go to retailers; cash flow.	1

It is difficult to determine if weather is positive increasing, for example firewood sales, or negative with respect to working conditions and charcoal sales. The climate resulting in a longer growing period was also mentioned (although under internal factors).

By this point the participants were engaged in this process and were asked to apply themselves to identifying internal factors affecting their business, defined as those over which they could perhaps exert some influence

Table 9.21 Internal factors affecting the business (ten did not respond)

Health and fitness; injury	12
Age; age affecting production	6
Lack of staff	5
Need more/better equipment; lack of education; training	4
Loss of workmen; need to change and adapt; more strings to bow	3
Customers; keeping customers happy; HSE (Health and Safety; Executive regulations) lone working; retirement of staff; machine maintenance	2
Ability to make a living; noisy machines; need closer yard; need NTPC (National Training Proficiency Council certification); insurance; loss of orders; untrained staff; legislation/red tape; yard space; investment; better products; longer growing period; children; better alarm clock; no sick pay; estate management issues; time for woodland management	1

9.5.3 New challenges for the businesses

By this stage participants were freely discussing their ideas and interacting with each other. Their ideas are listed in Table 9.22, below.

Table 9.22 New challenges for the businesses (twenty two did not respond)

Find new products; increase product base	5
Increase sales; legislation	3
Increase efficiency; challenges in France; expand export market; selling; marketing; supplying chip wood	2
Sell better quality wood ; be more competitive; none - carry on day to day; me; would like to do fencing; training; replace manager; make delivery cheaper; Farmers markets; maintaining quality; pursuing work; money; Get standardised product; equipment to make easier; even out peaks and troughs; trying to buy retort kilns	1

The results in the preceding tables (9.16 to 9.22) illustrate workers optimism, based on both their confidence in their products, and awareness of the environmental issues linking their work with the wider environmental benefits. The principal constraints are perceived to be legislative in origin, including health and safety and insurance requirements, although personal health and business organisation are also acknowledged. Some of the issues raised are those that would be anticipated for under-capitalised micro businesses working in isolation and with few links to technological change.

9.5.4 Proficiency

Participants were asked about the tasks they carried out during their work, how proficient they were at these and if there was anything that could help them improve their efficiency. Tasks were listed and ranked from 5 (excellent) down to 1 (poor). The results for each category are given in the Tables, 9.23 to 9.27, on the following pages.

Table 9.23 Tasks scoring 5 (excellent**)**

TASK	NUMBER IDENTIFYING THIS	SUGGESTIONS FOR IMPROVEMENT
Coppicing/felling	8	Get fully trained; try harder
Processing to logs/kindling	6	Can sell more than have
Felling/harvesting	4	
Pale making	4	Need more pale makers
Post/stake/spile making	3	No one better!
Peeling	2	
Log sales	2	Need new log splitter
Fencing making	2	Get quicker; more inspection
Erecting fences	2	
Charcoal burning	2	New kiln
Buy - assess wood	2	Look more than once
Loading transport to yard;fetch wood in	1	Bigger truck; have state of the art kit
Wood turning	1	
Customer satisfaction	1	
Groundwork	1	
Deliveries	1	
Organising	1	
Enjoy the day	1	
Tipping	1	
Cutting to length	1	
Product making	1	
Fencing	1	
Sell	1	no need to advertise
Forwarder driver	1	need new forwarder
Maintenance of machines	1	forwarder worn out
Processing post and rail	1	
Paperwork	1	wife excellent

Table 9.24 Tasks scoring 4

TASK	NUMBER IDENTIFYING THIS	SUGGESTIONS FOR IMPROVEMENT
Coppice cutting	16	More deer/rabbit control; need cutter to help; be 20 years younger; machinery to make faggots; stop harvesting machines
Charcoal making	9	Better grading/bagging facilities; more customers; larger scale production
Firewood/kindling processing	6	Better machinery; employ help
Fencing	4	More pale makers
Planting	4	Too old for physical side
Hedgelaying	3	Practice; better hedges to cut
Making products	3	Find more
Saw to length; cross cutting	2	
Make products	2	More practice
Hedgecutting/gardening	2	Extend - include landscaping
Do the books; paperwork	2	Legal cashier
Sell/admin	2	Wife does paperwork
Organise management; manage people	2	
Converting raw material	1	Better saws
Making up	1	
Finishing	1	Puts up price
felling/harvesting	1	
Deliver products	1	
Rake-making	1	Develop style
Making hazel products	1	Get better
Chestnut processing	1	Better machinery
Weed control	1	Need trained mates
Arboriculture	1	Need climbing certificate

Table 9.24 Tasks scoring 4 continued

TASK	NUMBER IDENTIFYING THIS	SUGGESTIONS FOR IMPROVEMENT
Making pales	1	
Selling service	1	
Demonstrating/instructing	1	Develop illustrative material
Training	1	Run more courses
Fence erecting	1	
Palings	1	Pale making needs mechanising
Rails	1	
Tool use	1	Training
Comunication with customers	1	
Selling at market	1	
Tree surgery	1	More practice
Enjoy it!	1	
Produce fencing	1	
Market	1	FSC certification
Maintainance of machines	1	Try to keep on top of it
Assess for CHP (material for combined heat and power plant)	1	Experience
Long term supply plans	1	waiting to see how it goes
Manage people	1	
Quote for work	1	
Sourcing products	1	
Buying wood	1	Concern about contracts

Table 9.25 Tasks scoring 3

TASK	NUMBER IDENTIFYING THIS	SUGGESTIONS FOR IMPROVEMENT
Accounts/book keeping/paperwork	6	Be more organised; do more regularly; get a secretary
Cutting coppice	5	Increase speed; more practice
Marketing	2	Need new ways to get to buyers; spend more time on it
Firewood processing	2	More time on job; be 20 years younger!
Charcoal burning	2	Experience; tighter kiln packing
Hedgelaying	2	Experience/training
Wood/hedge/tree planting	2	Experience/training; be 20 years younger!
Machinery operation	2	
Management	2	Listen; stop trying to do all at once!
Basket making	1	Practice
Demonstrations	1	Need to be more of a showman
Hazel products	1	Better grown hazel
Surveying	1	Upgrade skills
Report writing	1	Improve keyboard skills
Timber buying	1	Reject more
Credit control	1	
Make hurdles	1	Increase speed
Organising staff	1	
Chestnut products	1	Be 20 years younger
Coppice products	1	Time to practice
Posts	1	It needs mechanising
Costing jobs	1	
Gate hurdles/stakes	1	Need hydra-point
Sell standing wood	1	
credit control	1	

Table 9.26 Tasks scoring 2

TASK	NUMBER IDENTIFYING THIS	SUGGESTIONS FOR IMPROVEMENT
Paperwork/book keeping	2	More time; stop last minute panics!
Planning/time management	2	Know what I'm doing
Selling pales	1	Be more outgoing; need more customers
Coppice/felling	1	Need training
Handling chainsaw	1	Know when to rest
Look for more work	1	
Understanding with landowner	1	Better contracts/understanding
Lone working	1	Get mobile phone
Make fencing products	1	Developing skills
Logs	1	Need processing equipment
Coppice products	1	Need better selling ones
Producing products	1	Knowing what sells
Time management	1	

Table 9.27 Tasks scoring 1 (poor)

TASK	NUMBER IDENTIFYING THIS	SUGGESTIONS FOR IMPROVEMENT
Paperwork	5	Mother does it; wife does it
Marketing	1	
Credit control	1	
Forward planning	1	Know what I'm doing

9.5.5 Business management

The last task was the high point in all the focus groups. The participants engaged and gave every indication of enjoying thinking about how to improve, but few were interested in the management side and it was more of a challenge to keep their attention. All were asked if they set business goals; the response is recorded in Table 9.28 below. Discussion revealed that most were focussed on keeping going rather than having any future vision.

Table 9.28 Response to question about business goals

DO YOU SET BUSINESS GOALS?				
	TOTAL	**CHESTNUT**	**HAZEL**	**MIXED**
Yes	26	20	2	2
No	18	9	7	4
No response	2	2	0	0

Participants were then asked how their businesses were doing, as shown in Table 9.29, below. Some were not happy with answering this, although it did seem that most were generally positive.

Table 9.29 Response to question about how business is doing

HOW IS YOUR BUSINESS DOING?				
	TOTAL	**CHESTNUT**	**HAZEL**	**MIXED**
Good/well	15	11	2	1
OK	20	11	6	3
Not well	4	2	1	1
No response	7	7	0	1

This was followed by asking if there was a business plan, Table 9.30, followed by asking if participants adhered to this, shown in Table 9.31, below.

Table 9.30 Response to whether participants had a business plan

DO YOU HAVE A BUSINESS PLAN?				
	TOTAL	**CHESTNUT**	**HAZEL**	**MIXED**
Yes	11	7	2	2
Sort of	1	0	1	0
No	31	22	5	4
No response	3	2	1	0

Table 9.31 Whether participants adhered to their business plan

DO YOU ADHERE TO THIS BUSINESS PLAN?				
	TOTAL	**CHESTNUT**	**HAZEL**	**MIXED**
Yes	8	6	1	1
Sort of	1	0	1	2
No	7	4	1	3
No response	30	21	6	0

As so few had a business plan it is not surprising that so few were able to respond that they followed it. Questions about money followed; first asking participants if they felt they were in control of day to day money matters (Table 9.32), and then if they could plan their finances (Table 9.33). Both of these are on the following page.

Table 9.32 Day to day money matters

ARE YOU IN CONTROL OF DAY TO DAY MONEY?				
	TOTAL	**CHESTNUT**	**HAZEL**	**MIXED**
Yes	31	22	5	5
No	9	6	2	1
No response	6	3	2	0

Table 9.33 Whether participants were able to plan finances

ARE YOU ABLE TO PLAN FINANCES?				
	TOTAL	**CHESTNUT**	**HAZEL**	**MIXED**
Yes	35	24	6	4
No	7	4	1	2
No response	4	3	2	0

The conversations then moved onto staffing and whether businesses had enough staff (Table 9.34) followed by a discussion as to whether these were the right staff (Table 9.35).

Table 9.34 Whether participants have enough staff

DO YOU HAVE ENOUGH STAFF?				
	TOTAL	**CHESTNUT**	**HAZEL**	**MIXED**
Yes	25	16	5	4
No	12	9	1	1
No response	9	6	3	1

Table 9.35 Whether these are the right staff

ARE THEY THE RIGHT STAFF?				
	TOTAL	**CHESTNUT**	**HAZEL**	**MIXED**
Yes	23	15	5	3
No	5	2	1	2
No response	18	14	3	1

This was followed by questioning as to whether as to whether the businesses were able to make the best use of their staff and resources, Table 9.36, below.

Table 9.36 Whether businesses make good use of staff and resources

ARE YOU ABLE TO MAKE THE BEST USE OF STAFF AND RESOURCES?				
	TOTAL	**CHESTNUT**	**HAZEL**	**MIXED**
Yes	26	18	4	4
No	5	2	1	1
No response	15	11	4	1

All the participants were asked if they used a computer, responses are given in Table 9.37 below.

Table 9.37 Use of computers

DO YOU USE COMPUTERS?				
	TOTAL	**CHESTNUT**	**HAZEL**	**MIXED**
Yes	24	13	7	4
No	19	15	2	2
No response	3	3	0	0

The way businesses exercised quality control was discussed; the various methods used are shown in Table 9.38, below.

Table 9.38 Method of quality control

HOW DO YOU ENSURE QUALITY?				
	TOTAL	**CHESTNUT**	**HAZEL**	**MIXED**
No response	17	10	4	3
Physical/visual check	17	8		
Do it all myself	5	5		
Ensuring what customers want/feedback	3	1		
Rejection if not good enough	2	1		
Staff training	2	2		

Some of the responses were difficult to interpret, for example "*yes*" and "*quality control*". The final question related to business turnover; surprisingly, little resistance was encountered[381]. The results, with number of responses related to species, are shown in Table 9.39 below.

Table 9.39 Business turnover

TURNOVER	**TOTAL**	**CHESTNUT**	**HAZEL**	**MIXED**
< £10k	10	4	4	2
£10 – 24K	14	11	2	1
£25 – 49k	9	3	2	2
£50 -99K	1	0	0	1
£100 – 249k	4	4	0	0
£250 – 499k	4	4	0	0
£500 – 1000k	2	2	0	0
No response	2	1	1	0

[381] Although it is possible some were unclear about the difference between earnings and turnover, particularly in the lower range.

The businesses concentrating on chestnut clearly have the highest turnover and, with the exception of one mixed species business, are the only ones with a turnover of more than £50k. There is also a concentration of chestnut businesses at the lower end of the scale with almost half being below £24k. The hazel businesses tended to have low turnovers with 75% below £24k although this may be a function of the small number of businesses located, which in turn may reflect less organisation within the hazel industry. The results are shown as a graph in the following Figure 9.14.

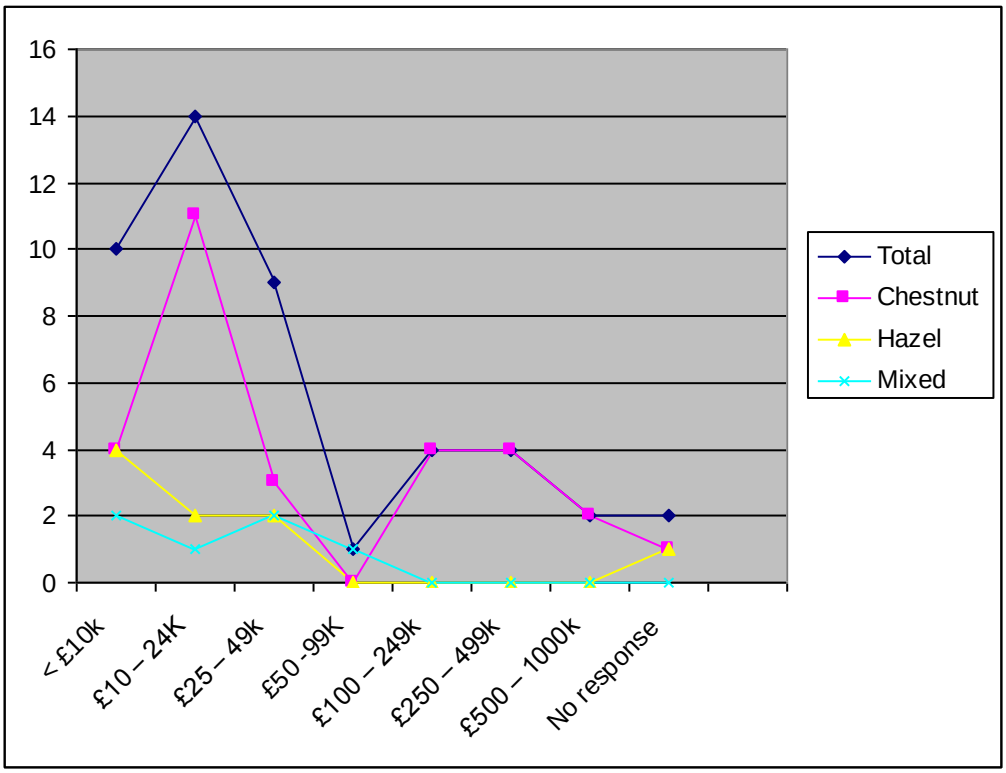

Figure 9.14 Business turnover

The final question asked was about the size of each business. This would usually be determined by the number of employees but this is extremely difficult to determine, as many of these businesses are informal groupings. Even where some are technically employed they also involve part-time collaborators. Equally, the business may act as a merchant selling on the products for several workers; with these numbering up to 25 or more in some cases.

CHAPTER 10 DISCUSSION

In the Introduction the primary research questions were identified[382] as:

To what extent is the coppice decline a matter of fact?

How much and why does this matter?

Why have attempts to reverse the decline by creating new markets failed?

It was anticipated that answering these would require carrying out investigations into the current area of coppice woodland management, finding out who is carrying out this work, identifying the issues for the workforce, and exploring the ways in which these could be addressed. These became the focus of the primary data collection for this research, as detailed in the previous chapter.

This chapter will be structured on addressing the research questions

10.1 The coppice decline

To achieve a lasting solution to the perceived decline, as identified in the 1980s (e.g. Betts and Claridge, 1994) the real nature and extent of it needs to be understood and evaluated. The first step is to validate the original premise, i.e. the extent of the decline, particularly in the South East, and to ascertain whether this is a trend that is continuing (Irwin, 2001). Latour (2005) distinguishes between "*matters of fact*" and "*matters of concern*" suggesting that detailed examination of controversies[383] can lead to a deeper understanding of both the social and environmental dynamics of an issue. Aspects of the assumed decline have been questioned previously, for example, the difficulty in interpreting the statistics in the various Forestry Commission censuses[384]. This factor has been explored by Collins (2004), who suggested that changes in the definition of coppice accounted for the greater part of the apparent national decline between the 1940s and mid 1960s and a significant part thereafter.

[382] On page 2
[383] Latour terms this deploying controversies
[384] Page 106 for hazel, 109 for chestnut

10.2 Evaluation of the decline in Kent

The Kent Coppice survey was first organised by the author in 1999, carried out annually for four years and repeated for three years between 2007 and 2010. The questionnaire is included as Appendix 1.

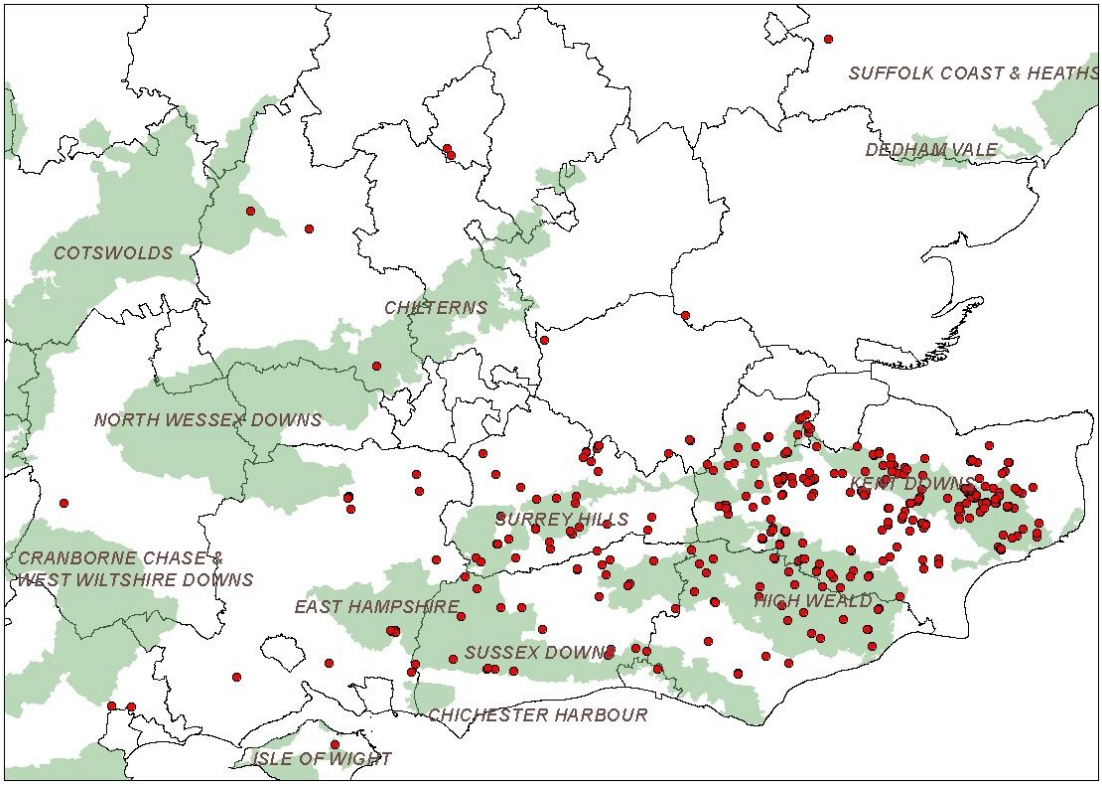

Figure 10.1 Distribution of coppice activity in the South East (based on coppice survey returns 2007-2010[385])

This was not a systematic survey but depended on the return of completed questionnaires. The first year, 1999-2000, can be discounted as it was a pilot with limited distribution of questionnaires; using the Parish Tree Warden network proved to be less successful than anticipated so a much wider, less structured approach was taken in subsequent years. The second survey, 2007-10, was extended beyond Kent as responses were received from woodland workers, both coppicers and managers, outside the county. While there are obvious limitations

[385] This repeats Figure 9.3 page 153

to this survey methodology the use of citizen-scientists to gather data is well-established (Bhattacharjee, 2005; Bonney et al., 2009; Cooper et al., 2007; Silverton, 2009; Smith and Evans, 2003). Checking a proportion of the submissions by visiting the sites is the only way in which the data can be validated. While this did not suggest inaccuracies, is not appropriate to subject the results to any form of statistical validation; information derived should be considered as indicative rather than absolute. Variations in the area reported may reflect recorder interest rather than trends in the areas cut. This is illustrated by comparing the number of records submitted[386]; 149 in 2007/08, 151 in 2008/09 but just 81 in 2009/10. This is likely to have contributed to the lower figures, that casual inspection could interprete as an apparent decline in area coppiced, for this period.

Deriving information about the proportion of the broadleaved woodland resource that is in active management from the coppice survey data is complex. On the basis of the returns for the first survey, 2000-2003[387], the average area of coppice reported as cut was 168.4 hectares; in the second, 233.4 hectares were reported in Kent[388]. According to the most recent Forestry Commission census[389] the total area of woodland in Kent was 39,487 hectares; 48.9% broadleaved[390]. If a rotation of 20 years is assumed then about 1000 hectares could potentially be coppiced annually, so the average in the second survey suggests that perhaps a quarter is in active management. Assuming Dannett's (1991) figure of 12,500ha for chestnut in Kent is accurate, and an average of about 112ha a year harvested, as implied by the most recent survey[391], on a twenty year rotation around 2,240ha would be in management. Extreme caution is required in interpreting these figures, as coppice cycles for chestnut vary from between 2 and 3 years (for trellis and walking sticks), to over 40 years for post and rail. Research into the proportion of

[386] See Table 9.1 page 152
[387] The first year, 1999/2000 was a pilot with low returns, so is excluded from the analysis.
[388] The figures are given in Table 9.2, page 155
[389] Forestry Commission Press Release for the launch of the Kent County Report, June 2002
[390] Only broadleaves are suitable for coppicing. The *Provisional Inventory for Ancient Woodland in Kent* recorded 29,951 hectares with 8,949 re-planted (Pritchard et al., 1994)
[391] This is almost certainly an under-estimate as significantly fewer returns were received in the final year than in the previous two

different products that are produced has not been carried out. The high figure for chestnut in 2008/09 may be attributable to the setting up of Torry Hill Fencing, combined with a rise in the export market (interviews 23 and 30).

The results of the coppice survey show that a significant area of coppice is cut annually, and that this has been maintained over the last decade. This does not negate the claim that coppice management has declined, but it does provide indications of continued activity, particularly in Kent. It is clearly important to have some means of monitoring the trend in woodland management, but identifying a practical method of achieving this is not simple. The coppice survey is now integrated into other activities, such as training initiatives, to provide information about who is cutting particular species in the different areas. Providing an incentive for workers to report regularly on the areas cut could increase information; an alternative would be to identify specific areas for detailed, more accurate monitoring. Improved information on management could facilitate a more strategic approach, ensuring the mixed aged structure beneficial to wildlife is maintained where this, rather than commercial factors, is the most valued attribute (e.g. PTES, 2010). Closer liaising with the local workforce could enable barriers to working specific priority sites to be identified and overcome.

10.3 The significance of the perceived decline

To determine the significance of the perceived decline in coppice woodland management requires that the stakeholders are identified and their relationship to the industry explored[392]. Coppicing combines a range of natural, social and economic factors, so exploration of the consequences of any decline involves stakeholders with very different views and agendas.

[392] This assumes an anthropocentric approach

Peterken (1981) flagged up the importance of ancient woodland[393] and this link to the past was, according to Saunders (1993) significant in bridging the gulf hitherto apparent between forestry and nature conservation. By the mid 1980s the Forestry Commission had made a sharp U-turn (or perhaps a tactical retreat) from mass conversion of broadleaved, often ancient, woodland to conifer to a policy that combined timber production with landscape, recreation and nature conservation objectives (Forestry Commission, 1985). This was the combined result of lobbying by conservationists and the failure of coniferisation to contribute significantly to either home-grown timber supply or the rural economy (Saunders, 1993). The coincidence between the recognition of the coppice problem with this change of emphasis may be significant. The Forestry Commission's concern demonstrated engagement with the conservation agenda and the scientific community (e.g. Betts and Claridge, 1994; Buckley, 1992; Fuller and Warren, 1993), and local authorities (e.g. Hampshire County Council et al., 1990).

10.3.1 The significance for agencies and local government

The driver for coppice woodland management had, in the past, been very significantly, if not entirely, commercial. The landowners, cutters, processors and through the supply chain to the end users, were financially motivated. The situation is now more complex. Woodlands previously belonged to the landowners alone and were the preserve of forestry. Now this has been extended to include professionals (foresters, ecologists and woodland archaeologists) and the community (local population, special interest groups and future generations) who all have a valid interest (or stake) in them. Institutional agendas now focus on Ecosystem Services which, for woodlands, include carbon storage and climate change (Forestry Commission, 2006) and the health benefits of green space and exercise (O'Brien, 2001; Stewart, 2010; Natural England[394]). DEFRA, Natural

[393] Defined as those woods known to have been in existence since 1600 AD
[394] See e.g. http://www.naturalengland.org.uk/Images/bristolgreenspacesummary_tcm6-12134.pdf, accessed 2/11/10

England and the Forestry Commission work together to set national policy, which is negotiated on scientific evidence combined with social pressures. This is demonstrated by the creation of stakeholder partnerships to develop the Regional Forestry Frameworks, an exercise completed by the mid 2000s. *Seeing the Wood for the Trees: a Forestry and Woodlands Framework for the South East* acknowledged the importance of local engagement, as well as the traditional top-down approach (Forestry Commission, 2004a).

At the same time many counties produced strategic reviews of the land based sector, including woodland, prompted by the need to explore the opportunities offered by the changes in the CAP[395], combined with the agenda emerging from the Curry Report[396] of economically and environmentally sustainable agriculture and forestry delivering public benefits. This incorporated an obligation to determine what the public valued, combining participation/stakeholder engagement with justification of treasury expenditure. The Kent report[397] identified the landscape of the *Garden of England* as the product of the history of farming and woodland management, noting change, particularly the decline in hops and coppice woodland management in the latter half of the 20th Century (Land Use Consultants, undated, page 3). Recommendations included familiar themes, such as the need for greater understanding of the land based sector, new high value markets for sweet chestnut[398], and reviews to determine trends and establish progress. Woodland owners, the agencies and local authorities require adherence to current legislation and health and safety guidance in all contracts, making working in these woods less desirable to local coppice workers.

[395] The European Community Common Agricultural Policy, under Agenda 2000 and the implementation of the Rural Development Plan England (RDPE)
[396] The outcome of the Policy Commission for the Future of Food and Farming, for more information see http://www.DEFRA.gov.uk/foodfarm/policy/sustainfarmfood/policycom.htm, accessed 10/11/10
[397] Carried out by Land Use Consultants, funded by the South East Economic Development Agency
[398] In marked contrast to other studies, e.g. Betts and Claridge (1994), who focussed on a bulk market for low grade chestnut

The AONBs[399], the Kent Downs, Surrey Hills and High Weald, are areas of particularly high woodland cover designated for the quality of their landscapes. Woodland management is central to their management plans, which are produced in consultation with stakeholder partnerships. In most cases these forums are convened during the working day, so comprise local authority or agency representatives, who are paid to attend, those who can afford the time or can forego a day's pay, and the retired. Even when specifically invited, woodland workers, particularly the self-employed, do not attend.

Kent, Surrey and the Sussexes all had dedicated County Woodland Officers during the 1990s and the early 2000s[400]; now only one remains[401]. These oversaw quarterly County Woodland Forums bringing stakeholders together. The Surrey Woodland Forum remains active, convened by the Surrey Hills AONB. Another, for Kent and East Sussex, has been re-instated by the Forestry Commission at Bedgebury. Few active coppice cutters have ever been involved[402]. This lack of engagement with the workforce was previously emphasised in the review of woodland initiatives, which found only two[403] of the hundred and fifty registered achieved this (Land Use Consultants 2002). Lack of engagement with the workforce may have contributed to the failure of so many attempts to support coppicing.

10.3.2 The significance for woodland owners

Traditional landowners with woodland are represented by the RFS, NFU and CBLA[404], in national, regional and local forums. Hobby or non-farming woodland owners are increasing in number, have different agendas, and are not easily

[399] Areas of Outstanding Natural Beauty
[400] In Kent and Surrey these were part funded by the Forestry Commission
[401] Julie Bolton in West Sussex
[402] As a result of lobbying, the chair of the Sussex and Surrey Coppice Group is now invited to Surrey Woodland Forum meetings.
[403] One of these was run by the author
[404] The Royal Forestry Society, National Farmers Union and the Countryside Business and Land Association

engaged by established methods. Fischer et al., (2010) evaluated different methods of communicating with these in the United States and Sweden where, as in the UK, many large estates have been broken up, increasing the number of owners and disrupting established communication networks. These authors concluded that information is most efficiently disseminated by peer networks, increasingly via the Internet. The Small Woodland Owners Group[405] (SWOG), formed in 2008, is leading the way in the UK, superseding the Small Woods Association[406] (SWA). Many new owners have bought woodland for amenity and recreation purposes, so have little interest in commercial management; many do coppice their woodlands, producing their own firewood, while others feel they should be 'left to nature'.

10.3.3 The significance for nature conservation organisations

Nature conservation organisations, such as the RSPB[407], Butterfly Conservation and the Wildlife Trusts, are both landowners and lobbyists on behalf of wildlife. Woodlands belonging to these have almost always been purchased to "*save*" them, often due to lack of commercial management. Re-instatement of a coppice regime to maintain and enhance wildlife is often a priority. This group are vocal about the lack of coppice cutters, fuelling the perception that these have largely disappeared. These organisations are often loath to accept the reality that, if they want coppicing carried out to exact specifications when the product has little or no value, then contractors need to be paid for this service. There is no shortage of raw material, either mixed species or chestnut[408], so coppice workers will go where they can make most profit with least interference. Inability to get cutters is not, as generally thought, necessarily due to lack of markets, but rather a function of income and convenience.

[405] See http://www.swog.org.uk/, accessed 18/11/10
[406] See http://www.smallwoods.org.uk/, accessed 18/11/10
[407] Royal Society for the Protection of Birds
[408] NB The case for hazel is entirely different

10.3.4 The significance for the public

The importance of the public as stakeholders, being actively invited to participate in decision-making, is a trend likely to continue with the pending Localism Bill[409]. The current framework for forestry policy is the Strategy for England's Trees, Woods and Forests (Forestry Commission, 2007a). It has a Delivery Plan (Forestry Commission[410], 2007b) which includes a specific aim to increase the contribution that trees and woods make to the quality of life of residents and visitors to England. This demonstrates the focus on the concept of "*place*" at Government level, reviewed by Stewart (2010). Sense of Place, as described by Williams and Stewart (1998), provides a framework for landscape management decision-making about landscape management, although the precise definition has been an issue. It is the links and bonds that people, individually or as groups, make from their own experience, that socially constructs places from undifferentiated space (for discussion see Stewart, 2010). Place, as a concept, can be understood as an amalgam of the meanings, beliefs, symbols, values and feelings that people associate with it. The way woods are perceived and valued varies with perspective. It is usually based on use, either active, for example, coppice cutting or walking, or passive, with woodland providing an idealised landscape setting.

Forestry Commission Design Plans[411] are presented, at a meeting, to local people, as a prerequisite to adoption. The rural population now features a high proportion of those from an urban background who, while enjoying living in the countryside, may have little understanding of it; often a product of "*retirement migration*" (Williams and Stewart, 1998). Publicity about environmental destruction (e.g. Shoard, 1980) has encouraged a commendable interest in trees and woodlands but the new rural locals often object to coppice cutting, an everyday activity to those brought up in the countryside. The former group are effective in voicing their concerns to, for example, local authorities. In the 1990s this led to a number of

[409] See http://www.communities.gov.uk/publications/localgovernment/localismplainenglishguide, accessed 2/6/11
[410] This document was produced in conjunction with Natural England and is sometimes cited with joint authroship
[411] For details see http://www.forestry.gov.uk/forestry/infd-7bbkt4, accessed 18/11/10

charcoal businesses in Kent being shut down due to complaints about pollution, and pale makers being prohibited from burning bark. The Forestry Commission regulates tree felling, although felling licenses are not usually required for coppice[412]; local authority tree officers manage the TPOs[413] overseeing regulation of tree work in Conservation Areas[414]. In recent memory, prosecutions have been made for the unauthorised removal of woodland[415], so it is hardly surprising that many people have mixed feelings about coppicing. This can cause real problems for cutters and has led to the production, by the author, of information boards, illustrated in Figure 10.2 below, explaining that coppicing is beneficial, rather than damaging, to the environment. 2000 have been produced and distributed.

Figure 10.2 Signs explaining the benefits of coppicing

[412] Only one is known to apply for these regularly felling 80-year chestnut for post and rail
[413] Tree Preservation Orders, currently under review
[414] These have blanket TPOs
[415] In Kent the infamous Hughie Batchelor was imprisoned for this

10.3.5 The significance for the workforce

Forestry contractors move throughout the UK in response to the market, i.e. payment for carrying out work (Firn Crichton Roberts and Clegg, 2000). In contrast, coppice workers tend to work locally, often managing the same woodland on rotation year after year. They pay the landowner (except when paid for hazel restoration or for conservation management), and so have a vested interest in the woodlands where they work, often having detailed knowledge of both the wildlife and archaeology.

The current paradigm is to involve all stakeholders and provide an opportunity for active participation in decision-making. This is required to justify expenditure of public/treasury or Lottery funding. The stakeholders conspicuous by their absence in this process, as it relates to woodlands, are the traditional coppice cutters and processors. It is often stated that these choose not to engage (e.g. Steve Foukes, Forestry Commission) although it can equally be argued that there are both practical and social reasons for this. The impact of the decline in coppicing on the size and composition of the workforce has received little or no attention in the published literature, although efforts to promote coppicing have been effective in attracting a new type of worker. This is illustrated by the National Coppice and BHMAT[416] apprenticeship schemes, which require candidates to pay for a week-long course, an intimidating prospect for those from the traditional coppice workforce. Also in this category are those who have made a lifestyle choice, often leaving more highly paid occupations to work in the woods. These tend to be both more articulate and less financially constrained than the traditional workers and can also see the potential advantage of being involved in groups. This is demonstrated by the profile of those attending events such as the SSCG Hands on Day (although this now attracts some traditionalists), and conferences. The traditional group have a real love of the woods, and tend to have started work very

[416] The Bill Hogarth Memorial Apprenticeship Trust

young, often helping family members. They see what they do primarily as a job rather than as a vocation or mission to change the world. This is clear from the way they describe themselves (see Table 9.9 on page 161). The two groups are very different. The newcomers tend to cut small areas producing craft products for niche markets, while the traditional group cut significantly larger areas and produce bulk commodities such as paling fencing and/or firewood.

10.3.6 The overall significance of the decline

From this brief resume it is clear that coppiced woodlands are valued for a range of different attributes, and that the views of the different interest groups are potentially conflicting, and in some cases diametrically opposed. To put this into a more theoretical framework, the official knowledge is that coppicing is a well-established and traditional practice with environmental benefits and is an integral part of the rural economy. In contrast the epistemology of the layman is based on information from a variety of sources combined with memories and experiences that may suggest woods are natural so should not be cut. Different groups and individuals construct their views and respond to issues in different ways. Understanding how opinions are formed, out of what sociologists term *situated knowledge*, helps to locate the common ground. The acknowledgement that all the stakeholders appreciate some aspect of coppiced woods, even if these are quite different, should enable initiatives to move forward, backed by all the stakeholder groups.

The decline in coppice woodland management nationally is acknowledged but there is evidence that it has been maintained in the South East, particularly in Kent, Surrey and the Sussexes. Quantification is difficult due to the limitations of the data on woodland area let alone on management, the variability in commercial coppice cycles, particularly for chestnut products, and the lack of integration of the workforce with any of the other stakeholder groups. The extent of the decline cannot be measured, neither can the impact it has had be quantified. This research has demonstrated that rotational coppicing is still taking place, particularly in Kent, and that no reduction has been observed in the last decade.

10.4 The workers in the coppice sector

As well as finding out the extent of coppice woodland management this investigation required information about the workforce. Prior to discussing the research findings, previous surveys are briefly reviewed in the following section.

10.4.1 Historical investigations into the workforce

A number of reviews specific to coppice workers have been carried out, with some information available from the various national censuses[417] (discussed by Collins, 2004). FitzRandolph and Hay found an industry in the 1920s with many of the same characteristics as today, comprising specialist processors focussed on one product, as well as generalists with products depending on demand and the available raw material. These authors recorded a scattered, disparate workforce with seasonal movement between the woods and farms observed in some areas, although in others the work had higher status and was more remunerative so was carried out all year round. The greatest barrier to development was considered to be the lack of organisation, in agreement with the conclusions of both Woods (1921 and 1949) and Jones (1927). All of these writers identified the importance of the workers understanding the need for, and potential benefits of, co-operation and that imposition of organisational structure from outside[418] would not be successful.

Edlin (1947, republished in 1973) considered the chestnut industry to be an outstanding example, having been given a new lease of life by the increased use of paling in the post war construction boom. His descriptions and photographs of cleft chestnut fencing production are virtually identical to those seen today. The Rural Industries Bureau found more than a thousand working in the underwood industries in 1960, but not a single indentured apprentice and only seven learners

[417] This information is complex as the four categories in 1801, agriculture, trade, manufacturing and handicraft, were split and added to in later censuses; industry was added in 1921. Precisely what these reveal about the coppice industry, with specialists and generalists, as well as a seasonal working pattern combined with summer agricultural work is unclear

[418] To quote "*One practical enthusiast …… will achieve more in the direction of the rehabilitation of the rural industries than a County sub-committee can do in years of inquiries and the formulation of schemes"* (FitzRandolph and Hay, 1926a, page 13-14)

(Collins, 2004). Geraint Jenkins (1965) reviewed traditional country craftsmen[419] with the focus on craftsmanship, which he defined as a combination of good taste and utility building on tradition and produced without the use of complex machinery. Geraint Jenkins considered coppice work as processing as opposed to a creative craft. Cleaving chestnut in particular was classified as a "*simple*" trade, involving little craftsmanship, and the review concentrates on the methods of craftwork rather than the economics of the industry or the workmen themselves.

Gordon (1993) surveyed a sample of coppice workers in East Sussex and the High Weald and concluded the workforce to be ageing and in decline, with most over fifty years old. Despite the questionnaire stressing confidentiality the report named the respondents; some are known to the author and are still active. Most had worked in the woods all their lives and were motivated by enjoyment of the work and being outdoors rather than the financial returns, which were described as low. Many had additional income, mostly farm and garden work. The greatest skill was identifying the product each piece of wood could yield and all reported learning this from watching older workers, often family members. The total number of workers was given as 55[420] and the annual area cut ranged between one half and 12 acres, averaging 4.5, consistent with the current research. Workers travelled between 5 and 20 miles to work, and preferred to work in family groups or on their own. There was no mention of different species, although it was implied that all had worked in chestnut. This study was used as evidence in the application for funding[421] the Woodland Enterprise Centre at Flimwell, originally envisaged as a visitor centre that would attract over 100,000 visitors a year and educate them about woodland (Strapp, undated). This has not been realised[422].

[419] These included clog sole makers, wattle weavers, hoop makers, charcoal burners, spar makers, spale (or spelt) basket makers, truggers, rake makers, gate hurdle makers, broom squires, coopers, wheelwrights and chair makers as well other crafts unrelated to coppice material
[420] A figure of 40 in East Sussex is given, so presumably 15 were located on the Kent borders
[421] Over £1million from the Rural Development Commission
[422] It currently houses the High Weald AONB team

Hampshire County Council's research into the hazel coppice industry found an ageing workforce with the majority approaching sixty (Hampshire County Council et al., 1990). A further publication (Hampshire County Council, 1995) is the summary of a report[423], by Fountain Forestry, based on the oral testimony of nearly 140 woodland owners and workers in Hampshire, describing the survival of the coppice industry as "*something of a miracle*". This identifies the lack of an organisation to act as spokesman as a constraint and acknowledges the reduction in the resource, the consequence of agricultural grants and conifer planting (Hampshire County Council 1995[424]). It ends with a detailed proposal for a coppice agency, the origin of the Wessex Coppice Group.

Collins (2004) reviewed the greenwood crafts distinguishing between professionals, hobbyists, casual, part-time and seasonal workers and, significantly classifying workers as belonging to the *new* or *old* traditions. The latter group are differentiated by having learnt their skills directly from older craftsmen. Collins suggests that this hereditary tradition, whereby skills pass from father to son, has died out, increasing the importance of training provision[425]. The profiles for these greenwood workers are markedly different from those identified for coppice workers in Kent (Bartlett and Rossney, 2007), probably due to the very low response from this group to the postal survey conducted by Collins (2004).

Various reviews into the forest, as distinct from the coppice, workforce have been undertaken, notably by Clegg and Crichton Roberts (2000) which found over half of businesses to be sole traders. A report on the future of forestry in Scotland,

[423] It has not been possible to source the original document

[424] This report gave various interesting statistics, as follows:

- the number of hazel workers halved in Dorset between 1953 and 1993 but remained virtually unchanged in Hampshire and the Isle of Wight
- the 1861 National Census recorded 38,200 in the coppice processing trades, with 410 in Kent, although the area recorded as cut in Kent would have required more than 1000 men
- no workers outside the South/South East making a full time living from coppice (page 15)
- out of 117 hazel hurdle makers fewer than 30 were full time (page 15)
- the skill involved in grading was emphasised
- average incomes of around £308 per week in 1990 were reported

[425] The recommendation is made that this should be overseen by the Sector Skills Councils; for the land based sector this would be LANTRA

published in April 2010[426], predicted serious lack of capacity and recommended addressing the issues restricting the availability of an adequate skilled workforce, while acknowledging that workers on the forest floor are difficult to reach.

It is interesting to note how issues, such as a perceived decline in the coppice industry, ageing workers, lack of new entrants and organisation are common features of investigations conducted over the last century. Attempts to form a new Coppice Association are currently being made, although grass roots support is not evident. The previous Coppice Association failed to achieve co-operation to meet orders[427]; hurdle customers have recently been lost, although the order could have been met by collaboration (Jackson, 2009). The situation in the chestnut sector is completely different. Both pale makers and post and rail producers have traditionally pooled material with a middleman (or merchant) making up the orders from various sources. This practice continues today; the pale shortage is currently so acute (June 2011) that a "*traveller*" is being employed specifically to source these and stimulate production (interview 7).

10.4.2 Current Research into the workforce in the South East

The author has been involved in this area of research for over fifteen years. The results presented in this thesis are the most recent in a series of investigations[428]. Different approaches, including focus groups, face-to-face questionnaires and interviews, have been used to collect data, which has been combined to provide information about those currently involved in the coppice industry in the South East. The centerpiece of this research is an archive of over two hundred data collection sheets dating from 2008. The phenomena known as "*mushroom cutting*"[429], where enthusiasts join the industry but give up quickly, was the rationale for separating out the newest entrants reducing the number to 186, 11 of whom were female.

[426] See http://forestryscotland.com, accessed 18/9/10
[427] See page 136
[428] For previous investigations see Bartlett and Rossney (2007)
[429] A phrase used by the established coppice cutters

Age was a key question, to validate the assertions that most coppice workers had an *"average age approaching 60"* (Hampshire County Council et al., 1990) and that few were under 50 (Gordon, 1993). In contrast, while the largest single cohort in this study were aged between 40 and 49 years old, almost a third were less than 40 (Figure 9.8, page 156). This suggests either that previous surveys did not embrace a representative cross section of the industry or that more, younger, workers have entered the industry since the early to mid 1990s. It is interesting that the new entrants group had a wide range of ages with only half under 30 and one over 50 years old. The most long established group are those who began working with older family members, most of whom work predominantly with chestnut. Woods (1921) considered that manual dexterity, such as that required to use hand tools efficiently, is acquired most effectively during childhood. While cleaving chestnut is, according to Edlin (1973) a simple and unskilled activity, it is apparent that those earning most from this activity began as children. Further attempts to train pale makers in response to the current shortage have not met with success, despite apprentice wages being offered for the six months it was envisioned that it would take for trainees to develop enough speed to move on to piece work (interview 16; Torry Hill Chestnut Fencing). This does resonate with the length of apprenticeships in the past and the apparent unwillingness of established businesses to take on older workers. Investigations into the length of time individuals had worked in the industry (Figure 9.9, page 158) showed that more than 60 had been involved for less than 10 years, further suggesting that concerns regarding the lack of new entrants may be unfounded[430].

Coppice workers can be classified in a number of ways. Collins (2004) made the cultural distinction between the "*new*" and "*old"* traditions. Classification by species worked[431] i.e. chestnut, hazel or mixed broadleaves, encompasses both traditions within each category. The age of workers was analysed by species (Table 9.3, page 156) revealing that the majority of the younger workers fall into the mixed

[430] The newest entrants, those who had been in the industry for less that three years, were excluded, meaning the 37 in the '< 5' category had more than 3, but less than 5 years experience
[431] This term is used advisedly as not all workers cut coppice

species category. This could indicate the older workers are more specialised but equally may suggest that the younger workers are more flexible.

Over half of the respondents had a home address in Kent, with almost a quarter more in East Sussex. Ten of the new entrants lived in Kent, four in East and three in West Sussex. This was not a systematic survey, and this almost certainly reflects the researcher's higher profile and greater credibility in Kent[432], so should not be interpreted as necessarily indicative of the size of the workforce in these counties. The pattern of residency showed relative stability, with most that had moved house in the previous five years remaining in the same area. This may be associated with work patterns and location as over half travelled less than ten miles to work.

Investigation of the reason for joining the coppice industry revealed that a third had done this for social reasons, either joining family or, to a lesser extent, friends who were working in coppice (Table 9.6, page 159). Others gave personal reasons such as wanting to work out of doors with some mentioning that environmental factors, i.e. ethics, were the principal reason. This question caused considerable difficulty, with some struggling to go beyond saying they liked it, others that it was their job and some failing to give any reply. When asked directly whether they had family members working in the coppice industry 80 (43%) of the main group and four of the new entrants said that they did, and so belonged to the old tradition. Others, joining as a result of local connections, could also fall into this category, as the criteria are based on learning their skills from existing, not necessarily related workers. Over half the women in the survey had family in the industry, and work with them. At least 62 of those with family in coppicing worked in chestnut[433], suggesting that a significant proportion of this sector is based on family groups. There are many more chestnut workers, particularly in Kent, than were involved in this survey. When the groups are visited in their yards or the wood, it is often only

[432] The author has lived in Kent for much of her life, was County Woodland Officer for Kent and is well known to the workforce

[433] This figure could be higher, as 7 others not specifying species and 3 of the 6 who failed to respond to this question were chestnut workers

the leaders who answer questions. There is an understandable reluctance to provide information about workers, even when these are clearly visible. Some are very shy but willingly demonstrate their skills, for example the pale maker in the photograph below, who, while willing to be photographed from this angle would not talk. In other cases, the boss is unwilling to let workers waste time being interviewed.

Figure 10.3 A Kent pale maker at work

The finding that half the Kent based workers had family connections (Table 9.8, page 161) suggests that this county may be the stronghold of the 'old' tradition although small remnants are reported for hazel in Dorset and Hampshire (interviews 34 and 47; Collins, pers comm.). This was not a systematic survey but this is a potentially important result as there is increasing interest in heritage crafts, for example the setting up of the Heritage Crafts Association in May 2011[434].

[434] For more information see http://www.heritagecrafts.org.uk/about.html, accessed 10/10/11

Collins (2004) refers to the "*Greenwood Trades*" and the term "*Underwood Industries*" has also been used, for example, by FitzRandolph and Hay (1926a), both referring to coppice work. The author was aware that many coppice workers prefer not to be associated with either of these categories and this was the rationale for asking respondents how they would describe themselves. The established chestnut cutters and processors, particularly the family groups, have strong opinions about those who have made a life-style choice to work in the woods, regarding them as hobbyists (or worse as hippies) rather than real coppice workers. The fact that those of the new tradition embrace the term greenwood work while those of the old strongly reject it poses a real problem for any initiative to bring the sectors together and speak with a unified voice. It is likely to have contributed to the very low representation of chestnut workers in the National Survey (Collins, 2004), despite the high overall response rate of 44% (literacy challenges may also have contributed but, although the author is aware of this issue no attempt has been made to quantify it). Self-classification was complicated further as many do a variety of different tasks, as demonstrated in Tables 9.23-9.27, on pages 178-182. Some only cut, others only process but some do both. More than half described themselves as coppice/wood cutters or forestry workers (Table 9.9, page 161) with only four referring to themselves as greenwood workers, all from the new tradition. Most of the new entrants group described themselves as coppice cutters, although others were principally involved in processing.

Employment status was explored, with most being self-employed. Of the forty four who were employed twenty seven were based in Kent (Table 9.10, page 162). Two of the new entrants were employed. There was considerable reticence around this question and discussions revealed that, while few actually employ workers most collaborate, either by working regularly with others or by helping each other out when necessary. In both cases there is no formal agreement. Many yards are hives of activity with many people working as part of the team, albeit on a self-employed basis. For the merchants this is an effective way to ensure reliable supply of product, and many take responsibility for sourcing/buying standing woodland, arranging for raw material to be brought in for processing and

for selling the product. While some charge for the work space (e.g. interviews 7, 8, 16), paying those working in the yards less than those who process in the woods and bring in finished products, such as pale bundles or rails, others show a high degree of care and concern for their workers despite the fact that they are not required to do so (interviews 23 and 30[435]). The focus groups explored the issue of staff with twenty five feeling they had enough staff while twelve did not; three identified a good team as a significant strength. The response to whether these were the right staff and how efficiently these where being deployed was not found easy to answer. The same was found when the size of businesses was raised; some, particularly those focusing on chestnut, support[436] more than 25 workers but the majority are simply not used to considering their groups as businesses in the accepted sense.

Working practices were investigated further by enquiring whether material was bought in or felled, with the majority cutting for themselves, six relying on buying in graded round wood and others (34) doing both. Eight chestnut workers referred to having cut in the past but were now processing; a pattern that was apparent from a number of interviews with older workers moving out of the woods as they aged and developed health issues, usually back and knee problems. Discussion revealed many alternate work practices, depending on demand, making no clear distinction between different modes. Processers may have been working with material cut by an associate but that they hadn't actually bought. This is further evidence of the complexity of the industry and of collaborative working without distinct demarcations. This was particularly apparent in the groups involving different generations of the same family. The firewood merchants buy in material for processing, often from several sources, in order to maintain supply. An example of seasoning stacks is shown in the following Figure 10.4.

[435] This was only revealed when probed as a result of comments made by workers; in both cases these are family chestnut businesses who are not employing but collaborating with self-employed workers who are also families. Both the workers and the merchants have known each other and their families all their lives.

[436] This is not the same as employing but rather a financial relationship of convenience to both parties

Figure 10.4 Seasoning stacks of chestnut for firewood delivered to the merchant by local cutters (interview 5)

The focus groups explored the tasks carried out by the participants themselves. This revealed a high level of confidence in practical tasks but demonstrated that, as business owners, they were aware of their weakness in the areas of paperwork, financial management and planning (Table 9.23-9.26, pages 178-182). Many indicated that they needed training in particular areas but the idea of employing (or even collaborating) with others with complementary skills was not apparent, although wives taking care of the paperwork was mentioned.

Those involved in cutting were asked the average acreage cut each year, with a total of 335.4 hectares reported, with 102 identified as chestnut, 9.3 hazel and the remainder as mixed species. However, 59 who gave their average annual area for mixed species but identified themselves as chestnut workers and eleven chestnut cutters did not answer this question implying the chestnut area is likely to be an under-estimate. These figures are roughly comparable to those reported to the coppice survey, and support the conclusion that a significant area of coppice is cut in the South East annually.

Seasonal working, such a feature of the coppice industry in the past (Woods, 1921; FitzRandolph and Hay, 1926a; Garrad, 1954), appears to have declined, as 162 of the respondents work in coppice throughout the year. However those that continue to work seasonally are working in the woods during the winter and turning to gardening, farm or estate work in the summer. None of the investigations undertaken explored whether work was undertaken on Forestry Commission or nature conservation organisation owned land. These impose strict regulations regarding cutting period and timing of removal of material, as well as health and safety regulations. This, combined with fewer opportunities for consistent farm work over the summer, may have instigated the move away from working on these sites. It is entirely possible that this contributed to the perception that the coppice industry had declined (e.g. Betts and Claridge, 1994) and led to the development of market led initiatives to stimulate it; that this was not the complete picture may be the reason these have not been successful.

Continuing on this theme respondents were asked if they had any additional source of income, with over half replying in the negative. Some did not want to answer this question, eight had a pension[437], and several referred to their wife's earnings. Gentle probing revealed two to be married to bank managers and another, a traditional chestnut worker, is known to be married to a vet.

Over the last century the principal products of the coppice industry have not changed significantly. FitzRandolph and Hay (1926a) found that chestnut was the most valuable coppice wood, used primarily for fencing, with hazel used for hurdles and thatching material; this remains the case today (Table 9.12, page 164). Overall the most important product is firewood across all species and all the counties represented in the survey; this continues a tradition going far back in time.

[437] Whether this was additional to the state pension was not stated

The current use of the woodlands of South East England as a source of fuel has not been quantified in this or any other study. In contrast, the potential yield in terms of the wooded area and the annual increment[438] has received extensive consideration (e.g. Clegg, 1994; Grayson, 2006) with the overall conclusion leading to wide promotion of wood fuel, for example by the Forestry Commission (2006) and West Sussex County Council (2010). It is interesting that this does not take into account the existing market for domestic wood fuel or compare the financial viability of producing bulk wood chip or pellets with logs. This is despite the fact that virtually every farm or village shop and Parish Magazine in the South East will carry at least one advertisement for logs during the winter months (Bartlett, 2011b).

Almost a third of those involved in the questionnaire considered that their work constituted selling a service, and this aspect also emerged in the focus groups with the acknowledgement that coppice work is environmentally beneficial. Those of the new tradition are particularly engaged with selling woodland management services with many paid to cut as well as making additional income from selling the roundwood and/or a product they have made (interviews 31, 47 and 49). Some coppice workers also lay hedges, although many giving this response were selling stakes and binders rather than actually doing it themselves. The finding that only two were producing any pulp wood is significant and, on the basis of anecdotal accounts, is a notable change from the situation in earlier decades (Betts and Claridge, 1994; interviews 4, 19, 27 and 29).

Investigations into the hazel coppice industries have found that the quality of the standing material is a constraint and this has been the basis of the grant schemes to restore hazel coppice (Colebourne, 1983; Hampshire County Council, 1995; Howe, 1993). This aspect was also considered in the national survey (Collins, 2004) and raised as the principal issue at the South East Coppice conference (Bartlett, 2011a). The fact that age of material, while significant for hazel, is of little

[438] The technical term used in forestry for growth rate

concern to the chestnut workers has previously been explained[439], so it is perhaps not surprising that a hundred of the respondents to the questionnaire indicated that they were not limited by the quality of available material for cutting or processing. Quality for chestnut and mixed species relates to the relative proportions - and value - of different products that can be derived from a specific cant. Determining this before cutting is highly skilled; even the most experienced buyers can get caught out. A previously profitable cant was bitterly reported as "*unaccountably disappointing*" on the next rotation (interview 19). Quality may also relate to site access. Buying standing wood was alluded to in the focus groups with a few rating this among their skills although the only suggestion to improve assessment was to look at the wood more than once.

The new entrants found many questions difficult to answer, probably because they were still in the process of establishing a work pattern Three reported sourcing good quality material to be a problem, seven said it wasn't; one said there were some problems and seven were not able to provide an answer on this topic.

Some of those involved in the coppice industry own woodland. Twenty five of those involved in this research (questionnaire respondents combined with those interviewed) admitted to owning just over 1013 hectares. Ten of these were based in Kent and six in East Sussex. All but 97.2 hectares of this woodland is on large estates and the remainder is in small blocks.

Almost all questionnaire respondents, including the new entrants, sold most products by word of mouth, the standard method used in the past (FitzRandolph and Hay, 1926a; Woods, 1949; Edlin, 1973). Some used text, predominantly local parish magazines, but few used the Internet with only three giving this as their main method of interacting with customers. Twenty four of the forty six businesses involved in the focus groups used computers, a surprisingly low figure. These results imply that the customer base and distribution networks tend to be local, although many chestnut sales are to merchants who sell on; this is the only sector

[439] See Sections 7.3 and 7.4, pages 106-112

for which a significant export market has been identified. While marketing and promotion were identified as opportunities none mentioned the Internet as a useful way to do this. There have been some attempts to promote firewood and coppice products via websites, set up by those outside the industry[440], but these have not been successful, partly due to the transport costs associated with small orders (e.g. interview 3).

The coppice workers, both cutters and processors, were generally optimistic about prospects. Over a third felt that their business was growing and a similar number that it was steady; only nine reported a decline. Perhaps surprising only five of the new entrants were seeing an expansion, although perhaps it was difficult for these to see a pattern. 35 of the 46 who took part in the focus groups said their businesses were doing OK or well with four responding they were not doing well (Table 9.29, page 183). Further questioning, intended to provide information on commercial trends over time was not successful. Many found comparing earnings to 2000 to be just too difficult, with some unable to remember. In retrospect the date, chosen to be memorable, may have been too distant, but despite this over a third reported increased income. Almost a hundred reported a rise in selling price although ten claimed these had fallen, indicating the majority to be positive about business prospects. The author was originally concerned that bias could be introduced if respondents thought giving the impression that they are having a hard time would be advantageous; this did appear to be the case.

Questions relating to money are always sensitive. The number prepared to provide information was unexpectedly high, with only 23 (~12%) unwilling to answer. Nearly 25% of respondents reported earning less than £10,000 (in 2008), nearly 19% between £10 and £15,000, 22% £15 to £20,000 and a further 22% a higher amount. The failure to specify earning from coppice, rather than including any additional income, was a flaw in the questionnaire design, but as 162 work in coppice all year round this indicates earnings to be generally low.

[440] For example,the Log Pile http://www.nef.org.uk/logpile/, accessed 9/12/09

Most are self- employed, so will be discounting business expenses, and are working locally and spending little on advertising. Little information was gained from the new entrants on this subject; questions about earnings were difficult for these to answer.

The Focus groups which brought key workers together followed the LANTRA Skills Check model[441], designed to stimulate participants to consider their businesses from a different perspective and so identify - for themselves – the potential for development. Forty six businesses (31 chestnut, 9 hazel and 6 mixed species) took part. This was an unfamiliar way of thinking for most participants and every effort was made to put them at ease[442]. However, the reaction was surprisingly positive with several saying afterwards how much they had enjoyed it, and, tellingly, that it had made them think. The results, given in Tables 9.16 – 9.19 (pages 172-174) suggest a high degree of confidence in their products, skill and experience and the availability of raw material. Some considered the environmental aspects a positive aspect of the industry while the key weaknesses were linked to under-capitalisation, with lack of skills and labour in specific areas also mentioned. Opportunities were associated with the extent of the resource and growing markets, while threats focussed on legislation, bureaucracy, insurance costs and personal health, with some discussion of the impact of poor quality products and under-cutting prices, uncertain markets, cash flow and cost of housing and yards.

Businesses then considered first the external and then the internal factors that influenced their ability to deal with change. Again it was legislation and compliance with regulations that was felt to be the principal restriction, followed by the weather. The latter is interesting as weather conditions can affect working conditions, especially on the Weald, with mud making extraction difficult, but hot summers increase charcoal sales and cold winters the demand for firewood. Climate was

[441] The author is a qualified by LANTRA to carry this out and LANTRA approved the modifications to the standard format prior to this research being carried out

[442] The focus groups were held in work yards so surrounding were familiar and those involved generally knew each other so were more relaxed and willing to talk than in front of strangers or competitors

also discussed as extending the growing period in one group. Internal influences were age and health related, both of staff and machinery, with the potential for diversification and need for training identified as important for the future. Standardisation of products and smoothing the peaks and troughs in demand were thoughtful reflections. The focus of the groups was then moved back from the business level to look at personal potential by asking participants what they did, how good they were at it and what, if anything, would enable them to improve. This revealed a high level of pride and confidence in practical skills, i.e. felling and processing, combined with lack of ability and/or inclination to deal with paperwork, credit control and forward planning. Almost half, despite being the mainstay of a business, did not use computers; twenty four did have access to computers, either using these themselves or by having a family member with this skill. This is extraordinary. Many factors would be predicted as common to small rural businesses, however, the lack of engagement with technology and the confidence in both personal ability and the products is perhaps more surprising.

The lack of organisation in the accepted sense was apparent, with discussions on the topic of business planning revealing that for most the goal was to keep going rather than to expand. Eleven had a business plan, with eight of these, six in the chestnut group, adhering to this. Thirty five felt their businesses were doing well or OK with only four giving a negative response (the others had lost interest by this point). When asked about financial matters, the chestnut workers began to stand out. 22 of the 31 who felt they were in control of day-to-day money matters and 24 out of the 35 who admitted planning their finances were in this category.

Formal questioning ended by asking participants to reveal their annual turnover, (Figure 9.14, page 188). This shows a wide range but caution is required as it is possible some, particularly those in the lower range, did not differentiate between earnings and turnover. It is clear that those with the highest turnover are concentrating on chestnut and, with the exception of one mixed species business these are the only ones that turnover more than £50k annually.

Chestnut businesses are also clustered at the lower end of the scale, with almost half below £24k. The hazel businesses tended to have low turnovers, with most below £24k. Turnover is usually a function of business size. This, in turn, is often determined by the number of employees. It is virtually impossible to quantify these informal groupings in this way although some admit to supporting at least 25 workers. While the majority of these are self-employed, it cannot be assumed that this is indicative of a black economy[443] operating, as there is so much buying in and selling out that it is difficult to see how this could be advantageous.

10.5 The Organisation of the Coppice Industry

Clear patterns of organisation have been identified during this research. Businesses based on mixed hardwoods tend to work alone or in small groups, which may include family members, with firewood the principal product. This is usually sold locally by word of mouth, parish magazines and cards in shop windows. Pulp wood, now increasingly known as chip wood, is collected from roadside by hauliers as a last resort; direct sales are much more profitable (interview 23). Pulp lengths[444] are traded locally particularly by forestry operations such as Landmark[445], who were selling seasoned pulp lengths to firewood processors in 2010 (interview 2 and 27). This is outwith the main coppice industry.

The hazel workers tend to work alone, or in couples[446], and sell direct to customers. Farmer's Markets have become increasingly important and many demonstrate at shows and craft fairs. In general the hazel workers are sociable, particularly in comparison to the chestnut group, and are more willing to join groups and respond to surveys. Many would be classified as of the new tradition, having previously worked in other areas. The exceptions are the small number of

[443] Where transactions are cash based with no paper trail, enabling avoidance of tax
[444] Approximately 4 foot
[445] Contractors to Defence Estates
[446] Several married couples work together in the woods; not seen in the chestnut industry where, when wives/partners are involved these are on the administration side rather than the woods

traditional hurdle (interview 47) and spar makers (interview 34), who sell on their products to others and tend to keep themselves to themselves.

The chestnut workers have a more complex and well established organisation, as well as the highest proportion of family groups (Table 9.7 page 160). In many cases these have the characteristics of the old tradition, as defined by Collins (2004) and, despite the different raw material and products, resonate with Hardy's depiction of Wessex hazel workers at the end of the 19th century (1912, reprinted 1974). Skills are still passed directly from one generation to another. Some of those involved in this research can trace their coppice heritage back over eight generations (interview 22, young David[447] is the ninth; interview 15). Many can trace back to their grandfather but are unsure what their great grandfathers did[448]. When visiting groups in school holidays and weekends children are often seen helping dads, brothers and uncles.

A number of businesses serve as focal points gathering in both graded round wood, for example for pales and post and rails, as well as processed products. These have yards with in-house[449] processers such as pale makers, and a co-ordinator, effectively a coppice merchant, taking care of sales and sourcing. Processed products, again bundles of pales and posts and rails, are also made in the wood, where the material was cut (as illustrated in Figure 10.5, on the following page) and are delivered in, sometimes daily. This pattern means communication and cohesion between and among these workers is much greater than in the more isolated hazel and mixed groups, although information may be modified as it is transmitted. The co-ordinators compete for both raw material and markets but also regularly trade with each other to make up orders, and, when faced with the threat of falling standards, combined to form the Chestnut Manufacturers Association[450].

[447] Well into his 40s
[448] This is standard - few people can say much about their great grand parents
[449] But self-employed
[450] See page 110

Figure 10.5 A break for splitting rails on the felling site

Collaboration, then, is standard practice with those who work in chestnut whereas, despite their greater involvement in coppice groups, hazel workers just don't seem to function in this way (e.g. Jackson, 2009). This may be because the merchants (or dealers) disappeared around fifty years ago (Collins, 2004); although at least one has emerged recently, employing mostly Polish cutters and processors, providing standing woodland and taking all the produce (interview 47).

Some chestnut groups have wiring machines so sell finished rolls of fencing (e.g. Homewoods, Fairseat and Torry Hill) while others sell unwired bundles, each with 25 pales. In the past snow and building site fencing was a significant outlet and pale bundles were collected by the lorry load and taken to the Midlands, Manchester, Ireland and Scotland to feed wiring machines, reducing transport costs. This still happens, but to a limited extent. Despite reduction in the traditional markets one business is selling between 10 and 15 kilometres of wired paling a week and is limited by availability of pales. As well as setting up training schemes this is employing a well-known coppice worker as a traveller to buy pales over a large area (interview 7 and 16, updated May 2011).

The export market for chestnut, despite the production in the Limoges area of France, is significant and growing. Short lengths go to Germany to be formed into walking sticks (e.g. from Chiddingfold, observed in October 2010), with longer lengths going to Belgium for restoration of First World War trenches (interview 30). Unwired short pales are exported to Holland for dyke revetment and wired paling to both Holland and Belgium for garden use. Post and rail fencing is also exported in significant quantity (interview 16, 20 and 23).

10.6 Issues for the coppice workers

While not planned as part of this investigation a participatory exercise was undertaken by the author during the South East Coppice Conference (Bartlett, 2011a). Comparing the results with those identified by the focus groups, as shown in Table 10.1, on the following page, requires caution as the participant profiles were very different and the investigations were not contemporaneous. The Coppice Conference was more recent than the focus groups, and, although the aim was to raise awareness of both sectors it was attended predominantly by hazel workers, accounting for the high profile given to neglected (overstood) coppice and deer. Recent conversations with the chestnut merchants have highlighted fresh concerns regarding FSC certification (e.g. interviews 19 and 30). One, Torry Hill, backed by a large estate, has accessed funding to achieve certification for both the woodlands and processing operations, with the result that this has cornered the corporate market[451], as FSC certification is specified in procurement policies. Businesses with little capital cannot afford certification or access grants. There is concern that quality will fall as buyers focus on FSC certification, with impact on the whole industry. Planning restrictions in the AONBs are also an emerging issue as yards and workshops are classified as brown field sites with development potential so can be developed for housing; this may influence land owners and reduce renewal of leases. If the exercise was repeated with wider particiaption it is likely that these two issues would feature more strongly for the chestnut workers.

[451] Including government agencies and local authorities

Table 10.1 Comparison of worker issues (* and # indicate common issues)

	FOCUS GROUPS	COPPICE CONFERENCE
1	Legislation#	Neglected woods need for restoration
2	Weather and climate change	Accessibility/availability of grants (for cutters rather than owners)
3	Insurance costs	Extended support for new starters
4	Lack of workers and high labour costs	Internal standards (quality of hurdles) and deer numbers
5	Financial aspects - interest rates, taxes and the economy#	Landowner co-operation
6	Competition	Affordable housing/yards/workshops
7	Fuel costs	Rotations for conservation are not commercially viable
8	Awareness of green products*	Insurance, VAT, tax, complex contracts#
9	Changing habitat management	Increase public understanding*
10	FSC certification	Use groups to share workload, machinery and cut delivery miles

The proposal to form a national association[452] was discussed, although none suggested this as a potential solution to any of the issues raised. The Coppice Conference passed a resolution that further discussions should be inclusive and representatives of all coppice groups and of those counties with no such organisation invited. This reflected concerns that the proposal would not succeed unless it effectively represented the views of the industry as a whole[453].

[452] This originating from the earlier conference held in Cumbria (Wood Education Trust with the Coppice Association North West, 2009)

[453] A positive result from the November 2010 meeting was the formation of a steering group, under the chairmanship of John Sinclair, of the SSCG, to consider this aspect before progressing further (the author is acting as impartial secretary)

10.7 The differences between the hazel and chestnut workers

This study of the coppice workforce, considered in conjunction with the historical background, implies that the coppice industry has changed. In the past it was a single entity, with regional differences that reflected both raw material and local demand. This is no longer the case.

The generalists, producing firewood from mixed species, may be associated with hazel and/or chestnut workers, or with arboriculture. These seem to be versatile and, having gained chainsaw accreditation, use this not only to produce logs, but also to carryout tree maintenance, garden and farm/estate work in the summer. The chestnut and hazel workers are more specialised and the differences between these that have been identified in this research are listed in Table 10.2, on the following page.

There are common issues, notably the cost of living in the South East. Coppice workers require not only affordable housing but secure yards and work places. Theft of equipment is a widespread concern as chainsaws in particular are readily saleable. An investigation carried out, by the author, for the High Weald AONB Unit at the 2008 Weald Wood Fair demonstrated some of these difficulties[454]. The chestnut sector is particularly vulnerable as, if the collecting yards that form the centre of the groups are lost all the workers in the supply chain are at risk. These are also affected by changes in, for example, agriculture. Collins (2004) concluded that, while the coppice and other craft industries had in the past been concerned with supplying the needs of agriculture and other rural industries, this was no longer the case, suggesting they were nowadays feeding the desires of green consumers. While this resonates with the pre-war artist craftsman movement (Brassley, 2006; see also page 74 in this document), it is not the case for the chestnut industry which remains focused on fencing production.

[454] Full report available at http://highweald.org/home/research/83-housing-needs-survey-of-rural-workers-in-the-weald.html, accessed 2/12/10

Table 10.2 Generalised differences between chestnut and hazel workers

CHESTNUT	HAZEL
Learn from existing workers, often family members, starting out while young	More career-changers who learn by attending courses; often little previous craft work experience
See coppicing as a way to earn a living	Coppicing chosen as a way of life
Do not see need for training, other than on the job[455]	More interested in joining groups and attending courses
Workers are links in an extended supply chain between the wood and end-user	Tend to be in direct contact with both customers and landowners.
Feed graded semi-processed material and finished products into focal points overseen by coppice merchants	Usually sell finished products (the exception being rods to hurdle makers and gads to spar makers)
Age of material is not an issue, although skill is required to assess potential profit again cost of exploitation	Value added products can only be produced from hazel of a limited age
Tend to see problems as insolvable (the weather), a fact of life (legislation and taxes), or problems they need to solve[456]	Tradition of grants combined with environmental awareness mean many workers feel they should receive direct subsidies[457]
See completion within from falling standards of workmanship, undercutting prices and FSC certificated products	See completion as coming from outside, e.g. imported Polish hurdles and thatching spars
Workers are loosely organised in businesses	No hazel equivalents

[455] The coppice harvesting efficiency course is popular as it improves speed and so earnings, and the advantages of the forestry first aid course becoming more accepted

[456] In late 2010 the author advised on recruiting pale makers; the statutory apprentice minimum wage[456] was used to support trainees while they developed enough speed to move to piece work.

[457] There was some conflict at the coppice conference with comments regarding funding generating the reposte that "*this is an industry not a charity*"; Further the calls from the Coppice Association North West for the proposed National Association to have charitable status reduces the likelihood of this being a representative organization

10.8. The Significance of these differences

Industry can refer to both scale and intensity of work. The term *business* implies organisation, hierarchy and leadership as well as interdependence between workers involved in the supply chain (Williamson and Winter, 1991). Coppice cutters depend on woodland owners for raw material and then direct sales or a processor, middleman or merchant to buy and sell on their products.

The social structures involved in the production of chestnut fencing are varied, and several scenarios may be found in the same group. Payment is based on productivity, so cutters may switch to processing with age. Responsibility, from identifying woods to be cut to selling the product, almost always rests with one person, a role passed from father to son in many cases (interviews 7, 19, 22, 23, 30). Many workers have also followed in their father's footsteps (interviews 8, 18, 20 and 25) and a similar hereditary pattern is found in estate ownership, so all know each other well. There is no parallel in the hazel sector[458] although it was undoubtedly a widespread pattern in the past. Some owners, predominantly the estates, weed coppice stands, replace stools and permit summer cutting acknowledging that their income depends on the continued viability of the cutters livelihoods. Others, particularly conservation organisations, impose rigid restrictions.

Understanding and acknowledging these aspects is fundamental to maintaining and developing the industry. If the coppice workforce is considered in the context of the social sciences then the chestnut workers emerge as an example of a group with a high degree of social capital and community cohesion (as defined by Stewart, 2010). Close horizontal and vertical[459] links have developed over time while in contrast the hazel workers have new dynamic links through coppice groups and directly to their customers. This is likely to enable them handle change more easily than the chestnut group, who are more firmly rooted in the past.

[458] The author is only aware of one intergenerational group working hazel, The Cleers. Marcus works with his father Paul making hurdles.
[459] The inter-generational aspects could also be termed *cultural capital*

Little has changed in the chestnut industry for decades. The same tools, with the exception of chainsaws, are used to produce the same products. Some now have powered, rather than hand wound, wiring machines[460] but production, though mechanised, could hardly be considered automated. Responding to change, whether in markets, available labour or raw materials, requires innovation. The distinction between *entrepreneurs* and *workers* is that while some people are innovators, aiming to develop their business, others are happy to continue making a living. Both are equally important, although the latter almost always outnumber the former. Some hazel workers are considering introducing electric secateurs[461], and have extended their product range with revivals of traditional products, such as pimps[462]. Chestnut innovations are Homewood's screens made of close wired pales and Torry Hill's FSC certification. Whether this represents stability or lack of innovation is debatable. The classic theory of entrepreneurship, developed by Schumpeter (e.g. Becker and Knudsen, 2009) is based on motivations, as listed in Table 10.3, below.

Table 10.3 The motivations of entrepreneurs

after Becker and Knudsen (2009, page 316)

TYPE OF ENTREPRENEUR	MOTIVATION	ORIGIN OF MOTIVATION
The factory owner and merchant	Care of the family, duty	Socially transmitted
The modern captain of industry	Will to win, exercise power	Inborn personality trait
The manager who actually carried out the entrepreneurial function	Applause of colleagues, recognition from others	Socially transmitted
The founder (promoter)	Urge to action, seeking and carrying out new possibilities	Inborn personality trait

[460] But these are still used e.g. interviews 30 and 43
[461] These were demonstrated at the South East Coppice Conference
[462] Bundles of kindling made of birch twigs, now desirable for filling disused fireplaces

This research has found that the chestnut businesses are predominantly focused on maintaining, rather than expanding, businesses they have inherited so are in the first category[463]. A sense of responsibility for the well-being of their workers is evident, with some continuing to take in very small quantities from the retired and infirm, provide interest-free loans and/or advance payment in emergencies, and provide opportunities for locals who would otherwise be unlikely to find work[464]. Innovation often sweeps away traditional, a process Schumpeter termed creative destruction (Becker and Knudsen, 2009). Is this really what is wanted - or needed - to address the coppice problem? An alternative would be to cherish the existing workers, particularly from the old tradition, value the cultural heritage they represent, help them overcome the problems they face and so to continue. Coppicing is a service industry, delivering Ecosystem Services, biodiversity and landscape benefits, as well as a manufacturing one.

Institutional capital is the knowledge, information and understanding that those in power have about those who are affected by the decisions they make (discussed, with respect to agriculture, by Platje, 2004). Little understanding of the perspective of coppice workers, particularly the chestnut group, is evident from the agencies and this is likely to be the root cause of the failure of the attempts to address the coppice problem. This was acknowledged as far back as the early 1920s by FitzRandolph and Hay (1926a) who considered any scheme to promote the industry that did not originate directly from the workers themselves, and was not based on the development of mutual trust, was doomed to fail; wise words that have been proved true. These authors identified many of the same issues as this research, and emphasised the role – and responsibility - of woodland owners in maintaining and supporting the industry. Woods (1949) went further, describing a triangle comprising workers, markets and woodland managers, and that these last should be trained in crafts so they understand what is involved for the workforce.

[463] Torry Hill Fencing, recently set up by an estate, with grant aid, and with an employed manager but the rationale for this was to keep the extensive Torry Hill Estate chestnut woods commercially managed, generating significant income for the landowning family
[464] Albeit at a very menial level; these are part of a team even if just feeding the fire

10.9 Addressing the issues for the coppice industry

The presence of an active coppice industry in the South East has been established although this remains, at least in part, below the radar. The extent of the decline has been questioned in this thesis although there is no doubt that it is based in fact. Moving on, the priority should now be maintaining existing activity, particularly in woods currently managed as rotational coppice. The most effective support measures are likely to be those that seek to overcome the barriers identified by those involved in the industry.

10.9.1 The environmental sociology context

Coppice woodland management is a human interaction with a natural resource. In the early 1960s Duncan proposed the POET model, which suggests that the population (P) adapts to the local environment (E) by a combination of social organisation (O) and technology (T) (reviewed by Dunlap, 2008). The disciplines of environmental sociology and landscape ecology emerged in the 1970s and integrated studies of society and nature, with these no longer being treated as separate areas (e.g. Irwin, 2001). Dunlap (2008) has charted the move from the Human Exceptionalism Paradigm (HEP), with humans being considered separate from nature to the inclusive New Environmental Paradigm (NEP) (see also Catton and Dunlap, 1978). The inter-relationship between man and environment is integral to the development of Actor-Network Theory (ANT or more correctly A-NT) by Latour (2005), which views the environmental resource, such as woodland, as an active participant rather than a passive resource, summing up all the interactions (see also Andersson and Marell, 2007).

This theoretical background is particularly relevant when considering how knowledge and information is transmitted as a pre-requisite to effective development. Organisation in the chestnut sector has been found to be loose groups with the merchants (or leaders) acting, in ANT parlance, as placeholders; woodland owners may also fulfill this role, although to a lesser extent. There is

less structure in the hazel world and no hierarchy, although the coppice groups[465] could be considered in the role of place holders. The difficulty experienced by the agencies in communicating with the coppice sector lies in the failure to understand, and so tap into the existing structure(s). This was acknowledged in recent research into the forestry industry in Scotland which concluded that it is difficult to reach the workforce on the forest floor, and that this hampers development (Anon, 2010b).

The literature on the movement of information through networks is extensive and was reviewed, with respect to agriculture, by Bartlett and Witts (2009). This identified two key factors, the importance of existing networks and the way individuals see themselves in relation to others. Pretty (Pretty and Ward, 2001; Pretty and Smith, 2004) considers this aspect of social capital to be the elements of social or community structure that enable individuals to achieve personal aims and develop their interests. This is dependent on the existence (or development) of relationships of trust, reciprocity and exchange, along with common rules and active connections into networks and groups are fundamental. Clarke (2006) used social network analysis[466] to explore supply chains in Bolivia and found that showing graphic representations to those involved enabled them to see their position in the network and facilitated discussions of how to strengthen and develop it. It would be interesting to apply this approach to the coppice sector.

Traditional knowledge and craftsmanship, termed *cultural capital*, is not necessarily rooted in the past. In the agricultural sector the importance of status (or peer regard) is an important attribute that takes time to develop, and this can act as a disincentive to change, influencing the uptake of agri-environmental schemes (Burton et al., 2008). Rosin et al. (2008) suggests the criteria by which peers assess their position, based on apparent skill and should be taken into account when considering change or development. On the same theme Carvajal (2008) defined *communities of practice* as groups with a shared skill, usually developing

[465] Such as the Sussex and Surrey Coppice Group and the Hampshire Coppice Craftsmen's Group
[466] Using 'NetDraw' software

informally from groups that are already connected. There are certainly well-respected personalities in the coppice sector, although now events such as the pale making competition at the Kent County Show have been discontinued there are few opportunities for demonstrating skill and establishing status[467]. Past cup winners are still proud of their achievements (e.g. interview 1and 17).

This review of the theoretical background demonstrates the academic interest in the processes connecting social and natural capital, particularly in the international agri-biodiversity conservation agenda (e.g. Uphoff and Wijayaratna, 2000; Pretty and Smith, 2004; Rodríguez and Pascual, 2004). There is consensus that social, cultural and institutional capital are all required for the long-term success of any support scheme. Horizontal development can take place quickly, for example as information is shared among networks of workers. Development of institutional capital requires accurate information to pass upwards to inform policy, future research and advice. The agricultural sector has found that offering farmers financial incentives for development is not sufficient, but that resources to build and develop existing networks and communities of practice are also required. Appreciation of local knowledge and skills should be recognised during the development process. The farming sector has achieved this by creating awards for good practice[468] and encouraging visits to model farms (Bartlett and Witts, 2009).

These findings and approaches have not, to date, been applied to development of the coppice sector. There is little, if any, basis for a solely market-based solution although this is still being actively pursued with respect to wood fuel. But how many coppice workers are aware of the Forestry Commission's Wood Fuel Strategy[469]? And how many have read books on coppicing such as that by Harmer and Howe (2003)?

[467] The SSCG Hands on Day is beginning to serve this function; and a spar making competiton is still held at the Dorset Steam Fair (interview 46)
[468] For example FWAG's annual Silver Lapwing Award
[469] Available at http://www.forestry.gov.uk/pdf/fce-woodfuel-strategy.pdf/$FILE/fce-woodfuel-strategy.pdf, accessed 10/12/10

10.10 The policy framework

At the international level the need for public engagement in environmental decision making has been recognised for some time, dating back to the Rio Summit in 1992 and enshrined in Europe in the Aarhus Convention of 1998[470]. By the end of the 1970s the global conservation movement had moved from the previous focus on wildlife and natural resources to a position that acknowledged this to be dependent on maintaining livelihoods, the basis for Integrated Conservation and Development Projects (ICDPs). This represented a paradigm shift from local resource users being considered as desecrators of the environment to seeing them as an essential resource to achieve the desired conservation outcome(s). However, this was not without problems, which included misunderstanding of the social aspects, the need for equitable stakeholder involvement and a method of incorporating indigenous knowledge into programmes and the development of both institutional and community capital (Fisher et al., 2008). Community Based Natural Resource Management (CBNRM) takes this approach further, reversing the top-down, centre-driven approach to conservation and placing responsibility for natural resource and or biodiversity protection by, for and with the local community (Fisher et al., 2008).

The standard method to achieve development is by transforming processes, defined in the DFID[471] *Integrated Livelihoods Framework*, as removing the constraints to sustainable livelihoods. This usually involves facilitators, enabling communities to assess their opportunities and develop coordinated action plans to achieve the desired outcome(s) for themselves (Redclift and Woodgate, 2010).

In the UK this approach has not been adopted extensively as, despite the post 1992 emphasis on community involvement, development activity, for example that intended to address the decline in coppice, has been carried out by those with little or no experience of community development, i.e. foresters and conservationists

[470] Available at http://www.unece.org/env/pp/documents/cep43e.pdf, accessed 11-9-10
[471] The UK Department for International Development

(Fisher et al., 2008). These authors give examples of the adoption of CBNRM by forestry departments in Malaysia and Vietnam, when it was recognised that the management aims could not be achieved without community involvement and support. Despite the number of Forestry Commission personnel with overseas experience, no attempt has been made to investigate the livelihood issues of the coppice workers or to incorporate these into strategic plans[472]. Current UK Government policy such as the 2006 White Paper, *Strong and Prosperous Communities*[473], aims to build community capacity, achieving this by encouraging agencies to empower those currently not engaged with public bodies. Similarly, Public Service Agreement 21[474] is concerned with building more cohesive, empowered and active communities with the skills, confidence and power to influence what public bodies do for them. This, combined with the power sharing elements of the Localism Bill[475] indicate the importance attached by central government to building capacity at local level and places responsibility on those in power to ensure that there is active engagement of marginalised groups in decision making, and further that this should be evaluated (Dickinson and Prabhakar, 2009, quoted in Stewart, 2010).

UK policy clearly intends to promote ways of effectively empowering community groups, although the application of this to the community/communities of coppice workers is yet to be seen. The current Forestry Commission agenda of stimulating demand for wood fuel shows no evidence of having been developed in conjunction with, or even in consultation with, the work force. John Drake, a key player in the chestnut business for 43 years, following on from his father and uncles, gave a

[472] For example, Biodiversity Action Plans
[473] Available at http://www.communities.gov.uk/publications/localgovernment/strongprosperous, accessed 10/8/11
[474] Dated 2007 available at http://webarchive.nationalarchives.gov.uk/+/http://www.hm-treasury.gov.uk/d/pbr_csr07_psa21.pdf, accessed 10/12/10
[475] 2010 Available at http://www.communities.gov.uk/publications/localgovernment/localismplainenglishguide accessed 20/8/2011

presentation at the South East Coppice Conference in October 2010[476] and clearly made the point that, although those promoting wood fuel seem to think they are doing the industry a favour by providing an outlet, there is no waste and a fair price is needed. The only way a living could be made on current prices is by investing in large scale equipment, and he asked why anyone would want to do that when they are satisfied with their low tech – but efficient – production. The financial constraints are clear; the current price for chip wood is less than it was for pulp twenty years ago (interview 27). The appropriateness of using large machinery in ancient woods is questionable as this could compromise the natural and cultural heritage value (Bartlett, 2011b). Many woods are already uneconomic simply because of limited road access[477] so it is difficult to see how, even with funding, wood fuel extraction could be realised.

Couper and Smith (1997) compared the attention paid to farmers, many of whom are powerful landowners, in policy formulation, to that of fishermen who have no role in formulation of fisheries policy. These authors found no forum bringing fishermen and scientists together; a parallel to the situation of coppice/woodland workers and the Forestry Commission. More recently Symes and Phillipson (2009), again considering fishing, investigated the issues for the workforce, finding similar concerns to those in coppicing, namely lack of a stable income, protection of the right to fish (equivalent to cutting), seasonality, affordable housing and inter-generational transfer of local ecological knowledge (in international development this would be referred to as traditional ecological knowledge or TEK). A range of potential support measures are suggested based on the need to build, rather than undermine, social cohesion and consider social issues in policy formulation, particularly the importance of workers self-esteem and cultural identity. The lack of social data, particularly about relationships within the industry, i.e. the functional networks, is identified as a barrier limiting the development of a strategic approach to the (social) sustainability of fisheries (Symes and Phillipson, 2009).

[476] The full report is available at http://coppicegroup.wordpress.com/, accessed 10/12/10
[477] There are recent Forestry Commission grants for extraction tracks in acknowledgement of this

Petrokofsky et al. (2010) reviewed the need for greater involvement of stakeholders in UK forestry policy, emphasising that 35% of the national resource of forests and woodlands are publically owned, and identified the top ten questions (the T10Q project). These authors pointed out that the current Forestry Commission *Strategy for Science and Innovation* fails to move beyond noting the importance of "*regular contact with diverse stakeholders*" quoted by Petrokofsky et al. (2010, page 359).

Involving all stakeholders, including the difficult to reach, is acknowledged as the most effective method of achieving development, whether the aims are socio-economic, environmental or a combination of these. Lip service was paid to this in the past but it seems likely that policy makers and those responsible for implementation will be held more firmly to account in the future.

10.11 Interventions with potential to support the coppice industry

Coppicing is interesting as, contrary to most natural resource issues, the policy agenda is to increase, rather than limit, exploitation. It has multiple values, with the current focus on the conservation and ecosystem service attributes, with socio-economics secondary. To date, no intervention has had more than limited short term effect[478], and the current promotion of wood fuel, with the aim to stimulate woodland management and contributing to carbon reduction targets, a win–win scenario, remains aspirational. Sunderlin (2010) has suggested that win-more-lose-less strategies would be more realistic. Viewing human-environment interactions in wider and/or denser context[479] has been proposed as a way to avoid assumptions and particularly generalised solutions being applied to local problems, without identifying differences (Vayda, 1983). This is the basis of the *negotiated landscapes* approach that aims to ensure that landscape scale conservation[480] is adequately debated by all the stakeholders (Fisher et al., 2008).

[478] See Section 8.2 page 128
[479] A process Vayda termed progressive contextualisation
[480] the land use planning approach currently in vogue

The literature is clear; a genuine participatory approach, including those at grass roots level, even if these are difficult to engage, is crucial for successful rural development; the problem to be surmounted is that of ensuring everyone involved is adequately represented.

Applying progressive contextualisation to the coppice industry would involve considering the woodlands and the workforce as well as the market place(s), consumers and all the links between, an approach suggested by Woods (1949). The responsibility for ensuring this rests with the Government Agencies, Economic Development Agencies[481] and local government. The Forestry Commission have initiated (or at least been involved in) most interventions to promote coppice, often in conjunction with other agencies, including local authorities. The workforce, particularly the chestnut workers, has not been involved; reversing this would be advisable.

The tenet that reduction in coppicing damages wildlife is well-established, although the risks and tolerances have not been clearly determined, and may be less than previously thought. Where specific wildlife associated with coppicing remains, then continuing this practice is of paramount importance. Guidance from the Forestry Commission on the safe period for coppicing when dormice (*Muscardinus avellanarius)* are present conflicts with that produced by PTES (2010), the organisation that runs the National Dormouse Monitoring Programme (Jim Jones, pers. comm.). Freudenburg et al. (2008) discuss Scientific Certainty Argumentation Methods (or SCAMs) in the context of forestry and agricultural pesticide legislation in America, concluding that policy makers are often in the situation of making decisions based on insufficient scientific evidence. Where data or information are absent Freudenburg et al. (2008) have argued for a balanced approach suggesting that rather than trading in absolutes, it would be more appropriate to acknowledge that further research is required, placing the onus on policy makers to ensure the evidence base is as robust as practically achievable. While some species may be at risk from a decline in coppicing this is hard to

[481] While these remain in existence

quantify, particularly as there is limited contact between specialist scientific interest groups and coppice workers[482], despite the latter being the mechanism to achieve the objectives of the former (although Ian White, PTES Dormouse Officer, acts as the secretary of the SSCG).

Increasing woodfuel production is viewed with considerable sceptism by the coppice workers. This research has found that firewood is already the principal product of the coppice industry (Table 9.12, page 164). Those already supplying domestic logs, a product with significantly higher added value than bulk chip, see no reason to spend more time (money) processing logs into chip for a lower return (interviews 5 and 14). Some already produce chip as garden mulch, again higher value than as fuel (interviews 1 and 2). Intervention in the form of machinery grants, to increase efficiency, has resulted in some firewood processors for logs, but whether the profit outweighs the effect of the debt incurred is debatable[483].

Future climate change scenarios, likely to affect wood fuel demand, have stimulated interest in chestnut, originally a Mediterranean species. A report was commissioned by the Department of Energy and Climate Change to determine the extent and distribution of the resource (Lockhart Garrett, 2009). Conversely there is concern that chestnut blight, *Endothia parasitica,* is more likely to become established with warmer weather (Rackham, 1986). The Forestry Commission have produced an information note on climate change and British woodlands, reviewing implications for pests, disease and growth rates (Broadmeadow and Ray, 2005). There is no specific mention of coppice, hazel or chestnut.

FSC[484] certification is a rising concern, particularly for the chestnut sector, as many organisations have adopted sustainable procurement policies that require all timber and wood products to originate from certified woodlands and show evidence of chain of custody. FSC certification was introduced to combat over-exploitation of tropical forests, promoting sustainable management; it has been a powerful tool in

[482] Undoubtedly the most frequent observers of woodland wildlife
[483] No information about, or evaluation of, the SEWTF has been made available by the Forestry Commission.
[484] Forestry Stewardship Council

many developing countries (Pullen, 2010). In the UK all Forestry Commission, Woodland Trust, National Trust and many conservation organisation owned woods are certified, but for the products to be certified all the processors in the supply chain, included hauliers, are required to have chain of custody certification, a significant additional cost[485]. At one time it appeared that the Forestry Commission would assist group certification but this has not materialised. The certification of one business has certainly tipped the balance in their favour and created a competitive environment no longer based on product quality.

Interventions under the Common Agricultural Policy have delivered support for farming since the UK joined the European Community in the 1970s, with woodland owners benefiting from various Forestry Commission grants. Previous research by the author into the coppice industry has led to funding bids to deliver training, identified as required by the workers themselves (Bartlett and Rossney, 2007). This began by considering coppice harvesting efficiency, and without this initiative few coppice workers would have been aware, let alone benefited from, any funding schemes. The degree of paperwork involved[486] is simply too challenging for many.

10.12 Future Research Needs

This chapter has discussed the findings, revealed by both the literature and investigations into the current workforce of this research. These provide insight into current coppice woodland management, the significance of this from different perspectives and suggest possible explanations for the failure of market-based solution to address the coppice problem. The information regarding the current workforce and the issues they face requires extending in order that the barriers to maintaining sustainable livelihoods can be overcome, and so ensure the coppice industry continues to deliver both commercial and non-market benefits.

[485] As previously discussed only Torry Hill fencing, backed by a large estate and so able to raise the 50% to access grants, is certified

[486] The training requires very little as the research enables bids for group funding rather than individual applications

The future research required to underpin development in the coppice sector is summarised below.

- If coppice management is valued, for whatever reason, then it needs to be measured so that trends, increase or decrease, are visible. The coppice survey, or an equivalent method of measurement, is required.

- The value of the coppice sector to the rural economy, in financial terms has not been calculated[487]. Focus on this aspect, supported by the TEEB report (TEEB 2010) would encourage agencies to support development, ideally in conjunction with the workers themselves.

- More research is required into the coppice workforce, the different types of workers, the variety of issues they face, and the ways that barriers to development can be overcome.

- The differences between the hazel and chestnut sectors should be explored in greater depth and used as the basis of communication strategies. Advice on the most effective way to access information from and deliver it to this group should be disseminated to increase institutional understanding (or capital).

- Effective involvement of, and communication with, woodland owners, the workforce and major buyers of coppice products is essential to any development plan. It is challenging to devise a way that the voices of all the stakeholders, including workers/woodland owners from the old tradition, can be heard and considered in plan and policy formulation. It is essential.

[487] There is increasing interest in determining the monetary value of ecosystem services but it remains problematic

- Supply chain analysis would identify existing and potential routes along which information passes and is exchanged. More work in this area, particularly into the complexities of the chestnut groups, would enable a strategic approach to develop both social and institutional capital, as well as community cohesion and resilient livelihoods in the coppice sector.

- Investigation of the conversion of coppiced roundwood into finished products is required to establish the cost and the value added at each stage. This would enable identification of any potential to improve efficiency.

- The size of the domestic log market has not been established and information in this area is urgently required as it has significant implications for the current promotion of bulk woodfuel.

- Woodlands where coppice management is required to for non-market reasons should be listed, prioritised, and the reason(s) that coppicing is not taking place identified. A selection should be developed as case studies to promote greater understanding of the issues from the woodland workers perspective.

- The formation of a National Coppice Association is under discussion. While the advantages of a single point of contact, particularly the Forestry Commission are clear it is difficult to see how all those involved, from woodland owners to multinational fencing companies could be involved. The previous Coppice Association was disbanded in favour of regional and local groups; identifying ways to support and develope these would be more constructive.

CHAPTER 11 CONCLUSIONS

This thesis began by asking questions about the coppice industry in South East England. An attempt has been made to answer these by reviewing the recent historical background, the changes in policy and practice over the last fifty years, the knowledge on which concerns about the decline in the industry was/is based and the attempts to address it. Research carried out by the author to find out more about the industry, particularly the chestnut sub-group, thought to have been under-represented in previous surveys, has been recounted and discussed. The conclusions reached with respect to the original questions are given below.

11.1 Primary Questions

To what extent is the coppice decline a matter of historical fact?

This question is impossible to answer. The statistics that indicate a significant fall are difficult to interpret[488]. There is no doubt that the area managed by coppicing decreased but it is suggested that this may not have been as extensive as generally thought and that the decrease in overall woodland area and the impact of coniferisation has not been taken into account.

Forestry Commission policy changed radically in the mid 1980s (Grayson, 1993), coinciding with the emergence of the environmental movement (Shoad, 1980; Adams, 1996), and acknowledgement of the failure of coniferisation (Warren, 2000). Special measures were introduced to protect species such as dormice, (*Muscardinus avellanarius*) thought to be in serious decline as a result of decrease in coppicing (Hurrell and Macintosh, 1984; Harris and Yalden, 2008). It is possible that these factors combined promoted the issue from a matter of concern to a matter of fact without a robust evidence base. The research focus moved to evaluating the potential for new markets; in retrospect ascertaining the dimensions and, more importantly, the reasons underlying the problem may have been a more appropriate first step.

[488] Discussed in section 10.2 page 190

How much and for what reason(s) does it matter?

Coppice has multiple values so there can be no simple answer to this question. The values for different stakeholders, both commercial and ecosystem services, have been discussed; while in the past the former dominated this has now changed with non-market benefits rising in importance. Buckley (1992) reviewed the complexity of the ecological value, establishing that while some species benefit from rotational coppice, others require mature woodland, edge or glades. Some species previously thought closely associated with, if not dependent on, coppicing, are now considered more flexible in their habitat requirements[489]. Views have changed over time; woodfuel is, according to the Forestry Commission (2006) the new panacea, with benefits for ecology and the rural economy as well as emissions targets.

In the early 1990s strong arguments were made for delivering conservation benefits by integration with commercial practice (Fuller and Warren, 1993; Peterken, 1993b), a view supported by the author. While risk assessment could be applied to each attribute, the socio-economic and cultural value of coppicing to the workforce is currently threatened; perhaps it is to these that the decline matters most.

Why have attempts to reverse the decline failed?

This research indicates the significance attached to the closure of the Kemsley mill to pulp may have been misplaced. This was clearly pointed out in a number of presentations at the *New Markets for Old Woods* conference (Betts and Claridge, 1994) but to no apparent effect. Surveys dating from the early 1990s did not

[489] Nightingales (*Luscinia megarhynchos*), favour scrub and are as likely to be found in disused quarries as coppice in Kent (Henderson 1999). Dormice (*Muscardinus avellanarius*) are now being found in conifer plantations and reed beds, although actively coppiced woodlands are still considered the ideal habitat for these European Protected Species (PTES, 2010). The situation regarding woodland birds and butterflies is complex. Fuller et al.. (2005) reviewed the reasons for the decline in woodland birds ranking reduced management of lowland woodland, previously thought the main factor, fifth in a list of seven likely causes. Hambler and Spreight (1995) questioned the unquestioning focus on coppice management

identify market failure but, on the contrary, reported significant under-supply (Gordon, 1993; Watkinson, 1994). In this context the failure of market-based solutions could have been predicted. Woodfuel is currently being promoted to drive woodland management, creating multiple benefits, including rural employment[490]. The workers are highly skeptical and consider this is just not economically viable, they see the challenge as meeting existing demand[491] rather than developing new markets.

11.2 Secondary Questions

How much coppice woodland management is taking place?

The coppice survey has shown that coppice woodland management is taking place over a wide area. A timed series of data is only available for Kent; this does not indicate a decline over the past decade.

Who is carrying out this work?

This research has demonstrated that there is an active workforce spread across the South East, comprising representatives of both the new and the old tradition. The majority of the latter are working in chestnut and many are still concentrated in family groups, with skills and knowledged past down through the generations. Contrary to earlier findings that the workforce is ageing[492], this research has revealed a significant number of younger workers and new recruits[493].

[490] For example, Forestry Commission 2006; West Sussex County Council, 2010
[491] For example, for hurdles Jackson (2009) and of recruiting more pale makers (interviews 7 and 16)
[492] For example, Hampshire County Council et al. (1990); Gordon (1993)
[493] See also Bartlett and Rossney (2007) and Bartlett (2011b)

What are the issues for the workforce?

The hazel and chestnut workers are markedly different[494] in attitude, collaboration and business organisation. While supply of raw material is a problem for the hazel workers, those focused on chestnut are more concerned about peaks and troughs in demand and legislation, particularly the effect of FSC certification on access to markets[495].

How can these be addressed?

The decline in coppicing is an apparently simple concept. Any plan to rectify this requires more in-depth consideration of issues such as how much is enough, whether this can be determined by area alone or if the location and/or tree species also need to be taken into account. In particular the risks associated with decline need to be clearly understood and assessed.

Whatever the rationale for coppice management the workforce to carry out this activity is fundamental. Sustainable forestry outside the UK emphasises the importance of sustaining livelihoods and overseas the coppice workers would be considered as forest-dependent people, particularly those of the old tradition, and would be considered to have rights and there would be a requirement to take their views into account in decision-making (Ambrose-Ogi, 2010). Addressing any risk to the viability of the existing coppice businesses should therefore be a priority.

11.3 Additional developmental factors

While this thesis does not explore training and apprenticeship aspects of the coppice industry in detail it has identified that the old tradition of inter-generational transmission of knowledge and skill remains significant in the chestnut sector. The training that has been developed as a result of previous research has included capacity-building activities designed to strengthen links and communication between workers, both within and between the two groups (Bartlett and Rossney,

[494] Discussed in Section 10.7, page 222 and 10.8, page 224
[495] Section 10.6 page 220

2007; Bartlett, 2011a). Parallel development of institutional capital, i.e. greater understanding of the issues for the workforce within the agencies, especially the Forestry Commission, and ensuring these receive due consideration in policy formulation, is more challenging. This would be fundamental in any international development project (Fisher et al., 2008; Roe and Elliott, 2010), with forest dependent groups a priority consideration (Ambrose-Ogi, 2010). Application to the coppice industry would provide a firm foundation to ensure the continuation of coppice woodland management.

The formation of a National Coppice Association is under discussion. A single point of contact representing the views of the sector has clear advantages for the agencies, particularly the Forestry Commission. It is difficult to see how the very different hazel and chestnut workers could be adequately represented, let alone include the various landowner groups and multinational fencing companies. The previous Coppice Association was disbanded in favour of regional and local groups. Exploring ways that existing groups, formal and informal, can be developed and encouraged to interact, sharing views and information with each other and feeding these into the decision-making process would be a more pragmatic approach.

The problems associated with considering coppice as a simple issue and coppice workers as a single group with common issues have been identified in this thesis. The clear distinctions between the chestnut and hazel workers and between those of the old and the new traditions should be fully acknowledged in all future attempts to develop the industry, whether this is for environmental, economic or social reasons.

REFERENCES

Adams W (1996) *Future Nature: A Vision for Conservation*. Earthscan

Alexejev V V, Alexejev Y V & Shkerin V A (1995) Russian Forest: its Dimensions and Use in *L'Uomo e la Foresta* pages 1085-1095

Alker G, Bruton C, Miller M, Richards, K Simmonds, L Berry G & Shockley D (2006) *A South East Regional Study into Wood and Energy Crops as a Source of Bioenergy*. Report to Rural Development Service available at http://www.tvenergy.org/pdfs/SE-Biomass-Report-2006.pdf

Ambrose-Ogi B (2010) Environmental sociology and international forestry: historical overview and future directions. Chapter 20 in *The International handbook of Environmental Sociology*. Redcliffe and Woodgate eds. 2nd Edition. Edward Elgar.

Anderson P E & Jensen H J (2005) Network properties, species abundance and evolution in a model of evolutionary ecology. *Journal of Theoretical Biology* 232 pages 551–558

Andersson F & Marell A (2007) A European Network in Support of Sustainable Forest Management. *Journal of Sustainable Forestry* 24 (2) pages 279-293

Anon (2010a). Wood Availability as a Raw Material for Paper Industry. *Scottish Forestry* 64 (2) page 14

Anon (2010b) The Future of the Forestry Workforce in Scotland *Scottish Forestry* 64 (2) page 36

Anon (2004) RIBA to Act on Tropical Timber Row, article in Building Design (UK) Accessed from http://www.illegal-logging.info/item_single.php?it_id=561&it=news

Anon (2001) *UK National Inventory for Woodland and Trees*. Forestry Commission, Edinburgh, UK.

Arnstein S R (1969) A Ladder of Citizen Participation *JAIP* 35, (4) pages 216-224.

Ashdown P J (1974) *An Economic Appraisal of Coppice Chestnut as a form of Land-use in Kent*. Unpublished thesis submitted to the University of Bangor

Aslo (1995) in L'Uomo e la Foresta

Babtie (2004) *A Landscape Assessment for Kent* available at http://extranet7.kent.gov.uk/klis/resources/landscape-assessment/Landscape%20Assessment%20of%20Kent%20October%202004.pdf

Bailey C (1996) Progress and Preservation: The Role of Rural Industries in the Making of the Modern Image of the Countryside. *Journal of Design History* 9 page 34

Baille M G L (1995) Dendrochronology Provides an Independent Background for Studies of the Human Past in *L'Uomo e la Foresta* pages 99 -119

Baker R (1844) On the farming of Essex. Journal of the Royal Agricultural Society 1 pages 1-42.

Ball M (1994) The 1980s Property Boom. *Environment and Planning* 26 (5) pages 671 – 695

Ballard A (1920) An 11th Century Inquisition of St Augustine's Abbey. In *The British Academy Records of the Social and Economic History of England and Wales*. iv. 7.

Bannister N R (2007) *The Cultural Heritage of Woodlands in the South East with reference to the High Weald, Kent Downs and Surrey Hills Areas of Outstanding Natural Beauty*. Forestry Commission

Bannister N R (2005) *Clowes Wood, The Blean, Archaeological Assessment*. Report prepared for Forestry Enterprise. Unpublished

Bannister N R (1996) *Woodland Archaelogy in Surrey : Its Recognition and Management*. Surrey County Council. ISBN 1 899706 1

Bannister N R & Bartlett D M F (2009) An initial investigation of an early routeway, possibly prehistoric, in Bedgebury Forest. *Archaologia Cantiana* CXXIX pages 295-311

Bannister N R & Bartlett D M F (2008) *Historic Landscape Archaeological Assessment of Bedgebury Forest*. Report prepared for the Forestry Commission

Bannister N R & Bartlett D M F (2005) *Exploring your Woodlands History* available at http://www.forestry.gov.uk/pdf/exploring_your_woodlands_history.pdf

Barratt M (1983) *Oak Swill Basket Making in the Lake District*. Terence Howarth, Kendal.

Barrington A C (1968) Forestry Commission Booklet Number 22

Bartlett D M F (2011a) Identifying Issues for the Coppice Industry. *Quarterly Journal of Forestry* 105 (2) pages 131- 134

Bartlett D M F (2011b) In Pursuit of the Truth About Coppice Woodland Management in the South East. *In Practice* 73 pages 20-21

Bartlett D M F (2005) Come together – The Blean Initiative *Landscape* 22 pages 16-17

Bartlett D M F (2000) The World is run by those who turn up *Ecos* 21 (2) 2000 pages 37 – 42

Bartlett D M F & Rossney D (2007) Socio-economic Analysis of the Coppice Industry in South East England. *Quarterly Journal of Forestry* 101 (4) pages 285-290

Bartlett D M F & Witts A (2009) *The Present Status and Future Development of the Grazing Advice Partnership*. Unpublished report prepared for Natural England

Barrington D (1771a) Concerning Chestnut. *Phil Trans Royal Society* 61 page 23; pages 167-169

Bealey C E & Robertson P A (1992) Coppice Management for pheasants. In *Ecology and Management of Coppice Woodlands* edited by G P Buckley. Chapman and Hall. Pages 193-210

Becker M C & Knudsen T (2009) Schumpeter and the Organisation of Entrepreneurship. Chapter 14 in *The Oxford Handbook of Sociology and Organisation: Classical Foundations.* Oxford University Press

Begley C D (1962) *Growth and Yield of Sweet Chestnut Coppice* (1962) Forestry Commission Forest Record no 30 page 2.

Betts A & Claridge J (1994) *New Markets for Old Woods*. Conference Report The Forestry Authority HMSO

Bhattacharjee Y (2005). Citizen scientists supplement work of Cornell researchers. *Science* 308 pages 1402–1403

Binggeli P (1994) Controlling the Invader *Tree News*, Autumn 1994, pages 14-15

Blake D (2007) *Raising out Game: a Survey of Game Management in the Cranbourne Chase and West Wiltshire Downs AONB*. Cranbourne Chase and West Wiltshire Downs AONB.

Blakesley D & Buckley G P (2010) *Managing your Woodland for Wildlife*. Pisces Publications

Bonham-Carter V (1971) *The Survival of the English Countryside*. Hodder and Stoughton.

Bonney R, Cooper C B, Dickinson J, Kelling S, Phillips T, Rosenberg K V & Shirk J (2009) Citizen Science: A Developing Tool for Expanding Science Knowledge and Scientific Literacy *BioScience* 59 (11) pages 977-984

Booker J & Tittensor R (1992) Coppicing for Nature Conservation – the practical reality. In *Ecology and Management of Coppice Woodlands*, edited by G P Buckley, Chapman and Hall pages 299-312

Boye P & Dietz M (2005) *Development of Good Practice Guidelines for Woodland Management for Bats*. English Nature Research Report no 661

Boyne G (1998) Competitive Tendering in Local Government: A Review of Theory and Evidence *Public Administration* 76 (4) pages 695-712

Boys J (1796) *A General View of the Agriculture of the County of Kent* with Observations on the Means of its Improvement. Drawn up for The Confideration of the Board of Agriculture and internal Improvement, From the original Report trasmitted to the Board; with additional Remarks of several respectable Country Gentlemen and Farmers. Printed for G. Nicol, Pall-Mall, Bookseller to his Majesty, and the Board of Agriculture.

Braden N & Russell K (2001) Chestnut in the United Kingdom Forest Area, Management and Utilisation as Timber. *Forest, Snow and Landscape Research* 76 (3) pages 505-510

Brandle M & Brandle R (2001) Species richness of insects and mites on trees: expanding Southwood. *Journal of Animal Ecology* 70 page 491-504

Brassley P (2006) Industries in Early Twentieth Century Countryside: The Oxford Rural Industries Survey of 1926-7 pages 133-148 in Hoyle R W *People, Landscapes and Alternative Agriculture.* British Agricultural History Society Supplementary Series no 3

Brassley P (2004) The Wheelwright, the Carpenter, Two Ladies from Oxford and the Socio-Economic Change in the Countryside between the Wars. Chapter 15 (pages 212-234) in *The English Countryside between the Wars*, edited by Brassley P, Burchardt J & Thompson L. Boydell Press.

Bright G (2001) *Foresty Budgets and Accounts*. CABI

Bright P W & Morris P A (1996) Why are dormice rare? A case study in conservation biology. *Mammal Review* 26 (4) pages 157- 187.

Bright P W & Morris P A (1992) Ranging and nesting behaviour of the dormouse *Muscardinus avellanarius* in coppice with standards woodland. *Journal of Zoology* 226 (4) pages 589-600

Bright P W & Morris P A (1991). Ranging and nesting behaviour of the dormouse, *Muscardinus avellanarius*, in diverse low-growing woodland. *Journal of Zoology*, London, 224, pages 177-190.

Bright P, Morris P & Mitchell-Jones A (2006) *The Dormouse Conservation Handbook* 2nd edition. English Nature

Broadmeadow M & Ray D (2005) *Climate Change and British Woodlands*. Forestry Commission Information Note HMSO.

Buckland G (1845) On Farming in Kent. *Journal of the Royal Agricultural Society* 6 pages 251-302.

Buckley G P (1992) *Ecology and Management of Coppice Woodlands*. Chapman and Hall, London.

Buckley G P & Howell R (2004) *The Ecological Impact of Sweet Chestnut Coppice on Former Ancient, Broadleaved Woodland Sites in South East England*. English Nature Research Report no 627

Buckley S E (1950) *Selections from Cobbett's Rural Rides*. Harrap & Co.London

Bulman C (2007) Woodlands a vital habitat for butterflies and moths *Quarterly Journal of Forestry* 101 (1) pages 29-38

Bunting J (2006) Bygone Industries of the Peak. *The Peak District Journal of Natural History and Archaeology* 3 pages 1-112. Wildtrack Publishing

Burton R, Kuczera C & Schwartz G (2008) Exploring farmers' cultural resistance to voluntary agri-environment schemes. *Sociologia Ruralis* 48 pages 17-37.

Cabinet Office (2006) White Paper, '*Strong and Prosperous Communities* Available at http://www.communities.gov.uk/publications/localgovernment/strongprosperous accessed 10/8/11

Carvajal A, Mayorga O & Douthwaite B (2008) Forming a community of practice to strengthen the capacities of learning and knowledge sharing centres in Latin America and the Caribbean: a D group case study*. Knowledge Management for Development Journal* 4: 71-81

Carson R (1962) *Silent Spring*. Houghton Mifflin

Catton W R & Dunlap R E (1978) Environmental Sociology: A New Paradigm? *The American Sociologist* 13 (4) pages 41-9

Chalkin C W (1965) *Seventeenth Century Kent: A Social and Economic History*. Longmans.

Church R (1948) *Kent.* Robert Hale and Company

Clarke L (2006) Building farmers' capacities for networking (Part II): Strengthening agricultural supply chains in Bolivia using network analysis*. Knowledge Management for Development Journal* 2: pages 19-32.

Clark Mactavish (undated) *New Markets for Coppice Woodland Products*. Report commissioned by Cumbria Broadleaves

Cleere H & Crossley D (1985) *Industry in the Weald* Leicester University Press

Clegg J (1994) *Marketing Large Volumes of Low Quality Timber*. Unpublished report commissioned by the Forestry Commission

Clegg J & Crichton Roberts (2000) *Monitoring the Health and Financial Viability of Forest Industry Businesses*. Forestry Commission available at http://www.forestry.gov.uk/pdf/fib.pdf/$FILE/fib.pdf

Clegg J & Firn Crichton Roberts (1998) *An assessment of the potential for securing a viable bulk industrial outlet for small diameter roundwood in South East England*. (Report commissioned by the Forestry Commission).

Clegg S R & Haugaard M (2009) *The Sage Hanbook of Power*. Sage Publishing

Cluttons (1864) *Church Commissioners Records* Section File 28417

Colebourne P (1983) *Hampshire's Countryside Heritage 2: Ancient Woodland*. Hampshire County Council

Collard F & Dellas*y* H (2003) *The Great Inflation of the 1970s*, conference presentation available at http://www.ecb.int/events/pdf/conferences/CollardDellas.pdf

Collins E J T (2004) *Crafts in the English Countryside: Towards a Future*. The Countryside Agency

Collins E J T (1989) *Agrarian History of England and Wales* volume VI Cambridge University Press

Cooper C B, Dickinson J, Phillips T & Bonney R (2007) Citizen Science as a Tool for Conservation in Residential Ecosystems *Ecology and Society* 12 (2): page 11 available at: http://www.ecologyandsociety.org/vol12/iss2/art11/

CoSIRA (circa 1970) *Economic Survey of Pale Manufacturing: Analysis of Operations*. Unpublished

Couper A D & Smith H D (1997) The Development of Fishermen-based Policies *Marine Policy* 2l (2) pages111-119

Court N & Howe J (1995) *Hampshire's Countryside Heritage 2: Ancient Woodland.* 2nd Edition. Hampshire County Council

Crofts R (2004) Linking protected areas to the wider world: a review of approaches, *Journal of Environmental Policy and Planning* 6 (2*)* pages 143-156

Crofts R (undated) *Changing Approaches to Nature in Europe in the Later Twentieth Century: The Three Progressions* available at http://www.rogercrofts.net/files/protectedareas/changingapproachestonature.pdf accessed 23/11/10

Crossley D (2005) English Woodlands and the Supply of Fuel for Industry *Industrial Archaeology Review*, 27, (1) pages 105-112

Crowther R E & Evans J (1984) *Coppice*. Forestry Commission leaflet 83 HMSO

Dannet N (1991) *Marketing of Coppice and Other Small Roundwood in the South East*. Report Commissioned by the Forestry Commission.

Dawson C (2007) Multi-use Sweet Chestnut Cultivation in Greece. Quarterly Journal of Forestry 101 (1) page 61-66

DEFRA & the Forestry Commission (2005) *Keepers of Time: A Statement of Policy for England's Ancient & Native Woodland.* Available as a pdf at http://www.forestry.gov.uk/pdf/anw-policy.pdf/$FILE/anw-policy.pdf

Design Magazine (1968) Editorial available at http://vads.ahds.ac.uk/diad/article.php?year=1968&title=235&article=d.235.23 accessed 7/1/10

Dewey P E (1987) *British Agriculture in the First World War*. Routledge

Dickinson S & Prabhakar M (2009). *An Analytical Framework for Community Empowerment Evaluations*. Department for Communities and Local Government, London

Draycott R A H, Hoodless A N & Sage R B (2008) Effects of Pheasant Management on Vegetation and Birds in Lowland Woodlands. *Journal of Applied Ecology* 45 pages 334–341

Ducarel (1771) A letter to Dr William Watson MD and FRS concerning Chestnut Trees ; followed by with two other letters in response to Dr Ducarel on the same subject. *Phil Trans Royal Society* 61 pp 136-151; pages 167-169

Duncan P M & Duncan L T (1961) *The Book of the Countryside*, Collins

Dunlap R E (2008) Promoting a Paradigm Change: Reflections on Early Contributions to Environmental Sociology. *Organization and Environment* 21 pages 478-487

Edlin H L (1973) *Woodland Crafts in Britain*. 2nd edition Country and Gardeners Book Society

Edlin H L (1970) *Trees, Woods and Man*. 3rd revised edition, The New Naturalist, Collins.

Edwards A (2008) Young guns roll out the barrels. *The Telegraph*, May 31st, page 12.

English Nature (1994) *Ecological Responses to the 1987 Great Storm in the Woods of South East England*. English Nature Science no 23.

Ernle L (1961) *English Farming Past and Present*. 6th Edition, Heinemann.

Evans J (1992) Coppice Forestry – an overview In *Ecology and Management of Coppice Woodlands*, edited by G P Buckley, Chapman and Hall.

Evans J (1984) *Silviculture of Broadleaved Woodland*. Forestry Commission Bulletin 62

Evans M N & Barkham J P (1992) Coppicing and natural disturbance in temperate woodlands – a review, in *Ecology and Management of Coppice Woodlands*, edited by G P Buckley, Chapman and Hall. Page 79-98

Evelyn J (1664) *Sylva or, A discourse of forest-trees, and the propagation of timber in His Majesties dominions.* The Royal Society (viewed at the Surrey History Centre, Woking)

Farncombe J (1850) On the farming of Sussex. *Journal of the Royal Agricultural Society* 11 pages 75-86.

Fiennes C (1888) *Through England on a Side Saddle in the Time of William and Mary* London: Field and Tuer, The Leadenhall Press

Firn Crichton Roberts Ltd & John Clegg & Co (2000) *Monitoring the Health and Financial Viability of Forest Industry Businesses*. Business Survey Report to the Forestry Commission and Forest Industry Associations

Fischer A P, Bliss J, Ingemarson F, Lidestan G & Lonnstedt L (2010) From the small scale woodland problem to eco-social systems: the evolution of social research on small-scale forestry in Sweden and USA *Scandinavian Journal of Forest Research* 25 pages 390-398

Fisher R, Maginnis S, Jackson W, Barrow E & Jeanrenaud S (2008) *Linking Poverty and Conservation: Landscapes, People and Power*. Earthscan.

FitzRandolph H E & Hay M D (1926a) *The Rural Industries of England and Wales. Volume 1 Timber and Underwood Industries and Some Village Workshops*. Clarendon Press Oxford.

FitzRandolph H E & Hay M D (1926b) *The Rural Industries of England and Wales. Volume II Osier Growing and Basketry and some Rural Factories*. Clarendon Press, Oxford.

Forestry Authority (1993) *The Conservation Management of Deadwood in Forests*. Research Information Note 241

Forestry Commission (2007a) *England's Trees Woods and Forests*. Available at http://www.forestry.gov.uk/pdf/eng-etwf-delivery-plan.pdf/$FILE/eng-etwf-delivery-plan.pdf

Forestry Commission (2007b) *England's Trees Woods and Forests*. Delivery Plan 2008 – 2012. Available at http://www.forestry.gov.uk/pdf/eng-etwf-delivery-plan.pdf/$FILE/eng-etwf-delivery-plan.pdf. (Note: this was produced in conjunction with Natural England and authorship is sometimes cited as Forestry Commission and Natural England)

Forestry Commission (2007c) *Lepidoptera on Forestry Commission Land in England; Conservation Strategy 2007-2017* available as a pdf at http://www.forestry.gov.uk/pdf/fce-butterfly-conservation.pdf/$FILE/fce-butterfly-conservation.pdf

Forestry Commission (2006) *A Woodfuel Strategy for England*. Available at http://www.forestry.gov.uk/pdf/fce-woodfuel-strategy.pdf/$FILE/fce-woodfuel-strategy.pdf accessed 8/1/10

Forestry Commission (2005a) *Science and Innovation Strategy for British Forestry*. Available at http://www.forestresearch.gov.uk/website/pdf.nsf/pdf/fcsis.pdf/$FILE/fcsis.pdf

Forestry Commission (2005b) *Woodland Management for Bats* available at www.forestry.gov.uk/forestry/INFD-6K3CXY accessed 10/7/10

Forestry Commission (2004a) *Seeing the Woods for the Trees: A Forestry and Woodlands Framework for the South East*. HMSO

Forestry Commission (2004b) *Restoration of Neglected Hazel Coppice*. Forestry Commission Information Note 56 Forestry Commission

Forestry Commission (2002) *Life in the Deadwood*. Available at *http://www.forestry.gov.uk/pdf/lifeinthedeadwood.pdf/$FILE/lifeinthedeadwood.pdf* accessed 12/11/10

Forestry Commission (1998) *England Forestry Strategy, A New Focus for England's Woodlands: Strategic Priorities and Programes*. HMSO.

Forestry Commission (1996) *Forestry Ministers Welcome New UK Forestry Accord.* Press Release 497

Forestry Commission (1985) *Guidelines for the Management of Broadleaved Woodland*. Forestry Commission Edinburgh.

Forestry Commission (undated c1983) *Census of Woodland and Trees 1972-82: Great Woodland.* Forestry Commission, Edinburgh.

Forestry Commission, Countryside Agency & Small Woods Association (2006a) *A Marketing Guide for Owners of Small Woodlands.* Forestry Commission.

Forestry Commission, Countryside Agency & Small Woods Association (2006b) *A Marketing Guide for Makers of Wood Products'.* Forestry Commission.

Forestry Commission Research Division (1996) *Harvesting and Comminution of Sweet Chestnut Coppice for use as Fuel Stock for Electricity Production*. Technical Development Branch Technical Note 28/96

Forest Research (1999) *National Inventory of Woodland and Trees Inventory Report Kent. Part 1 – Woodlands of 2 hectares and over*. HMSO

Freudenburg W R, Gramling, R & Davidson D J (2008) Scientific Certainty Argumentation Methods (SCAMs): Science and the Politics of Doubt. *Sociological Inquiry* 78 (1) pages 2–38

Fuller R J (2005) Recent Declines in Populations of Woodland Birds in Britain. *British Birds* 98 pages 116-143

Fuller R J & Moreton B D (1987). Breeding bird populations of Kentish sweet chestnut *Castanea sativa* coppice in relation to the age and structure of the coppice. *Journal of Applied Ecology* 24 pages 13-27.

Fuller R J & M S Warren (1995) Management for Biodiversity in British Woodlands – Striking a Balance. *British Wildlife* 7 pages 26-37

Fuller R J (1992) Effects of coppice management on woodland breeding birds. in *Ecology and Management of Coppice Woodlands*, edited by G P Buckley, Chapman and Hall. Page 169 – 192.

Fuller R J, Noble D G, Smith K W & Van Hinsbergh D (2005) Recent Declines in Woodland Birds in Britain. *British Birds* 98 pages 116-143

Fuller R J & Warren M S (1993) *Coppice Woodlands: Their Management for Wildlife*. 2nd Edition JNCC

Fuller R M (1997) ed. *Farmers at the 'Fountain' A History of Canterbury Farmers Club* 1793 – 1993. Thanet Press

Furley R (1871) *A History of the Weald of Kent Vol 1* John Russell Smith London

Furley R (1874) *A History of the Weald of Kent Vol 2* John Russell Smith London

Game Conservancy Trust (2003) *Woodland Conservation and Pheasants: a Practical Guide for Game Managers and Woodland Owners*. The Game Conservancy Trust

Garrad G H (1954) *A Survey of the Agriculture of Kent*. County Agricultural Surveys No 1 RASE

Geraint Jenkins J (1965) *Traditional Country Craftsmen*. Routledge Kegan and Paul

Gordon M (1993) *Survey of Woodland Workers in the East Sussex/High Weald Area*. (thought to have been commissioned by Weald Woodnet)

Grayson A J (1993) *Private Forestry Policy in Western Europe*. Scottish Forestry Trust/CAB International.

Grayson S (2006) *The Economic Viability of Woodland in the South East, with particular reference to Kent, Sussex and Surrey*. Report prepared for SEEDA

Greenaway F & Hill D (2004) *Woodland Management Advice for Bechstein's and Barbastelle Bats*. English Nature Research Report no 658

Hall J E, Kirby K J & Whitbread A M (2004) *National Vegetation Classification: Field Guide to Woodland* JNCC

Hambler C & Speight M R (1995) Biodiversity Conservation in Britain: Science Replacing Tradition. *British Wildlife* 6 pages 137- 147

Hammond J L & Hammond B (1911) *The Village Labourer*. Longman Green & Co

Hampshire County Council (1995) *Hazel Coppice: Past, Present and Future*. 2nd Edition. Hampshire County Council

Hampshire County Council (1990) *Hampshire's Countryside Heritage: A Progress Report*. Hampshire Books

Hampshire County Council, Countryside Commission & Task Force Trees (1990) *Hampshire's Countryside Heritage Coppice Feasibility Study* Hampshire County Council

Hardy (1912) Introduction to *The Victoria County History of Kent*, edited by W Page, Archibald Constable, London

Hardy T (1912, reprinted 1974) Introduction to *The Woodlanders*, included in The New Wessex Edition. MacMillan.

Harman R & Howe J (2003) *The Silviculture and Management of Coppice Woodlands*. Forestry Commission

Harris S & Yalden D W (2008) *Mammals of the British Isles* 4th Edition. The Mammal Society.

Harvey G (1998) *The Killing of the Countryside*. Random House

Hasted E (1797) *The History and Topographical Survey of the County of Kent*: W Bristow, Canterbury

Hasted E (1771) Concerning Chestnut trees. *Phil Trans Royal Society* 61 pp 160-166

Henderson A (1999) *Nightingales in Kent: Report of the County Survey* Report to the BTO

Hewitt E M (1926) Industries in *The Victoria History of the Counties of England. A History of Kent.* Vol 3 The St Catherine Press, London.

Hiley W E (1931) *Improvement of Woodlands*. HMSO London

Hill M O, Mountford J O, Roy D B & Bunce R G H (1999) *Ellenberg's Indicator Values for British Plants*. Technical Annex to ECOFACT. Volume 2. Centre for Ecology & Hydrology

Hodder K H, Bullock J M, Buckland P C & Kirby K J (2005) *Large Herbivores in the Wildwood and in Modern Naturalistic Grazing Systems*. English Nature Research Report No 648.

Hodgeson J, Moilanen A, Bourn N, Bulman C & Thomas C (2009) Managing sucessional species: modeling the dependence of heath fritillary populations on the spatial distribution of woodland management. *Biological Conservation* 142 pages 2743-2751

Hopkins J J & Kirby K J (2007) Ecological Changes in British Broadleaved Woodland since 1947. *Ibis* pages 1-12

House F H (1965) *Timber at War: An Account of the Organisation and Activities of the Timber Control, 1939-1945*. E. Benn (London)

Howkins C (2003) *Sweet Chestnut: History, Landscape, People*. Unwin Brothers

Howkins C (1994) *Trees, Herbs and Charcoal Burners*. Unwin Brothers Ltd.

Hurrell E & Macintosh G (1984) Mammal Society Dormouse Survey 1975-April 1979 *Mammal Review* 14 pages 1-18

Irwin A (2001) *Sociology and the Environment*. Polity Press

Isaac D & Reid C (1997) *Surrey Inventory of Ancient Woodland (Provisional).* English Nature.

Jackson D (2009) Woodin' in the Malverns. *21st Century Coppice – The First Cut* Conference Report: produced by the Wood Education Trust with the Coppice Association North West. Pages 18-20

James N. D. G. (1991) *An Historical Dictionary of Forestry and Woodland Terms*. Blackwell Oxford

James N D G (1989) *The Forester's Companion.* 4th Edition. Blackwell, Oxford.

Jameson P & Howe J (2009) The Coppice Industry in the South - a Hampshire Viewpoint. *21st Century Coppice – The First Cut* Conference Report: produced by the Wood Education Trust with the Coppice Association North West. Pages 24-25

Johns C A (1885) *British Birds and their Haunts*. SPCK London

Jones A (1927) *The Rural Industries of England and Wales. Volume IV, Wales*. Clarendon Press, Oxford

Jones M (undated) *Fuelling a revolution - Sheffield's Woodland Heritage* http://www.heritagewoodsonline.co.uk/wood/history.html accessed 28/9/09

Kent Biodiversity Action Plan Steering Group (1997) *Kent Biodiversity Action Plan: A Framework for the Future of Kent's Wildlife*. Kent County Council.

Kent County Council (1995) *State of the Countryside* Report. Kent County Council

Kent County Council (1994) *Phase 1 Habitat Survey* Report. Kent County Council

Kerr G (undated) *Uneven-aged Sylviculture in Britain*. Forest Research report available as a pdf on the Forestry Commission website: http://www.forestry.gov.uk/pdf/frunevenagedsilviculture0001.pdf/$FILE/frunevenagedsilviculture0001.pdf accessed 10/5/09

Keys J (2001) *The Tree Station Project*. Report to the Bio-Regional Development Group

Kightly C (1984) *Country Voices: Life and Lore in Farm and Village*. Thames and Hudson Ltd, London

King A (2010) presentation to the *South East Coppice Conference* available at http://coppicegroup.files.wordpress.com/2010/11/2010-south-east-coppice-conference-report.pdf page 5

Land Use Consultants (2007) *Woodlotting in Kent*. Final report to Kent County Council.

Land Use Consultants (undated) *The Landbased Economy of Kent*. Report produced for Kent County Council

Land Use Consultants (2002) *Review of the Effectiveness of Woodland Initiatives*: Final Report. Prepared for The Forestry Commission and Countryside Agency (available at http://www.forestry.gov.uk/website/pdf.nsf/pdf/woodlandinitiativesfinalreport.pdf/$FILE/woodlandinitiativesfinalreport.pdf accessed 3/5/10

Land Use Consultants, Eamonn Wall & Co, Atlantic/Roger Tym & Partners, Price C and Sandys P (2002) *South West England Woodland and Forestry Strategic Economic Study*. Report commissioned by the Forestry Commission and the South West Economic Development Agency.

Lantra (2009) *Labour Market Report 2009* available at http://readingroom.lsc.gov.uk/lsc/National/CAS_-_Lantra_-_LMI,_Nov_09.doc

Lappenberg J M (1845) *History of England Under The Anglo-Saxon Kings*, Part One Kessinger

Latour B (2005) *Reassembling the Social: an Introduction to Actor-Network-Theory*. Oxford University Press.

Levy S, Evans M, Desai P & Fisher M (1996). *Firewood: A Study into the Background and Potential Markets in the Weald*. Report produced for Weald Woodnet.

Lindsay Marketing Services (UK) Limited (1994) *Developing the Market for Woodland Products in the South East of England*. Report prepared for East Sussex County Council and the High Weald Forum

Lindsay Marketing Services (UK) Limited (1993) *The Marketing of Coppice Chestnut Products in South East England*. Report commissioned by the Policy Studies Division of the Forestry Commission

Lockhart Garratt (2009) *British and Irish Hardwoods Trust: Chestnut Project 2009* code 523392. Report prepared for the Department of Energy and Climate Change.

Lowe P (1996) Blueprint for a Rural Economy. Chapter 10 in Allanson P & Whitby M eds. *The Rural Economy and the British Countryside*. London: Earthscan

Mast J N & Chambers C L (2006) Integrated Approaches, Multiple Scales: Snag Dynamics in Burned Versus Unburned Landscapes. *The Professional Geographer*, 58 (4) pages 397– 405

MacLean N (2010) *Silent Summer: the State of Wildlife in Brtiain and Ireland*. Cambridge University Press

Mingay G E (1968) The Agricultural Revolution in English History: A Re-consideration. Pages 9-27 in *Essays in Agrarian History.* Volume 2. David and Charles

Mitchell P L (1992) Growth stages and microclimate in coppice and high forest. *In Ecology and Management of Coppice Woodlands*, edited by G P Buckley, Chapman and Hall, p 31-51.

Mitchell B R (1988) *British Historical Statistics*. Cambridge University Press

Morgan K (2001) *The Oxford History of Britain*. Oxford University Press.

Muhlfield H E (1933) *A Survey of the Manor of Wye*. Columbia Press New York

North M (1995) Trade and Production of Timber and Timber By-Products in the Baltic Region 1575 – 1775 in *L'Uomo e la Foresta* page 883 - 894

Odum H T & Odum E P (1953) Fundamentals of Ecology

O'Brien E (2001) *Social Forestry: Questions and Answers*. Forest Research

Orwin C S (1949) *A History of English Farming*. Nelson

Orwin C S & Whetham E H (1964) *History of British Agriculture 1846 – 1914* David and Charles

Oxford English Dictionary (1989) 2nd Edition volume XX Clarendon Press

Page W (1926) *The Victoria History of the Counties of England. A History of Kent* volume 2 The St Catherine Press, London

Perks R (1995) *Oral History: Talking about the Past* Historical Association, London, second edition 1995.

Perks R & Thomson A (1998) (eds), *The Oral History Reader*, London, Routledge

Perry P J (1974) *British Farming in the Great Depression 1870-1914. A Historical Geography.* David and Charles

Peterken G F (1996) Natural *Woodland. Ecology and Conservation in Northern Temperate Regions*. Cambridge University Press

Peterken G F (1993a) Woodland Conservation and Management 2nd Edition Chapman Hall

Peterken G F (1993b) Presidential Address. Coppice Association Newsletter, Issue 2, page 2.

Peterken G F (1992) Coppices in the Lowland Landscape. In *Ecology and Management of Coppice Woodlands*, edited by G P Buckley, Chapman and Hall, page 11.

Peterken G F (1977) Habitat Conservation Priorities in British and European Woodlands. *Biological Conservation* 11 223-236

Peterken G F and Allison H (1989) *Woods, Trees and Hedges, a Review of Changes in the British Countryside*. Focus on Nature Conservation no 22. Nature Conservancy Council, Peterborough

Peterken G F and Jones E W (1989) 40 Years of Change in Lady Park Wood: the Young Growth Stands. *Journal of Ecology* 77 (2) pages 401-429).

Petrokofsky G, Hemery G & Brown N (2008) Knowledge feeds decision making: the people's say in UK forestry. *Quarterly Journal of Forestry*. 102 pages 221-225

Petrokofsky G, Brown N D, Hemery G E, Woodward S, Wilson E, Weatherall A, Stoke V, Smithers R J, Sangster M, Russell K, Pullin A S, Price C, Morecroft M, Malins M, Lawrence A, Kirby K J, Godbold D, Charman E, Boshier D, Bosbeer S & Arnold J E M (2010) A participatory process for identifying and prioritising policy-relevant research questions in natural resource management: a case study from the UK forestry sector. *Forestry* 83 (4) page 356 – 367

Piggott S (1981) Pre-history Vol I (I) of *The Agrarian History of England and Wales* General editor J Thirsk. Cambridge University Press

Pitcher M (2007) The Socio-Economics of Woodfuel *Quarterly Journal of Forestry* 101 (3) page 195-199

Platje J (2004) An analysis of trends and requirements for the development of sustainable agriculture in Poland, in Leal Filho, W. (Ed.), *Ecological Agriculture and Rural Development in Central and Eastern Europe*, NATO Science Series V: Science and Technology Policy, No. 44, IOS Press, Amsterdam, pages 15-37.

Pollard A (2006) Mechanisms for Working Together: the Woodland Initiatives Network *Quarterly Journal of Forestry* 100 (3) pages 209-212

Poolman V R (2009) Opportunity Knocks – Turning Coppiced Chestnut into Big Business. *Forestry Journal* December 2009

Porritt J (1995) Fuelling a Conspiracy Theory. *Weekend Telegraph* 3/6/95 page 4

Pretty J & Smith D (2004) Social capital in biodiversity conservation and management. *Conservation Biology* 18: 631-638.

Pretty J & Ward H (2001) Social Capital and the Environment. *World Development* 29: 209-227.

Pritchard C, Phillips P, Jones A & Reid C (1994) *A Provisional Inventory of Kent's Ancient Woodland*. English Nature

PTES (2010) *Managing Woodlands for Dormice*. PTES

Pullen A (2010) *The Evidence Base for Community Forest Management as a Mechanism for Supplying Global Environmental Benefits and Improving Local Welfare* available at http://www.environmentalevidence.org/

Rackham O (2003) *Ancient Woodland: its History, Vegetation and Uses in England*. Castlepoint Press

Rackham O (2002) in *The Blean The Woodlands of a Cathedral City*. Page 1 White Horse Press Ltd.

Rackham O (1995) Forest History of Countries Without Much Forest in *L'Uomo e la Foresta* pages 297- 326

Rackham O (1990) *Trees and Woodlands in the British Landscape* (revised edition). J M Dent and Sons Ltd.

Rackham O (1986) *The History of the Countryside*. J M Dent & Sons, London

Rackham O (1980) *Ancient Woodlands*. Edward Arnold, London

Radford J Q & Bennett J F (2007) The Relative Importance of Landscape Properties for Woodland Birds in Agricultural Environments. *Journal of Applied Ecology* 44 pages 737-747

Ratcliffe D A (1977) *A Nature Conservation Review* Volume 1 Cambridge University Press

Ratcliffe P R (1992) The interaction of deer and vegetation in coppice woods. In *Ecology and Management of Coppice Woodlands*, edited by G P Buckley, Chapman and Hall, p 233 - 245.

Redclift M R & Woodgate G eds (2010) *The International Handbook of Environmental Sociology*. 2nd Edition. Edward Elgar

Roberts G (1999) *Woodlands of Kent*. Geerings of Ashford

Rodríguez L & Pascual U (2004) Land clearance and social capital in mountain agro-ecosystems: the case of Opuntia scrubland in Ayacucho, Peru*. Ecological Economics* 49 pages 243–252

Roe D & Elliott J (2010) *The Earthscan Reader in Poverty and Biodiversity Conservation*. Earthscan.

Rosin C, Cooper M, MacKenzie A & Maegli T (2008) New Zealand pastoral farmers and the mitigation of greenhouse gasses in the agricultural sector*. Centre for the Study of Agriculture, Food and Environment*, University of Otago, New Zealand.

Ross J (2006) £135,000 drive to dig up 'tax-dodge' trees and restore peatlands *The Scotsman*, dated 10th October, 2006 available at http://news.scotsman.com/inverness/135000-drive-to-dig-up.2817245.jp accessed 10/6/11

Salzman L. (1952) *Building in England down to 1540*. Oxford

Saunders G (1993) Woodland Conservation in Britain, Chapter 6 in Goldsmith F B & Warren A (eds) *Conservation in Progress*, Wiley and Sons

Schumacher E F (1973) *Small is Beautiful – a study of economics as if people mattered*. Harper & Row

Selman P & Powell J (2003) *Woodland Wealth Appraisal for the East of England*. Report commissioned by the Forestry Commission and the East of England Economic Development Agency

SEEDA (2005) *Regional Economic Strategy* 2006-2016 available at http://www.seeda.co.uk/RES/

Seymour J (1976) *The Complete Book of Self Sufficiency*. Dorling Kindersley

Shoard M (1980) *The Theft of the Countryside*. Temple Smith

Short B, Watkins C, Foot W & Kinsman P (2000) *The National Farm Survey 1941-43*. CABI

Silverton J (2009) A new dawn for citizen science. *Trends in Ecology & Evolution* 24 (9) pages 467- 471

Slater G (1926) *The Victoria History of the Counties of England*. A History of Kent Volume 3 The St Catherine Press, London.

Smith J F & Evans S M (2003). The value of marine ecological data collected by volunteers. *Biological Conservation* 113 pages 199–213

Stace C. (1991) *A New Flora of the British Isles*, 2nd Edition, Cambridge University Press

Stewart A (2010) *Place-making and Communities: A review of concepts, indicators, policy and practice*. Forest Research, Alice Holt
Stewart-Roper C & Park A (1996) *The Living Forest; Non-market Benefits of Forestry*. HMSO

Stobart J (2004) The Economic and Social Worlds of rural craftsmen-retailers in eighteenth- century Cheshire. *J AgHR* 52 pages 141-160

Straker E (1931) *Wealden Iron* (9 Editions, the most recent being 1961) Bell

Strapp T (undated) Breathing New Life into the Wood Industry. *Country Landowner* February (year unknown) page 16

Streeten A (1982) Potters, Kilns and Markets in Medieval Kent (in Leach P ed *Archaeology in Kent to A.D. 1500* CBA report 48 pages 87–95)

Sunderlin W D, Angelsen A, Belcher B, Burgers P, Nasi R, Santoso L & Wunder S (2010) Livelihoods, Forests and Conservation in Developing Countries. Chapter 5 in Roe D and Elliott J (2010) *The Earthscan Reader in Poverty and Biodiversity Conservation*.

Surman W (2009) Wood fuel offers huge potential *Farmers Guardian*, August 28th 2009

Surrey County Council (2007) *The Surrey Woodland Study.* Surrey County Council.

Surrey Woodland Working Group (2000) *What Woodland Owners Want – An Attitude Survey*. Unpublished report.

Symes D & Phillipson J (2009) Whatever became of social objectives in fisheries policy? *Fisheries Research* 95 pages 1–5

Symes N & Currie J (2005) *Woodland Management for Birds: a Guide to Managing for Declining Woodland Birds in England*. RSPB

Tabor R (2005) *The Green Wood Working Pattern Book*. Batsford

Tansley A. G. (1939) *The British Islands and their Vegetation*. Cambridge University Press

TEEB (2010) *The Economics of Ecosystems and Biodiversity.* Report for Business downloadable from http://www.teebweb.org/LinkClick.aspx?fileticket=ubcryE0OUbw%3d&tabid=924&language=en-US accessed 10/12/10

Tipples P (2009) Happy Days Growing Hops. *South East Farmer* November 2009 page 67

Thirsk J (1987) England's Agricultural Regions and Agrarian History 1500-1750. *Studies in Economic and Social History*. Economic History Society

Thirsk J (1964) Diseases and lopping for fodder *Agricultural History Reveiw* 12 page 58-59

Trout R, Quine C, Dugan D & Summers R (2001) *Alternative Deer fences in Core Capercaille and black Grouse Habitats*. An Interim Guidance Note. RSPB and Forestry Commission

Uphoff, N. & Wijayaratna, C. (2000) Demonstrated benefits from social capital: The productivity of farmer organisations in Gal Oya, Sri Lanka*. World Development* 28 pages 1875–1890.

Van der Zee F F, Wiertz J, Ter Braak C J F, van Apeldoorn C J & Vink J (1992) Landscape change as a possible cause of the badger *Meles meles* L. decline in The Netherlands. *Biological Conservation* 61 (1) Pages 17-22

Vayda (1983) Progressive Contextualisaton: Methods for Research in Human Ecology *Human Ecology* 11 (3) pages 265-282

Vera F W M (2000) *Grazing Ecology and Forest History*. CABI

Wallenberg J K (1931) *Kentish Place Names*. Upsala

Wallenberg J K (1934) *Place Names of Kent*. Upsala

Warren C (2000) 'Birds, bogs and forestry' revisited: The significance of the flow country controversy *Scottish Geographical Journal* 116 (4) pages 315 – 337

Warren M, Clarke S, & Currie F (2001) The Coppice for Butterflies Challenge: a targeted grant scheme for threatened species. *British Wildlife* 13 (1) pages 21-28

Wates N (2000) *The Community Planning Handbook*. Earthscan

Watkinson P (1994) *The Markets for Hazel in 1994: Hurdles, Thatching Spars and Hedgelaying Materials*. Report prepared for Hampshire County Council

Watson G (2010) The Market Dogma. *Resurgence* 259 pages 50-51

Westermann E (1995) Central European forestry and mining Industries in the early modern Period. An Analysis of Conflicts and Research Problems. In *L'Uomo e la Foresta* pages 927- 941

West Sussex County Council (2010) *Woodfuel Supply and Demand in West Sussex*. Report available at http://www2.westsussex.gov.uk/environment/heritage/WoodfuelSupplyDemand_WestSussex_ExecSummary.pdf, accessed 10/12/10

Wheaton A (2002) *The Blean: The Woodlands of a Cathedral City*. White Horse Press Ltd.

Wheaton A & Birmingham E (2002) in *The Blean The Woodlands of a Cathedral City*. Page 57. White Horse Press Ltd.

Whitlock, R. (1983) *The English Farm*. J M Dent & Sons Ltd.

Williams D R & Stewart S I (1998) Sense of Place: An Elusive Concept that Is Finding a Home in Ecosystem Management. *Journal of Forestry* 96 (5) pages 18 – 23

Williamson O E & Winter S G (1991) *The Nature of the Firm: Origins, Evolution and Development*. Oxford University Press

Wilson P (2007) The United Kingdom Woodland Assurance Standard. *Quarterly Journal of Forestry* 101 (2) pages 111-114

Wilson-Fox A (1968) Agricultural Wages in England and Wales During the Last Half Century pages 121 – 198 in *Essays in Agrarian History* Vol 2 Minghinton (ed). David and Charles

Witney K P (1990) The Woodland Economy of Kent 1066-1348 *Agricultural History Review* 38 pages 20-39

Witney K P (1976) *The Jutish Forest - a Study of the Weald of Kent from 450 to 380 A.D*. Athlone Press, London.

Woods K S (1949) *Rural Crafts of England A Study of Skilled Workmanship*. E P Publishing Ltd & British Book Centre Inc.

Woods K S (1921) *The Rural Industries Round Oxford. A Survey made on behalf of the Institute for Agricultural Economics*. Clarendon.

Wood Education Trust with the Coppice Association North West. (2009) 21st Century Coppice – The First Cut Conference Report.

Woodland Trust (undated a) *Looking after Woodland.* Available at http://www.woodlandtrust.org.uk/SiteCollectionDocuments/pdf/woodmanprinciples.pdf, accessed 10/12/10

Woodland Trust (undated b) *Space for Nature: Landscape Scale Action for Woodland Biodiversity.* Woodland Trust. Available at http://www.woodlandtrust.org.uk/SiteCollectionDocuments/pdf/space.pdf, accessed 10/12/10

Worrell R (1991) *Trees and the Treasury*. WWF

WWF (2004) Deadwood - Living Forests: The importance of veteran trees and deadwood to biodiversity. WWF. Available via http://www.wwf.org.uk/wwf_articles.cfm?unewsid=1644

APPENDIX 1

South East England COPPICE SURVEY

Coppicing is a traditional and sustainable way of managing woodland. Trees are cut down to ground level and then grow up with several stems. The process can be repeated indefinitely, the time between cutting depending on type of tree and intended use. Many different plants and animals – from butterflies to dormice – benefit from the increased light levels and shrubby re-growth that result from coppicing.

We need to know how much coppice is cut and where it is happening in order to target research, raise awareness of the industry and increase support for local coppice products.

The previous survey, carried out between 2000 and 2003 helped attract funding to support the industry, increasing woodland management and benefiting woodland wildlife. It is now being repeated.

We want to know where coppice is cut between 1st September 2008 and 31st August 2009

Please help by filling in the from below or sending the information in by email.

YOUR NAME:		email or phone no.	
ADDRESS			
NAME OF WOOD: WE ALSO NEED TO KNOW WHERE IT IS		Grid reference?	
Parish?		County?	
Tree species cut (please circle)	Sweet chestnut?	Hazel?	Mixed?
Approximate area cut*			

* a hectare is 100m x 100m

Please return to: Debbie Bartlett, School of Science, University of Greenwich
Central Avenue, Chatham Maritime, ME4 4TB
Email : d.bartlett@gre.ac.uk

APPENDIX 2

Finding out about the COPPICE INDUSTRY

Why do we need this information?
We know coppice is important and that there are lots of you working hard in the industry.
This is not always clear to those making decisions about rural industries. We need accurate information so that we can pass this on and make sure the importance of the **coppice worker** in the South East is not overlooked.

We can also pass your details on to potential clients for your products or services.
If you don't want us to do this please fill in the form anyway but tick this box ☐

WHO ARE YOU?

Name:		
Organisation:		
Address: Postcode:		
How long have you lived there?		
Tel:	Mobile:	Male or female:
E-mail:		Date of birth:
When did you first start working in coppice? (How did you start?)		
Why did you become a coppice worker?		
Do you have a family history in the coppice industry? (Which relatives have worked in coppice?)		

WHAT DO YOU DO?

How would you describe yourself?	
Do you fell coppice or buy wood from others? Average area cut each year?	Species Cut?
Main Products and services? (E.g. Firewood, fencing, extraction, hedge laying, tree surgery, etc. Please list)	

APPENDIX 2

ABOUT YOUR BUSINESS

Are you: self-employed or employed? (please circle)	
Do you employ workers?	If so, how many?
Do you own woodland?	If so, what area?
What months do you work: (Please circle) J F M A M J J A S O N D / All Year Round	
Do you have another job or source of income? Yes or No	If so what?
What distance do you normally travel for work each day in either hours or miles?	
Is finding good quality raw materials an issue?	
Earnings: (In confidence) <£10k £10-15k £15-20k £20-25k £25-£30k >£30k	
Is your business: (Please circle) Growing? Declining? Steady?	
Compared to 2000, is your income More? Less? The same?	
How have selling prices changed? % Up? % Down)? The same?	
How do you sell products? (Please number in order of importance) Word of mouth? [_] Local press? [_] Yellow Pages etc? [_] Trade publications? [_] Internet? [_]	
What equipment have you got? (Not including chainsaws)	
What training have you had? • • • •	In which year?
Do you need: • Training? If so what? • Machinery and equipment? If so what? • More people? How many and what skills would they need?	

Thank you for taking the time to fill in this form – please return it to:

Debbie Bartlett, School of Science, University of Greenwich, Central Avenue, Chatham Maritime ME4 4TB

If you'd like an electronic version of this form please email d.bartlett@gre.ac.uk