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TOM'S WOOD – THE HISTORY AND DEVELOPMENT OF NEW WOODLAND IN NORTH WEST HAMPSHIRE

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ABSTRACT

In 1980 the first trees were planted in what is now known as Tom's wood – a small area (2.8 acres – 1.14ha) of mixed woodland on the edge of Wildhern. Twenty-one years on, it seemed an appropriate time to document the history of this wood and to present a botanical portrait of the wood as it was handed over to the Woodland Trust. Tom's Wood supports a small but interesting diversity of flowering and cryptogamic plants as well as fungi. The species composition of shrubs and ground flora indicates an earlier history of woodland and old hedges on the site. Documentary sources support this evidence. Former woodland occupied a site close by and surrounding hedgerows may date from 1700 and earlier. The vegetation ecology is discussed in the context of former landuse, recent planting and the landscape history of the site and surrounding area. Faunal surveys are currently in progress, findings of which may be presented in a future paper.

INTRODUCTION

Aims and objectives

The first trees were planted 21 years ago and the planting and management of the young wood was the dedicated work of one man – until 1998. Since then the wood has received minimal management. After his death in 1998 the wood, previously referred to locally as Tom's Wood, was officially named in his memory.

The aim of this paper is to document the history and the planting of Tom's wood; to record the species that have colonised the wood to date; to describe the present composition of flora and fungi and discuss how it relates to the wood's history; and, to recommend the way forward for its management in years to come for the benefit of wildlife and for the enjoyment of the local community to whom the wood has been left.

An important objective has also been to encourage and invite interested specialists to participate in this survey in order that a friends' group might join the Woodland Trust in protecting the wood in perpetuity.

The last 21 years

The life of this small woodland corner began in 1981 when the first trees were planted on an area of 1.14 hectares north-west of the village of Wildhern. However, new planting does not take place on blank canvas, and this small parcel of land has a history that continues to influence the development of the wood. Likewise, as the trees become embedded in the history of the site, so the tree planter brought with him a history of his own reasons for planting:

In Tom's words: 'The history of the planting and development of a wood inevitably becomes interwoven with biographical introspection. As the trees grow up and time marches on, the past recedes but at the same time acquires a relevance that can become quite interesting'.

'On the subject of motivation for the planting of a wood I am reminded of experiences in Pakistan in 1940. In the barren hills of the north-west frontier we were obliged to dig defences against the possible invasion of the Russian forces. The possibility was remote but the interesting point was the discovery of ancient tree stumps, under-

ground in this treeless zone. The goat was of course the culprit. The land was open to herds of marauding goats. Further south where the Forestry Commission held some authority there was more control of grazing. I always had an urge to reafforest those barren hills. It is very difficult to make a connection between the Khyber Pass and small paddocks in a Hampshire village – but why not? The more trees that can be planted anywhere in the world are surely to be encouraged'.

Britain was once a predominantly wooded country until woodland clearance was started by Neolithic farmers about 5000 years ago. Now, just 11.9% of land is woodland (Forestry Commission 2004) of which 20% is ancient (defined as areas continuously wooded since 1600 (Peterken 1993, 12)) and 80% recent. Cover varies throughout the country. Compared to the county average of 7.5 % Hampshire has 19.7% woodland cover of which approximately one third is ancient (HCC 2000). Whilst overall cover in England is now greater than at any other time since the late seventeenth century due to recent planting, the fragmentation of ancient woodland continues. Clearances for agriculture and forestry, as well as for urban expansion with its accompanying demands for mineral extraction, takes place at an alarming rate. These fragments are further threatened as traditional management becomes impractical or uneconomic. This impacts on our wildlife as many of the plants and animals we associate with ancient woodland depend on continuity of management, e.g. bluebells and dormice in coppiced hazel woodland.

Ancient woodland is richer in plant and animal species than recent woodland and it can take hundreds of years for some woodland species to colonise recent woodland. Plant communities in recent woodland vary according to age and area, and whether planted or naturally regenerated. Past landuse has been shown to have an influence, together with soil type and climate, on the ecology of a recent wood together with proximity to ancient woodland or hedges (Peterken and Game 1984; Wulf 1997; Verheyen *et al.* 1999, 2003). The single most important factor for the woodland species, however, has been shown as the distance between the source of colonising species and the new woodland. In this short history of Tom's Wood the composition of plants is related to the past as identified through maps and literature.

The study area

The village lies on the southern edge of the Hampshire downs (grid reference: OS 1:50,000, SU 351508), one of 11 character areas identified in Hampshire County Council's landscape character assessment (Hampshire County Council 1999), and falls within the North Wessex Area of Outstanding Natural Beauty (AONB). The surrounding landscape is undulating countryside with arable and pasture punctuated by pockets of woodland and ribbons of ancient hedgerows (Fig. 1). Once an area of small agricultural holdings, it inevitably suffered from the intensification of agriculture in the 1960s and 1970s. However, the immediate locality still retains small areas of ancient woodland, interesting recent woodland with plantations of beech as well as ancient lanes and tracks bordered by hedgerows. An important remnant of the Winchester to Cirencester Roman road cuts across the landscape. Until Dutch elm disease struck the area in the 1970s, mature elms were an important feature of the hedgerow landscape. Since the late eighties, a few of the sites cleared of woodland in the 1960s have been replanted, some hedges restored and field margins left uncultivated with assistance of agri-environment schemes.

Topography, geology and soil

At 120 metres above sea level, the area lies over upper chalk of the Hampshire Downs.

On the site of the wood the general soil depth over chalk averages 0.254 metre. There are variations of depth caused by the terracing, the deeper layers being along the south hedge lines. The soil association is Andover II (Jarvis *et al.* 1984, 78). The soil pH was tested within different areas of the wood and ranged from 6.3 to 7.6 with an average pH of 7.1.

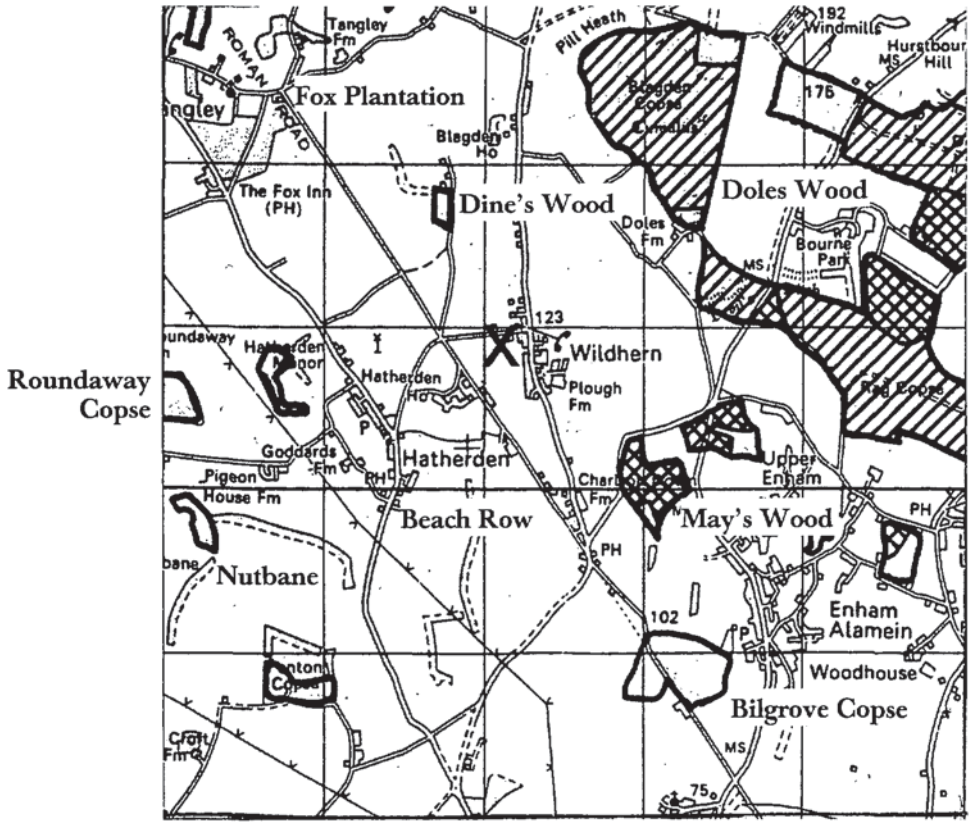

Fig. 1 Map showing study area and surrounding woodland sites. Reproduced with the permission of the Ordnance Survey. Scale 1:50,000

X marks the site of Tom's Wood

Key:

Ancient semi-natural woodland

Ancient woodland - cleared since 1950s

Ancient woodland – replanted

Recent plantation

METHODS OF INVESTIGATION

History

Historical maps and manuscripts sourced from Andover library, Hampshire Record Office and the British Library were used to trace former landuse. Maps included county maps of 1759 (Issac Taylor's map of Hampshire), 1791 (Thomas Milne's survey of the county from 1788 to 1790) and 1826, (Greenwood's map of Hampshire) as well as the 1848 Tithe map and OS maps dating from 1873. Estate maps of Hatherden House and Dines Farm (1861) and map and survey of the Estate of George Dewar (1785) were also consulted. Aerial photographs were used to complement maps to see the distribution of woods, field patterns and hedgerows. Older manuscripts

were searched for references to local forestry, including a survey of the King's Woods (1608).

Local hedges and nearby woods were walked to gather additional complementary evidence such as the tree, shrub and ground flora species in neighbouring hedges, woodland and grassland. Hedges immediately adjoining and surrounding the wood were surveyed following the standard procedure set out in the Hedgerow Survey Handbook (Bickmore 2002). An attempt was made at applying Hooper's rule (Hooper 1971) to trace the age of these hedgerows by counting the number of woody species in thirty metre-lengths.

In addition, local social and natural history records were sourced from local libraries including Dewar (1899) who wrote extensively about the natural history of the area at the end of the nineteenth century. Farm estate records have been used for details of local land history, supplemented by the testimony of local farmers and woodsmen or their surviving relatives. The original plans and plant records were also used (Ware 1993).

Botanical and Fungi Survey

Vascular plants

Trees and shrubs planted from 1980 were recorded and mapped during a survey carried out in 1982 (Ware 1993). Since then trees planted subsequently were added to the plan, as was the ride that was created in the winters of 1987/88 to 1990/91. Photographic records of the wood were made annually between 1981 and 1996. The current tree survey was undertaken between 19th April and 14th May 2002. The species of each tree were recorded, together with measurement of girth at 1.5 M height, as recommended by Mitchell (1994, 13). Tom's tree plan was updated and annotated (Fig. 2).

Ground flora was recorded throughout 2001 to 2003 following modification of the General Appraisal Methodology (M1) recommended by Mitchley *et al.* (2000, 5). This methodology is recommended for monitoring new woodland (usually for the first ten years of the project) to assess development in terms of biodiversity. The general appraisal focuses on attributes of the site, in this case, the development of woodland ground flora, including colonisation of species from adjacent habitats. For survey purposes, the wood was divided into 7 compartments. The compartments, delineated by path and old hedge boundaries, were chosen so that they could easily be relocated for future comparable surveys. The compartments are marked on the map of the wood (Fig. 2). Field layer species abundance was recorded in each compartment using the DAFOS scale (Mitchley *et al.*, 2000, 8). Nomenclature follows Stace (1997).

As an example of one species to have colonised from the old hedges, populations of dog's mercury *Mercurialis perennis* were mapped on a plan to illustrate extent of colonisation over the past twenty years (Appendix 2).

Bryophytes, Lichens and Fungi

Although vascular plants are the dominant plant group, non-flowering plants and fungi are integral to the ecology of a wood; a botanical survey would be incomplete without their inclusion. A survey of bryophytes and lichens was carried out by Mike Walsh and Phil Budd in February and March 2002 respectively. Since this date bryophytes have been monitored during most site visits. Fungi surveys were carried out by Graham Mattock on October 2001 and in November 2002. Species were recorded in each of the 7 compartments of the wood.

HISTORY OF THE SITE – FORMER LANDUSE

A Woodland landscape

The study area was taken to include an arbitrary distance of a 3 kilometre radius from Tom's Wood (Fig. 1) – this area being roughly approximate to the parish boundary. Existing woods are annotated according to their status (English Nature 1995). The same area is shown as mapped by Thomas Milne (1791) (Fig. 3) and Greenwood (1826) (Fig. 4).

The major king's forest in the area was Chute Forest. As with other royal forests, Chute Forest was probably not continuously wooded but

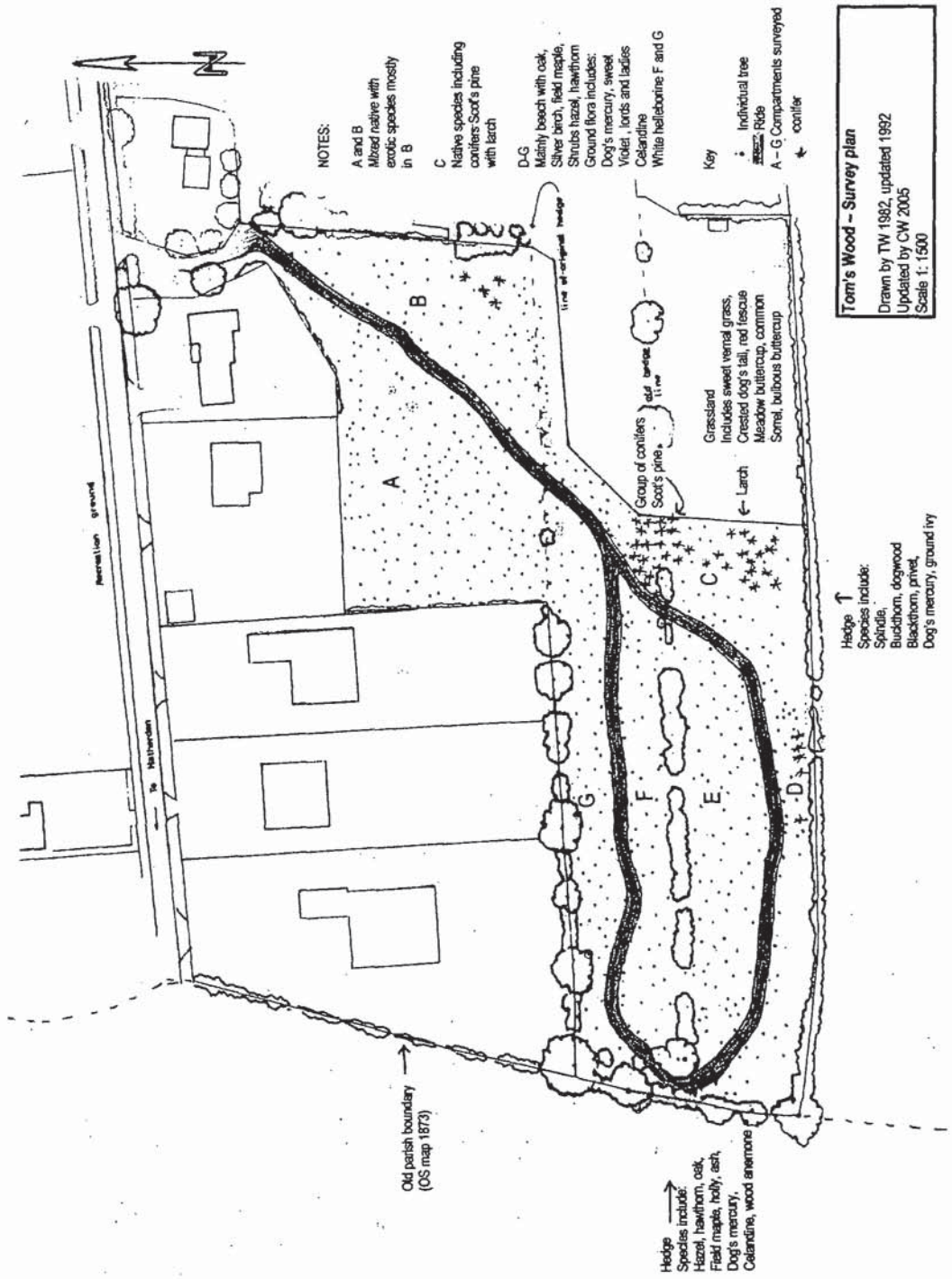

Fig. 2 Survey plan of Tom's Wood 2002

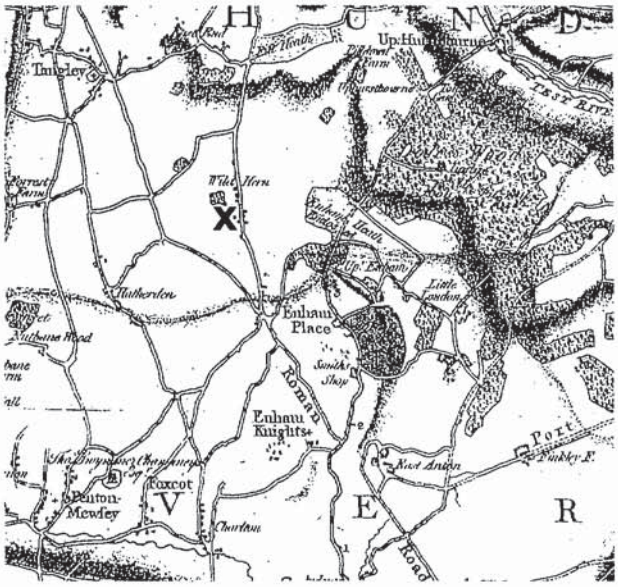

Fig. 3 Study area showing woodland in late 18th century
(source: Thomas Milne's Map of 1791)
X Approximate site of Tom's Wood

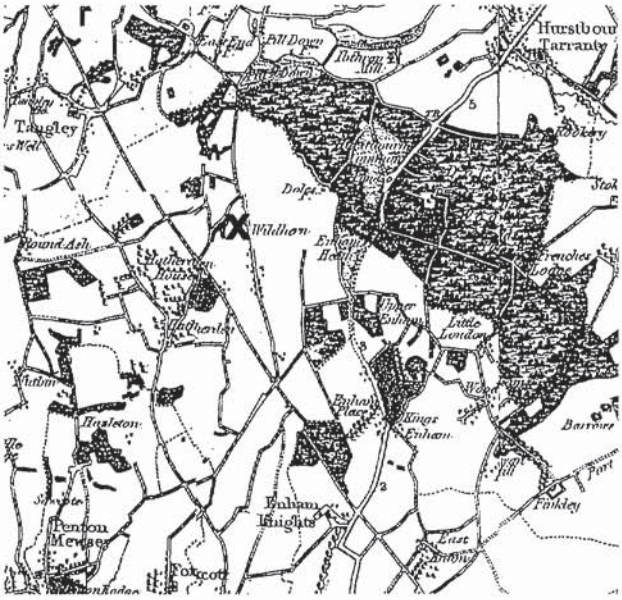

Fig. 4 Study area showing woodland in early 19th century
(source: Greenwood's Map of 1826)
X Approximate site of Tom's Wood

would have included tracts of open land including common land. The 1608 survey of the King's Woods features 11 forests in Hampshire, including New Forest and Alice Holt and makes passing reference to nearby Chute Forest under the county of Wiltshire. After a list of forests in Wiltshire the writer lists those forests they had no time to survey including Chute Forest 'Less undone for want of time . . . . . Chute Forest . . . . . .' (1608).

Although Chute Forest certainly extended across the Wiltshire/Hampshire county boundary there has been less consensus as to the precise area of north-west Hampshire it covered.

Saxton's map of 1575 shows Chute Forest extending from Tangley south-east to Enham which would almost certainly have included Doles Wood and most of Wildhern. Speed's map of Hampshire (c. 1611) is of little help as downland is shown but not woodland; the villages of Tangley and Hatherden are named but Wildhern is omitted. Likewise, Kitchin's map of Hampshire (c.1750). In fact the current usefulness of these early county maps for landscape history is dismissed by Rackham (1993, 18) due to the small scale and probable inaccuracy.

The more detailed and larger scaled maps show most of the woods and copses thought to be ancient woodland in the area but they are not necessarily consistent. Issac Taylor's map of 1759 shows Doles Wood and woodland on the site of May's Wood and Nutbane but no woodland at Dines or Roundaway. Chute Forest is an unshaded area confined to the Wiltshire side of the county border.

Thomas Milne's map of 1791 shows Doles Wood, and woodland on the site of Dine's Copse, May's Wood and Nutbane Wood but not Roundaway Copse or Bilgrove Copse. A woodland site similar in size to Dine's Copse is also shown very close to the site of Tom's Wood (Fig. 3).

Greenwood's map of 1826, considered more accurate than those of Taylor or Milne (Colebourn 1983, 24), shows Doles Wood extending from Pill Heath north of Wildhern to a strip of woodland to Finkley. Woods on the sites of May's Wood, Nutbane and Roundaway (Round Ash) are marked as well as Dine's Copse and a curiously shaped woodland area between Wildhern and Hatherden House possibly corresponding to the woodland close to the site of Tom's Wood in the map of 1791 but further north. This small patch of woodland is not marked on OS map 1895.

Doles Wood (including Blagden Copse, Rag Wood and Copse, Long Copse and Hurstbourne Common), just under one kilometre to the north-east was recorded as covering 4.85 square miles in 1926 (Dewar, 19260. It now covers an area of 34 hectares and includes mixed hazel *Corylus avellana* coppice with oak *Quercus robur* and beech *Fagus sylvatica* standards, and beech and conifer plantations. There is evidence of Neolithic occupation from tools found in Blagden copse, and considerable settlement and activity from the late Iron Age and Roman period, after which the land reverted to natural woodland (Porter 1989, Green 1987). So although there is evidence that much of Doles has been continuously wooded since 1600 (Dewar 1926), its previous history points to early clearance and cultivation on what was originally natural primary ancient woodland. Dine's Copse with hazel, oak and ash *Fraxinus excelsior*, less than a kilometre to the west of Tom's Wood, covers an area of 2.4 hectares – an area roughly unchanged from 1791.

It has not always been clear whether Doles Wood and Dine's Copse were originally included in Chute Forest. T.W. Shore (1855) describes the country north of Andover as 'one of the most interesting parts of Hampshire' where the 'forest character of Chute Forest was maintained long after most of those parts south of it, had ceased to be part of a royal forest'. 'Hurstbourne Tarrant', four kilometres north-east of Wildhern, 'was the chief forest village and records relating to the woods south of Hurstbourne Tarrant exist from the thirteenth century'. Writing at the end of the nineteenth century, Dewar (1899, 4) also assumes that Doles Wood was a part of Chute Forest but Dewar (1926) quotes a source that is less clear on the relationship of Doles to Chute Forest. Both woods are, however, shown within the overall boundary of Chute (Colebourne 1983, 18).

Fox Plantation, 1.8 kilometres north-west, was planted about 150 to 200 years ago (Eric Hall pers.comm.). The earliest map that records this

wood is OS 1873. The plantation, originally planted with beech, oak and ash with spruce was managed for its timber. Ground flora includes dog's mercury *Mercurialis perennis,* bramble *Rubus fruticosus* agg, violet *Viola* sp, wild strawberry *Fragaria vesca,* sweet woodruff *Galium odoratum,* wood avens *Geum urbanum,* and ground ivy *Glechoma hederacea.*

Closer still on the south-west edge of Wildhern, Charlton Woodland's Farm includes a small woodland of beech. This woodland appears on the OS map of 1895. The size of the beech indicates that the present trees are over 200 years old. May's Wood, approximately one kilometre south east of Wildhern fell victim to clearances in the 1960s for arable cultivation. A tiny fragment of May's Wood now remains. Less than a kilometre south of May's is Bilgrove Copse, straddling the Roman road (Hungerford Lane). Bilgove is a remnant of ancient woodland.

This mixed woodland landscape was sustained mostly by coppice-with-standards management. The most commonly coppiced species in the local downland area was hazel, ash and oak (Doles wood, Dine's Copse and May's Wood). A thriving market in hazel and ash provided material for sheep hurdles. Writing about Doles Wood in the latter part of the nineteenth century, Dewar (1899, 247) describes the local hurdles: 'the finest Hampshire hurdles are in demand in various parts of the south of England, going to customers, in some instances, even north of London'. Coppiced hazel was also used for wattle and thatching spars for buildings, pea sticks and bean rods; other underwood was bundled into faggots and sold for fire wood. Oak, ash and beech standards were left to grow for heavier timber use. Doles Wood supported many woodsmen from Wildhern as testified by more recent witnesses. Hilda Smith (pers. comm.) confirms that woodland management, as described by Dewar, was practised by her father and grandfather. Though latterly, as metal replaced wattle and as arable replaced sheep farming, hazel hurdles were made and sold for garden fencing. This method of woodland management, begun thousands of years ago, sustaining both the landscape and the market place, came to an end in the early 1950s as farming methods became intensified. There has been a recent revival of coppicing started by Hampshire County Council and the Wessex Coppice Group (HCC 2000; Capes pers.comm).

Fields and hedges

Tom's Wood was planted on ground that has a history of strip cultivation. The long narrow fields were terraced; the soil depth on the north side is less than the south side.

The origin of these narrow fields is obscure but may in part derive from medieval field systems. The pattern of field systems west of Wildhern suggests a medieval origin. There is evidence of a 'ladder' system of field patterns (David Hopkins pers. comm.) in the neighbouring village of Hatherden, the place name being first mentioned in 1193 (Coates 1989, 88). Traces of these medieval field patterns can be detected abutting Wildhern's road on the west. To the north east of Wildhern, Doles Wood is fringed by some large irregular enclosures with an outer edge of the field pattern being a little rounded in character (OS map 1st edition 1873). This suggests more encroachment into the former extent of the wood in the relatively recent past. Wildhern heath (still referred to as Wildhern's heath in 1861) on the east side of the settlement was probably an expanse of scrubby wasteland from which the name Wildhern derives. First mentioned in 1635, Wildhern means 'wild corner' or wilderness (Coates 1989, 176). The village may have been settled as woodland and wasteland were being cleared for agriculture. (David Hopkins pers. comm.). An old parish boundary running north-south and taking in the west boundary of the two long fields (see Fig. 2), may date from early medieval times. The sinuous boundary runs north-south through the study area from alongside Dine's Copse to the narrow coppice woodland of Breach Row (OS map 1871).

Moving on two hundred years, the fields belonged to separate small-holdings. The 1848 Tithe map and Andover tithe apportionment which documents land use and ownership as well as field names, shows the two long narrow fields under arable cultivation. The south field was named 'The long two acres' and the north field had a similarly unimaginative name of 'Long field'. The smaller pocket of land – now the

northern section of the wood – was pasture at the time. The pasture and the Long two acres were both owned by a local farmer; the middle 'Long Field' was owned by another villager. Herbicides and pesticides were rarely used before the second world war and rotation and manuring was more common than the chemical fertilisers used from the late 1950s. Both long fields were grazed in the late 1940s and then intermittently until the late 1970s. It is not known whether these fields were sown for grazing or whether, left fallow, they were colonised naturally by grassland species. However, given the present composition of species which includes sweet vernal grass *Anthoxantham odoratum,* crested dog's-tail *Cynosaurus cristatus,* red fescue *Festuca rubra,* meadow buttercup *Ranunculus acris,* bulbous buttercup *Ranunculus bulbosus,* sorrel *Rumex acetosa,* red clover *Trifolium pratense,* it is likely that the meadows were sown with barn sweepings as was the custom at the time, together with a grazing mix which included sweet vernal grass (Colebourn pers.comm.) There are also areas of common nettle *Urtica dioica* and creeping thistle *Cirsium arvense*, probably a result of overgrazing by ponies in the 1970s.

In the same period the site of the northern section of the wood had been a poultry farm, then cultivated for a market garden for several years and left fallow for a few more years before being turned over to grazing in the 1970s. Now approximately one-third of the two long fields remain as grassland and is occasionally grazed by sheep.

The 2 long fields which are recorded on the original OS map 1873 are surrounded by mixed hedges. These hedges, now bordering the wood and within the wood, include holly *Ilex aquifolium*, pedunculate oak, field maple *Acer campestre*, ash, hawthorn *Crataegus monogyna*, hazel, spindle *Euonymus europaeus*, dogwood *Cornus sanguinea*, crab apple *Malus sylvestris* and buckthorn *Rhamnus cathartica*. Taking different sections of the boundary hedge I surveyed three 30-metre sections along the south boundary hedge. I recorded eight woody species, seven species and four species in the three sections respectively. Six species were recorded in one 30-metre length of the old west boundary hedge. Following Hooper's Rule of the number of species being equal to the age of the hedge in centuries, the hedges are likely to date from 1600 at least. Moreover, certain plant species may be more indicative of a hedge's history than the number of species. Rackham (1993, 203) cites field maple and dogwood as being 'less good colonisers and rarely planted, may be the fourth and fifth species' (after hawthorn, oak, ash, briar or blackthorn) 'in hedges of Tudor age'. Hooper (1971) infers that a 'hedge has to be 400 years old before conditions suitable for the establishment of field maple have developed' and similarly 600 years old before the right conditions for spindle occurs. All of the above-mentioned species were recorded though field maple was present in the west boundary hedge only (Fig. 1), and is also present in the inner boundary hedge which is now contained in the wood.

A fuller picture may be formed when ground flora is taken into account. Species recorded in the hedge survey include dog's mercury, sweet violet *Viola odorata* and yellow archangel *Lamiastrum galeobdolon* and nearby, goldilocks buttercup *Ranunculus auricomus*. In a study in Huntington and Peterborough, Pollard (1972) found that mixed hedges with a variety of shrub species such as hazel, spindle, dogwood or oak *and* having woodland herbs in the ground flora such as, for example, dog's mercury, are relics of old woodland, 'the former wood edge being managed to form a hedge'. Furthermore, as Pollard (1972) states 'old woodland in lowland Britain is often at the parish edge, adjoining the parish boundary and frequently contiguous with other parish woods. The boundaries of these old woods are usually irregular and cleared areas of existing woods can often be recognised by their straight edges or their relationships with parish boundaries'. Peterken and Game (1981) found mixed hedges in Lincolnshire mainly in the vicinity of surviving ancient woods'.

The possibility that these old hedges may have formed part of a boundary of a small wood is supported by evidence on the map of 1791 (Fig. 3), and also by the evidence of an old parish boundary on the west of the site (Fig. 2) as mentioned above. In addition the composition and number of woody plant species in this old west boundary hedge (oak, ash, field maple, crab apple, elder and hazel) suggests an earlier history of woodland. At the northern end of the west boundary, the hedge was much thicker some fifty years ago, even small woodland according to local testimony.

Using both number and composition of species, the hedges may date from a period between 1200 and 1400. However the regular shape of the two long fields within the hedge boundary suggests a later origin determined by Enclosures; enclosure by agreement in the 1700s is likely (Colebourn pers. comm). It is possible however that the two systems overlap: the west boundary hedge derives from an earlier parish boundary and woodland edge, and one of the east-west running hedges is a relic of the medieval 'ladder' field system; the second and third east-west running hedges may be later additions in line with the settlement of Wildhern around the mid 1600s (David Hopkins pers.comm). The history of these local field systems and hedges certainly merit further study.

By the late 1970s the hedges surrounding the long fields had been neglected for many years and had been used to support barbed wire (stock) fencing. Rigorous rehabilitation work on the hedges was carried out during the autumn of 1979. The outer southern boundary hedge is cut every other year by the Electricity Board to keep the height clear of overhead power lines. The hedges surrounding Tom's Wood fulfil many of the requirements for wildlife value (Kirby 2001, 69) being over one metre thick, over two metres tall and they merge with the surrounding field margin via scrambling vegetation and tall herbs.

PLANTING THE WOOD

From field enclosure to wood – dates and choice of species

The idea of planting a wood evolved in the late 1970s as the area of rough grassland in the two long fields was available. The existing hedgerows would reinforce the planting and would provide a useful source of ground flora and wildlife for a new wood. Some of the taller hedgerow trees which had been barked by grazing animals, were pollarded, hazel was coppiced and elder scrub was cleared (Ware 1993).

In January 1981 the planting area was fenced off and Tom planted the first trees on 10th February 1981. He continued planting during the winters of 1980/81 to 1993 depending on the time available. The original idea was for a beech wood. Although there are no beech in the immediate vicinity, there are large areas of beech in the surrounding woods, as mentioned above. There were changes in emphasis over the years; for example a donation of an unplanned tree such as the gift of giant sequoia *Sequoiadendron giganteum* was added to the upper part of the wood; and other changes, for example new building developments, prompted the planting of more yew *Taxus baccata*, holly and cherry laurel *Prunus laurocerasus* than previously planned, to preserve the privacy of the wood. Laurel was planted on the boundary, not in the wood itself. Many of the trees and shrubs were grown from seed before planting started. Seeds were collected from the local area including the garden or, further afield for the more exotic species, for example the seeds from a cider apple tree came from Tintinhull in Somerset. Many seedlings were raised in pots and planted out in the garden. A few trees were donated and others purchased from commercial nurseries.

Nearly 700 trees were planted over thirteen years. If the wood had been planted as a forestry plantation the number of trees planted in the area would have been over 2000 – and they would have been planted in straight lines. Tom's aim was more natural grouping: 'The trees were planted randomly, some as close as two metres apart and some up to 5 metres or more. Groups of species were generally planted together with the odd exception to uphold the character of a naturally regenerating wood' (Ware 1993). Beech is the dominant species with field maple, ash and oak. Several lime *Tilia* spp. were planted as well as hornbeam *Carpinus betulus* and two groups of whitebeam *Sorbus aria*. A small number of conifers (Scot's pine *Pinus sylvestris* and Japanese larch *Larix kaempferi*) was grouped at the eastern end. Shrub species include hazel which was already present in the inner and northern hedgerow, and hawthorn, buckthorn, wayfaring tree *Viburnum lantana*, guelder rose *Viburnum opulus*. The recorded planting over the years is shown in Table 1.

The top part of the wood, where the entry is close to habitation, is more of an arboretum where several exotic species were planted. These include gifts such as giant sequoia, and its relative dawn

Table 1 Numbers of trees planted between 1980 and 1993

Year	*Number of plants*	
1980/81	Jan / Mar	214
1981/82	Nov/ Mar	152
1982/83	Nov/ Mar	2
1983/84	Nov/ Mar	5
1984/85	Nov/ Mar	39
1985/86	Nov/ Mar	15
1986/87	Nov/ Mar	68
1987/88	Nov/ Mar	54
1988/89	Nov/ Mar	60
1989/90	Nov/ Mar	40
1990/91	Nov/ Mar	16
1991/92	Nov/ Mar	21
1992/93	Nov/ Mar	12
	Total:	698

redwood *Metasequoia glyptostroboides*. These trees require a deeper soil and were planted on the terrace side with additional topsoil collected when digging the ride. Other exotic species were grown on from collected seeds including walnuts *Juglans regia* that Tom thought might one day produce good timber, pink chestnut *Aesculus* x *carnea* from the parent growing on the edge of the wood, as well as acorns including Hungarian oak *Quercus frainetto,* and *Quercus* x *hispanica*. A persuasive nurseryman led to the planting of six southern beech, both *Nothofagus obliqua* and *Norhofagus procera*. The beautiful Japanese elm *Zelkova serrata* is included in the collection and several ash including white ash *Fraxinus Americana*. A list of species is contained in Appendix 1.

Shortly after the main planting was completed Tom made it clear that visiting public were welcome to walk around the young woodland. In January 1985 Tom wrote to the Woodland Trust tentatively offering the wood, the idea being that the wood would be left to the village for amenity use and wildlife habitat but managed by the Trust. Following a visit from the Woodland Trust, the gift was accepted by the Trust in November 1985 although it would be seven years before it was handed over. Additional trees were planted on their recommendation.

Stages of growth during the first twenty years and the impact of the trees are best further illustrated by photographs (Figs. 5 – 18).

Use of local genetic stock/commercially sourced nursery material

An issue insufficiently highlighted in the early days of planting Tom's Wood was the protection of local provenance of plant material and in the winter of 1993 Tom recalled:

'In retrospect, other matters might have received more attention such as the source of trees to be planted. This may not seem to have much relevance to the planting of a small wood but the inheritance factor through plant genes is beginning to be recognised as having an important bearing on all aspects of tree plantation. There is a beech in Blagden copse, about a mile to the north, which has a span of about 35 metres. If I had been more on my toes I would have collected seed from this impressive parent' (Ware 1993).

I have calculated from Tom's notes and diaries that over 50% of native species came either as seeds or seedlings from local sources; the remainder from commercial nurseries. Of those nurseries, I have recently contacted one who confirmed that their native trees are sourced from the south east (Kent) then grown on in Holland and returned for sale as whips and standards. Ornamental species, as already mentioned above came from a variety of sources.

Early management

The young plants were protected from rabbit grazing and other mammal damage with tree shelters and spiral guards. These were regularly monitored and removed when necessary. Mown paths were maintained for access and invasive herb species checked around the young trees.

Although the ancient hedges would provide a source of shade-bearing herbs some additional woodland species were introduced in parts of the wood – see below. As the original meadow plants were shaded out care was taken to ensure invasive species such as hogweed *Heracleum sphondylium* and common nettle did not dominate the ground flora or prevent hedge species, such as dog's mercury

Fig. 5 View A – Entering the wood 1982 (photograph Tom Ware)

Fig. 6 View A – Entering the wood 1985 (photograph Tom Ware)

Fig. 7 View A – 1989 (photograph Tom Ware)

Fig. 8 View A – 1995 (photograph Tom Ware)

Fig. 9 View B – View west within long field first summer after planting 1981 (photograph Tom Ware)

Fig. 10 View B – View west within long field – 1985 (photograph Tom Ware)

Fig. 11 View B – Work on ride stopped during summer months – 1989 (photograph Tom Ware)

Fig. 12 View B – Ride now completed and beginning to weather in – 1990. Hogweed abundant (photograph Tom Ware)

Fig. 13 View B – Beech canopy beginning to overshade ride (photograph Tom Ware)

Fig. 14 View B – View at time of tree survey May 2002 – clumps of dog's mercury in background (photograph Caroline Ware)

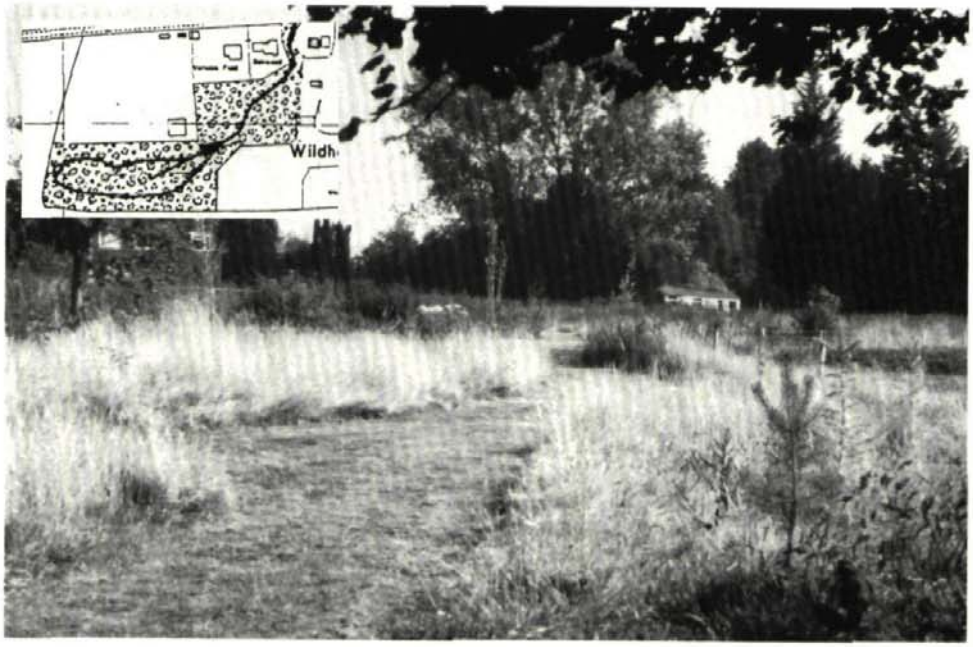

Fig. 15 View C – View north with conifers planted on right – 1982 (photograph Tom Ware)

Fig. 16 View C – 1986 (photograph Tom Ware)

Fig. 17 View C – 1990 (photograph Tom Ware)

Fig. 18 View C – 1993 (photograph Tom Ware)

and sweet violet, from colonising the wood. In the early days some selective herbicide was used as well as mowing and scything.

To address the problem of access for future management Tom decided to provide a 'ride' or track with firm foundations. This was hard physical work as Tom describes: the ride 'was dug by hand to avoid the ravages of machinery and the width was dictated by the size of the lorries delivering the hard core and gravel. About six to nine inches of top soil was dug out and wheel-barrowed away to the benefit of other parts of the wood. The whole operation took four winters. Hard-core was scavenged from a number of sources and if roadworks were being carried out locally then the discarded tarmac was accepted. If cheap base material could not be obtained then a heavier grade of scalpings had to be used. Finally the top four inches was levelled off with surface scalpings. The scalpings were distributed very cleverly by large lorries and levelled off by hand. At first the lorries reversed all the way down the ride but later, when there was a loop way out, they were able to drive forward all the way. The ride may have problems later. Leaves will accumulate of course in places and weeds will grow. However with a few years of use as a track it will perhaps survive as a useful access, particularly if it is used frequently.' This was the main expense of the wood.

Tom continued to look after the wood until shortly before he died in June 1998. Plant losses were low, probably because each tree was individually tended. Writing during the winter 1985/86 Tom noted that losses were ten.

There was little work carried out from 1998 until late summer 2002 just after the Woodland Trust took over, when lower branches over-shading the rides were cut back. Some thinning of conifers and hazel coppicing is planned for early 2005.

Introduced ground flora species

Introducing plants to the field layer on a large scale was not an option in the eighties due to problems in sourcing such plants and the likely cost of doing so. Controlling invasive shade-tolerant species by mowing, scything and spot herbicide was carried out to improve opportunities for natural colonisation from the hedges. However introductions of the quintessential spring woodland flower, the bluebell was an exception together with snowdrops.

Whilst a few bulbs of native bluebell *Hyacinthoides non-scripta* were donated from the owner of a nearby wood (Roundaway Copse), Spanish bluebell *Hyacinthoides hispanica* has also unintentionally been introduced so that there are now both English bluebell and hybrids *Hyacinthoides non-scripta* x *hispanica* in the bluebell population (Fig. 19). There are no bluebells in the surrounding hedges so it is unlikely that bluebells will arrive on their own. Conversely the hybrids are unlikely to pose a threat to native bluebell populations in Dine's Copse 800 metres away. Nevertheless I would be tempted to remove all Spanish species and hybrids as I believe Tom would have done. But for this to be effective it would mean also persuading adjacent garden owners to remove their plants of Spanish bluebell. In 2002 I planted native bluebell bulbs just over 100 metres from the existing mixed population. I will monitor these plants for any changes. It is hoped they will retain their pure identity.

Tom introduced snowdrops *Galanthus nivalis* to three areas within the wood. These have spread locally. Although snowdrops are not native to lowland woodland, they provide an attractive addition to the wood before the flowers of primrose, celandine, bluebell and others appear.

Primrose *Primula vulgaris* which is common in neighbouring woodland is not present in the surrounding hedges. The nearest population grow on the banks of the Roman road and Dines approximately 500 metres away. Ten plants were introduced in March 2000.

THE PRESENT – SURVEY RESULTS

Tree establishment

The girths of 621 trees were measured and plotted on a map of the wood. The girths ranged from 117cm and 132 cm on beech and field

Fig. 19 Mixed bluebell species and hazel (photograph Caroline Ware)

maple respectively planted in the early 1980s, to 8 cm and 22 cm for beech planted more recently (1992). Measurements for field maple ranged from 17cm to 132cm. The largest of the faster growing species such as silver birch had gained height at the expense of girth. Larger specimens of silver birch and ash had girths of 120 cm and 116cm respectively. The sizes are consistent with the age of the trees planted in open conditions. During the early years of new woodland with the young trees planted in open field at distances of between two and five metres, it is reasonable to compare the growth rate with Mitchell's rate of 2.5 cm in girth a year (Mitchell 1994, 25) so we would expect beech and field maple to have reached at least 50 cm in 20 years. Young oaks however often grow 3.75 cm to 4.5cm a year for their first 60 to 80 years of life (Mitchell 1994, 25) so the majority of oak, planted in 1982 should have reached 75 cm in girth. The girths of oaks planted in the early 1980s ranged from 66cm to 82cm.

The discrepancy between the number of trees in planting records and the number of trees surveyed maybe due to the fact that trees and shrubs with girths less than 5cm or with several stems, including yew, hazel, young hawthorn and laurel, were not measured in the current survey. For example there are twenty hazel and approximately ten guelder rose. In addition, some of the trees originally planted were subsequently felled e.g. two poplars planted in 1981 (visible in View C plates 15–18) were felled in 1994, and a few species died including 3 English elm *Ulma procera* and ten other trees, as noted above. Two Southern beech were uprooted in high winds in 2000.

Ground flora – vascular plants

Distribution patterns

The number of woodland species on the ground far exceeds the grassland species which were only recorded along edges bordering grassland (compartments B and C).

Dog's mercury was abundant near the old hedge-lines in all compartments though markedly less so in compartment A. The mapping of population movement of dog's mercury from the hedges is shown in Appendix 2. Other species that are frequent to abundant throughout the wood include lords and ladies *Arum maculatum*, wood avens, ground ivy, field maple seedlings, ivy-leaved speedwell *Veronica hederifolia,* and common nettle. Species frequent to abundant in three to four compartments were: celandine *Ranunculus ficaria* ssp.*bulbilifer,* sweet violet, germander speedwell *Veronica chamaedrys*, cow parsley *Anthriscus sylvestris*, cleavers *Galium aparine* and hogweed. The last four species occurred more commonly in the northern upper part of the wood whereas celandine and sweet violet occurred more commonly in the main part of the wood (compartments D–G). The western boundary of the wood was more species-rich with wood anemone, two species of *Ribes,* and male fern *Dryopteris filix-mas* together with lords-and-ladies, wood avens, sweet violet, dog's mercury, celandine and bluebells.

Remnant grassland species such as meadow buttercup, red fescue, cut-leaved geranium *Geranium dissectum,* lesser stitchwort *Stellaria graminea* were recorded growing in compartments B and C alongside the grassland together with shade tolerant species such as germander speedwell and hedge bedstraw *Galium mollugo.*

Other recorded species were scattered (occasional or scarce) throughout the wood.

Woodland herbs and tree and shrub seedlings in the ground flora can be broadly sorted into three main categories partly based on Peterken's Lincolnshire groupings (1993, 92) and others (Grime *et al.* 1988, Honnay *et al.* 1999, Hermy *et al.* 1999) and adapted for Hampshire:

1) 'primarily' woodland species including ancient woodland indicators and woodland colonists that are characteristic species of both ancient and secondary woods;

2) fast colonising woodland species including shade-bearing weeds;

3) remnant grassland species i.e. those species that are also present in the adjoining grassland.

The species are listed under these headings in Table 2.

Primarily woodland species

This layer comprises species generally recognised as slow colonisers to secondary (recent) woodland. Wood anemone *Anemone nemorosa* and stinking iris *Iris foetidissima* are ancient woodland indicators in Hampshire (Rose 1999). The population of wood anemone was recorded on the western edge of the woodland (compartment F) in the hedge boundary. Surprisingly it had not been observed before Spring 2003. However since wood anemone is not known to have a persistent seed bank (Grime *et al.* 1988) and is a poor colonist, its presence, albeit a small population, is likely to have been in existence for many years. Plants of stinking iris were also recorded in the western end of the wood as well as the north-east (compartment B).

Two other ancient woodland indicators were recorded nearby. Yellow archangel was present in the west hedge sixty metres from the wood and it will be interesting to see if and when it moves into the wood. Since writing, however, this area of hedge was found in May 2005 to have been sprayed with herbicide, which considerably reduces the chances of yellow archangel surviving at all. Yellow archangel was also found (May 2005) in a previously unsurveyed area near the entrance to the wood – (approx 28 metres away). It is hoped that this plant may in time spread into the wood itself. Goldilocks buttercup was found further away from the hedge line (approx 100 metres from the wood edge) but with a 3 metre expanse of tarmac to leap its spread into the wood itself is unlikely. The western boundary of the wood was slightly more species-rich which reflects its likely history as a wood relict hedge (discussed above). All populations of these slow colonisers are small but tenacious having survived in this tiny fragment of old woodland for probably hundreds of years.

Species such as sweet violet, lords and ladies, celandine, and dog's mercury are also primarily woodland species but have relatively good colonising ability compared to ancient woodland indicators, and the hedges have hastened their entry to the wood.

Two important recent (2002) colonisers to the wood are common twayblade *Listera ovata* and white helleborine *Cephalanthera damasonium.*

Table 2 Ground flora recorded 2001-2004

(1) Woodland species	*(2) Secondary woodland species including Shade-bearing weeds**	*(3) Remnant grassland species*
*Anemone nemorosa****	*Aegopodium podagraria*	*Achillea millfolium*
*Arum maculatum***	*Agrimonia eupatoria**	*Agrostis sp TBC*
Cephalanthera damasonium	*Alliaria petiolata**	*Anthoxanthum odoratum*
*Dryopteris filix-mas***	*Anthriscus sylvestris**	*Arrhenatherum elatius*
Cornus sanguinea seedling	*Arctium minus**	*Cerastium holosteoides*
Corylus avellana seedling	*Bromus sterilis*	*Dactylis glomerata*
Euonymus europaeus seedling	*Bryonia dioica**	*Festuca rubra*
*Geum urbanum***	*Carex divulsa* ssp *divulsa*	*Fumaria officinalis*
*Hedera helix***	*Cirsium arvense**	*Geranium dissectum*
*Iris foetidissima***	*Cirsium vulgare**	*Holcus lanatus*
*Listera ovata***	*Convolvulus arvensis*	*Plantago lanceolata*
Mercurialis perennis	*Fragaria vesca*	*Ranunculus acris*
*Poa trivialis***	*Fraxinus excelsior*	*Ranunculus repens*
Prunus spinosa seedling or sucker	*Galium aparine**	*Rumex acetosa*
Quercus robur seedling	*Galium mollugo*	*Stellaria graminea*
Ranunculus ficaria Ssp.	*Glechoma hederacea***	
Bulbilifer	*Heracleum sphondylium**	
Ribes uva-crispa	*Hypericum perforatum*	
Ribes nigrum	*Lamiastrum galeobdolon* cv.	
Rosa sp seedling	*Lamium album**	
*Rubus fruticosus***	*Lapsana communis**	
Rumex sanguineus **	*Myosotis arvensis**	
*Silene dioica***	*Prunella vulgaris*	
*Urtica dioica***	*Rumex obtusifolius**	
Viola odorata	*Sambucus nigra* seedling	
Clematis vitalba	*Senecio vulgaris*	
	Silene latifolia	
Introduced woodland species	*Solanum dulcamara**	
Galanthus nivalis	*Stachys sylvatica***	
Hyacinthoides non-scripta	*Stellaria media**	
Hyacinthoides hispanica	*Taraxacum officinale* agg*	
Primula vulgaris	*Taxus baccata* seedling	
	Veronica chamaedrys	
	Veronica persica	
	*Veronica hederifolia**	

***ancient woodland indicators in the south (NCC 1986)

** fast-colonising woodland species, characteristic members of undisturbed communities in ancient woodlands (Peterken 1993)

* shade-bearing weeds (Peterken 1993)

Secondary/recent woodland species including shade-bearing weeds

Most of the other recorded shade-bearing species, normally found in hedges and other shaded habitats, were found to be efficient colonisers of recent woodland in Lincolnshire (Peterken and Game 1984), as they are here. These include ground ivy, hedge woundwort *Stachys sylvatica*, hedge mustard *Alliaria petiolata*, hedge bedstraw *Galium mollugo*, and cow parsley, many of which would have been present in the original hedges and are also present in other hedges close by.

Remnant grassland species

The grassland species have gradually been replaced by more recent shade-bearing colonisers. Up until 1998 small glades remained and supported fescues, yorkshire fog *Holcus lanatus,* meadow buttercup, common sorrel and small scabious *Scabiosa columbaria*, but now grassland remnants only remain where woodland meets pasture.

Cryptogamic plants and fungi

Bryophytes

An early bryophyte coloniser to the wood was *Eurhynchium praelongum* which spread over large surfaces of the ground, on banks and at the bases of some trees (pers.obs.) Eighteen other species were recorded in the survey (Table 3). All are common species of lowland deciduous trees and woodland (Watson 1995).

Brachythecium rutabulum, a very common pleurocarpous moss is present on the ground beneath and on the base of trees as well as on the paths and rotting wood. Likewise, and superficially similar in appearance, *Hypnum cupressiforme,* in its most typical form, was found occasionally forming mats on the branches and trunks of trees. Another bryophyte of robust habit is *Homalothecium sericeum* which has formed bright silky mats on the base of many trees including field maple.

Several species of tree with neutral to alkaline pH bark, including ash, field maple and elder are important for epiphytes. *Amblystegium serpens*, common in moist woodlands and hedge banks in southern England was growing on field maple. *Orthotrichum affine*, another common species in woods and other shady habitats was an early coloniser in Tom's Wood, forming distinctive green tufts on the bark on field maple and ash. *O. diaphanum* was found less commonly on these two tree species. In contrast to the tufts of *Orthotrichum affine, Dicranoweisia cirrata* was also present, forming dense lightly yellowish green cushions and mats on the bark of trees and shrubs including hawthorn.

Of the four liverworts recorded *Frullania tamarisci* was perhaps somewhat surprising to find as it is more commonly found on rocks. It was growing here on field maple (Fig. 20).

A greater number of bryophyte species were found than might be expected in a recently-planted woodland, perhaps because of the higher proportion of older stumps and logs provided by the old hedges and the hedgerow trees of ash and field maple.

Nearby woods support acid-loving species such as *Mnium hornum, Dicranum scoparium* and *Atrichum undulatum* on banks and at the base of beech and silver birch and it will be interesting to see how long before these species colonise this wood.

Table 3 Bryophytes recorded 2002

Bryophytes

Mosses:	Liverworts:
Amblystegium serpens	*Metzgeria furcata*
Brachythecium rutabulum	*Lophocolea heterophylla*
Brachythecium velutinum	*Lunularia cruciata*
Dicranoweisia cirrata	*Frullania dilatata*
Dicranella heteromalla	*Frullania tamarisci*
Eurhynchium praelongum	
Eurhynchium striatum	
Fissidens taxifolius	
Homalothecium sericeum	
Hypnum cupressiforme	
Orthotrichum affine	
Orthotrichum diaphanum	
Rhynchostegium confertum	
Tortula laevipila	

Fig. 20 Moss *Orthotrichum affine* and liverwort *Frullania dilatata* on field maple 2.1.2005 (photograph Francis Ware)

Lichens by Phil Budd

A total of 25 taxa of lichens were recorded and 24 of these were determined to species level (Table 4). Most of the lichen species recorded were corticolous, that is to say that they were associated with the wood or bark of trees. However one saxicolous species was identified on chalk/flints, namely *Verrucaria muralis*. As would be expected for a woodland site on chalk, there were no terrestrial species of lichen.

The lichen flora of Tom's Wood was found to be rather deficient. This can be attributed to the fact that, apart from the remains of old hedgerows, the woodland is very new. Most of the trees were planted in the 1980s and therefore the lichen communities have had little time to develop.

It is clear that in time a rich lichen flora is likely to develop if the woodland character of the site is maintained. Support for this prediction can be found on an old cherry in an adjacent cottage garden. The bark of this tree is covered in foliose lichens including three species not identified

Table 4 Lichens recorded 2002

Lichens

Arthopyrenia sp.
Arthonia punctiformis
Candelariella reflexa
Cladonia fimbriata
Evernia prunastri
Fuscidia lightfootii
Lecanora chlarotera
Lecanora conizaeoides
Lecanora expallens
Lecidella elaeochroma
Lepraria incana
Parmelia caperata
Parmelia glabratula
Parmelia reticulata
Parmelia subaufifera
Parmelia subrudecta
Parmelia sulcata
Physcia adscendens
Physcia caesia
Physcia tenella
Physconia grisea
Ramalina canariensis
Ramalina farinacea
Verrucaria muralis
Xanthoria parietina

Table 5 Fungi recorded 2001 and 2002 – listed alphabetically by class

Ascomycetes
Daldinia concentrica
Diatrype disciformis
Hypoxylon fragiforme
Hypoxylon fuscum
Nectria cinnabarina
Xylaria hypoxylon
Basidiomycetes
Agaricus praeclaresquamosus
Agaricus silvicola
Agrocybe erebia
Auricularia auricula-judae
Byssomerulius corium
Chondrostereum purpureum
Clavulina cristata
Clitocybe fragrans
Clitocybe vibecina
Coprinus micaceus
Cortinarius brunneus
Crepidotus cesatii
Crepidotus variabilis
Cystoderma granulosum
Cystolepiota bucknallii
Dacrymyces stillatus
Entoloma sp.
Entoloma pleopodium
Entoloma sericeum
Exidia glandulosa
Exidia nucleata
Exidia thuretiana
Hebeloma crustuliniforme
Hyphoderma sambuci
Hypholoma fasciculare
Hypochnicium sp.
Inocybe sp.
Laccaria laccata
Lachnella sp.
Lactarius blennius
Lactarius deliciosus
Lactarius glyciosmus
Lactarius quietus
Lactarius torminosus
Lepiota castanea
Lepiota cristata
Lepiota friesii
Lepista flaccida
Lepista nuda
Macrolepiota rhacodes
Macrotyphula fistulosa
Macrotyphula fistulosa var. *contorta*
Marasmiellus ramealis
Marasmius cohaerens
Marasmius wynnei
Mycena sp.
Mycena arcangeliana
Mycena galericulata
Mycena galopus
Mycena leptocephala
Mycena pelianthina
Mycena pseudocorticola
Mycena pura
Mycena sanguinolenta
Mycena vitilis
Peniophora sp.
Peniophora quercina
Psathyrella sp.
Rhodocollybia butyracea
Stereum hirsutum
Stereum rugosum
Stropharia cyanea
Tremella mesenterica
Tubaria furfuracea
Xerula radicata

within Tom's Wood itself i.e. *Platismatia glauca, Hypogymnia tubulosa & Parmelia borreri.*

Currently the lichen flora of Tom's Wood is dominated by early successional species associated with smooth, young bark such as *Lecanora chlarotera, Lecidella elaechroma* (Fig. 21) and *Lepraria incana.* However the presence, mostly in small quantities of six species of *Parmelia* and two species of *Ramalina* is a clear indication of low atmospheric pollution.

Another important factor for the lichen flora of Tom's Wood is the fact that the majority of the tree species have alkaline or basic bark. Such trees include ash *Fraxinus excelsior,* field maple *Acer campestre,* elder *Sambucus nigra* and blackthorn *Prunus spinosus.* Trees with alkaline bark tend to support far more lichens than those with acid bark such as conifers, birch *Betula sp* and alder *Alnus sp.*

The only uncommon species of lichen recorded in Tom's Wood were *Fuscidia lightfootii* and *Ramalina canariensis.* The latter species was of particular interest and may be favoured by nutrient enrichment of bark. The presence in the wood of such species as *Physcia caesia, Physcia tenella* and *Physconia grisea* support the idea that many of the trees in Tom's Wood have nutrient enriched bark. This is probably an effect of fairly intensive agriculture in the surrounding area but this is a good thing for at least some species of lichen.

Fungi by Graham Mattock
Chairman of the Hampshire Fungus Recording Group

Tom's Wood has a rich and varied mycota (Table 5) but it is surprising, considering the diverse tree species present, that some of the genera of fungi

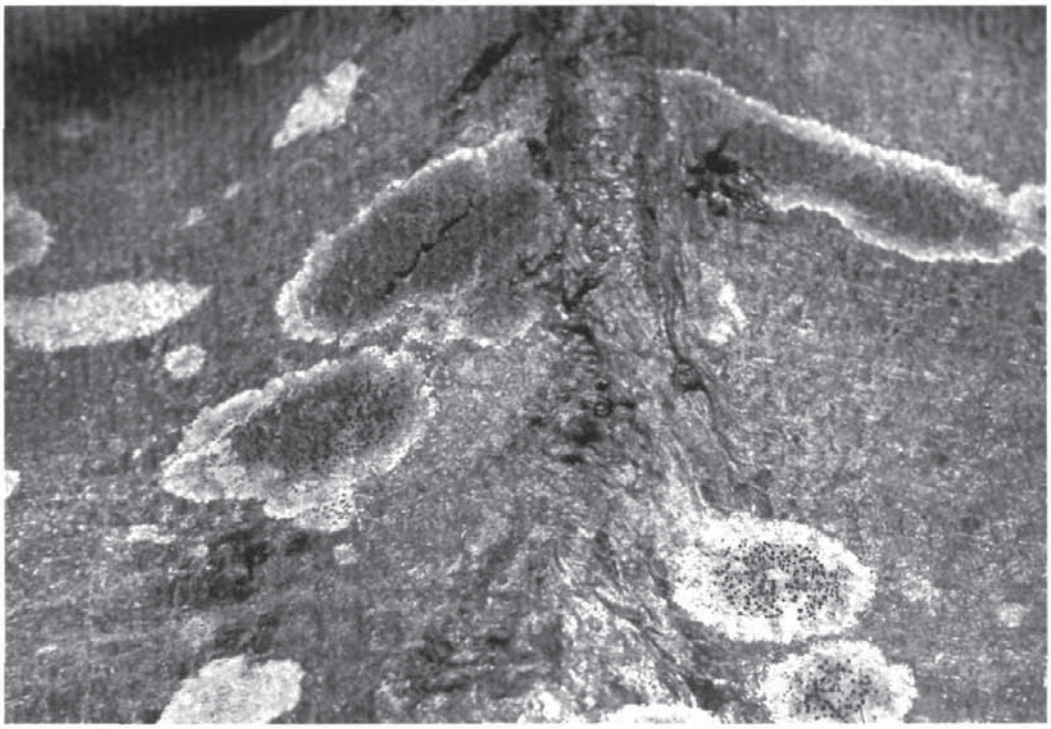

Fig. 21 Lichen *Lecidella elaeochroma* on beech 2.1.2005 (photograph Francis Ware)

that are known to form mycorrhizal associations with tree roots are absent. The *Lactarius* species are particularly well represented by *L. blennius* associated with *Fagus*, *L. deliciosus* with *Larix*, *L. glyciosmus* with *Betula*, *L. quietus* with *Quercus*, *L. subdulcis* with *Fagus* and *L. torminosus* with *Betula*. Within the Cortinariaceae two *Hebeloma* species have been recorded at Tom's Wood- *H. crustuliniforme* associated with a variety of the trees and *H. mesophaeum* with *Larix*; *Cortinarius* is represented by a single species *C. brunneus* recorded during both the 2001 and 2002 surveys. Conspicuous by their absence are species from the mycorrhizal genera of *Russula*, *Amanita* and *Boletus*.

Species of interest

Several of the fungal species recorded at Tom's Wood deserve a special mention. During the 2001 survey the attractive yellow *Entoloma pleopodium* (= *E. icterinum*) was recorded under *Fraxinus* in compartment A. Also during the 2001 survey *Cystoderma granulosum* was found in compartment C. Unfortunately neither of these two uncommon species were seen in 2002.

An impressive display of *Mycena pseudocorticola* (Fig. 22) was observed during 2002. Several hundred fruit bodies of this delicate small agaric lined the rotting bark of a standing field maple in compartment E.

Agrocybe erebia is a medium sized toadstool with brown spores, a chocolate brown cap and a white ring on its stem. It is said to be a common species in Britain but this would seem to be untrue for Hampshire (it has never been recorded on any of the Hampshire Fungus Recording Group's numerous forays). I was therefore pleasantly surprised to find some magnificent specimens of *Agrocybe erebia* at Tom's Wood during the 2001 survey, my first encounter with this toadstool in the field. It fruited again in 2002 in the same spot in compartment F.

Fig. 22 Fungi: *Mycena pseudocorticola* on bark of field maple 16.11.2002 (photograph Graham Mattock)

Fig. 23 Fungi: *Macrotyphula fistulosa* 28.10.2000 (photograph Graham Mattock)

A speciality at Tom's Wood is a Club fungus called *Macrotyphula fistulosa* (Fig. 23) whose tall slender fruit bodies emerge from fallen twigs and branches buried in the leaf litter. It is hardly a rarity, usually being found as an isolated cluster, but here it fruits gregariously across the wood being recorded in all compartments A-G. The truncated and contorted variety of this fungus, called *Macrotyphula fistulosa var contorta*, was also recorded on standing dead wood in compartment A.

Survey evaluation

Unlike flowering plants, fungi have erratic and unpredictable fruiting patterns; some species only fruit under optimum conditions and are not seen again in the same location for many years. The single surveys in 2001 and 2002 can only provide 'snapshots' of the fungi present in Tom's Wood. The impressive species list compiled so far suggests Tom's Wood is a site of fungal importance even though no red data list species have so far been recorded. It is hoped that further annual surveys will provide a truer picture of all the fungal species present.

DISCUSSION

The plants in this small plot may be seen as a product of the wood's former land history where the different flowering plant groups illustrate differ-

Fig. 24 Flowering plant dog's mercury (photograph Caroline Ware)

ent layers of history and corresponding land use or management.

Relics of ancient hedgerows or former woodland edge

In some areas, notably Northamptonshire and Lincolnshire, dog's mercury is an indicator of ancient woodland or wood-relict hedges (Pollard 1973, Peterken and Game 1984). It is a common plant of hedges and woodland in Hampshire but usually takes some fifty years to colonise secondary woodland (Colebourn pers. comm.) The presence in Tom's Wood of dog's mercury (Fig. 24) which has been observed to spread outwards (Appendix 2) from the hedges into the wood – presumably vegetatively since regeneration by seed is rare (Grime *et al.* 1988) – strongly suggests that the hedges have provided the population source. Similar observations were made of dog's mercury colonising the naturally regenerating wood of Geescroft Wilderness, Rothamstead from boundary hedgerows (Piggott 1977). Less clear, given the isolation of the hedges from woodland, is the original population source. It may have spread from an earlier population in the older western boundary hedge or could be a chance seed introduction. Connecting hedges in the surrounding area also contain some dog's mercury though in hedges bordering arable crops its population is sparse possibly due to herbicide drift. Though Gove *et al.* (2004) found that dog's mercury, recovered well and showed fewer long-term effects of herbicide drift than many other species. The nearest wood is 800 metres away from Tom's Wood and there is almost continuous hedgerow apart from a gap of three metres in the form of New Road that was constructed in approximately 1850. Before the road construction the hedge would have been continuous from Dine's Copse. The population of dog's mercury may possibly have arrived from a source population in Dine's Copse. However, the corridor function of hedgerows for woodland plants is questionable because hedgerow habitats differ not only in light/shade intensity but also in soil nutrient levels and microclimate (McCollin *et al.*

2000). It is more likely that if the west boundary hedge is wood relict hedge as suggested above, it is the original source of dog's mercury (as well as other woodland species).

Woodland plants, including dog's mercury, stinking iris and wood anemone, that normally take decades to colonise new woodland, moved in after a few years and now have firmly established populations. This confirms evidence that new woodlands planted near or incorporating semi woodland habitats such as ancient hedges will become richer in woodland plants than isolated new woods 500 metres or more from sources (Peterken 2000). As mentioned above, several new woods have been planted locally in the last 10 years as part of agri-environment schemes and it would be interesting to compare species colonisation rates and patterns of these other new woods.

Influence of former pasture grassland

Open spaces, rides and edges are important habitats in woodland providing opportunities for grassland plants and animal species (Peterken and Francis 1999; Ferris and Carter 2000). The wood's former life as grassland and pasture has contributed grassland species including meadow buttercup, sweet vernal grass, cocksfoot (Table 2) that survive on the south and east facing edges. However other species including small scabious, wild basil *Clinopodium vulgare,* red clover *Trifolium pratense* have been shaded out in the last five years. For conservation purposes edge management as described by Buckley *et al.* (1997) along the south and eastern boundary (compartments B and C) might stimulate the conditions for some of the grassland species to reappear.

In addition, nitrophilous and phosphatophilous species such as common nettle, hogweed and cow parsley benefit from the most recent land use i.e. grazing, as well as disturbance. While arguably less attractive and too invasive, umbellifers such as hogweed and cow parsley are important for many insect species including flies, parasitic hymenoptera and beetles (Ferris and Carter 2000, 28). Cow parsley, especially, is attractive in the upper eastern end of the wood under the spring canopy of exotic tree species. Hogweed, once ubiquitous, has gradually been subdued over the past eight years by the shade of the maturing tree canopy. Common nettle is an important food plant for several species of butterfly and moths. Many of the moths species recorded during a moth trapping session in June 2003 are reliant on nettle as a food plant (Budd 2003). Although it has been suggested that common nettle might be responsible for delayed establishment of woodland plants in many new woods (Honnay *et al.* 1999), research carried out in 1964 found dog's mercury successfully competing with nettle (Piggott's and Taylor 1964). In many areas of Tom's Wood dog's mercury out-competes nettle.

Other plants of cultivation and disturbance are also important nectar-producing plants including creeping thistle, hedge woundwort and ground ivy.

Recent Planting

The trees introduced as small plants and seedlings between 1980 and 1987 are well established, provide an attractive addition to the landscape (Figs. 25 and 26) and support epiphytic bryophytes and lichens as well as mycorrhizal associations. The trees have provided shaded conditions for emerging woodland ground flora – for plants that have been living, confined to hedges for well over one hundred years as well as new colonisers.

In addition, the ornamental species in the north-eastern section (compartment B) are established and provide a transition from houses to native wood. Some thinning is now required to allow specimen trees space and light to develop to their full potential. For example, Norway maple *Acer platanoides* has acted as a good nursery species providing a fast-growing canopy but could be reduced to provide space for neighbouring Japanese elm on the north side and dawn redwood south of this group. Many conservationists would not recommend planting these non-native species in a new wood and they are not included in recent woodland planting prescriptions (Rodwell and Patterson 1994; Gilbert and Anderson 1998). Tom had considered this but decided 'the planting of a mere three acres of isolated grassland is not going to have much impact on the surrounding countryside' and so

Fig. 25 General View from meadow May 2000 (photograph Caroline Ware)

Fig. 26 General View – December 1999 (photograph Vron Ware)

added some exotics as well as conifers. In fact many exotic species that have been grown in Britain for over a hundred years are now recognised for wildlife value. Cider apples – though perhaps they do not come to mind as exotic – provide food for a range of insects as well as birds; conifers can provide extra bird cover in winter and food for particular species including goldcrest and coal tit (Couzens 2005); horse-chestnut, prone to 'sap runs, supports an interesting fauna' (Kirby 1992, 27). Sycamore was not included because of its invasive habit, but was already present in the south boundary and middle hedgerow. It is not showing signs of self-seeding in the wood.

Many of the shrub species are additional plants of those already present in the original hedges such as hazel, hawthorn and spindle and therefore extend habitats for animals and insects dependent on these particular plant species. The hedges have provided shelter for the young trees as well as a source of shade-bearing and woodland plants. Hedgerow trees and shrubs on the south boundary have been pollarded and are maintained at a height of two metres and this provides good bushy growth for animals and birds. The hedgerow trees, including ash, oak and field maple, on the west boundary continue to provide an air of maturity to the wood.

Recent arrivals

Plants also arrive because of the change in environmental conditions including increased shade and humidity. Bryophytes and lichens as well as fungi are selective in terms of habitat and respond more rapidly than flowering plants to environmental changes such as light intensity, humidity and temperature. The arrival of non-flowering plants and fungi discussed above contribute greatly to the ecology and character of the wood.

Flowering plants that have arrived on their own include white helleborine and common twayblade. The minute light seeds of orchids enable them to be blown long distances but orchids have precise habitat requirements and germination is also dependent on fungal associations. White helleborine favours beech woods but has not been recorded in the study area though it has been recorded within tetrad SU3650 (Brevis *et al.* 1996). Populations of common twayblade have been recorded in Doles Wood (Rag wood and Wallop hill copse) and Fox Plantation in the last ten years (HBIC 2004). White helleborine is known to be self-pollinating; common twayblade relies on small insects attracted by its abundant nectar. It is hoped that their tiny populations increase.

This small woodland together with uncultivated margins of the adjacent arable fields extends the wooded network in the local area and in many ways reinstates the small patch of woodland that once grew close by. The composition of tree species may be different but the ground flora is responding under their canopy.

VALUE FOR NATURE CONSERVATION

Size and area of woodland

Tom wrote that 'the small acreage being planted is really insignificant when one looks around the neighbourhood' and at many times he said he wished it could have been at least an acre larger .... Although the area now covered by woodland plants is small in landscape terms it nevertheless offers opportunities for both faster, and slow colonising woodland herbs to extend their populations. This in turn increases habitats for important woodland colonisers such as white helleborine, as well as habitats for mammals, birds and invertebrates which a future survey will evaluate. It is unlikely to attract many additional woodland plant species as there are few species in the surrounding hedges that have not already colonised the wood. Yellow archangel and goldilocks buttercup have already been mentioned and two, more common, species close by, are greater stitchwort *Stellaria holostea* and false brome *Brachypodium sylvaticum*. Both these species are growing less than 500 metres away and may arrive in due course.

Habitat diversity

The main benefit of larger new woodland is the opportunity it provides for additional habitats

including grassland, wetland and bog species. Open spaces are important for grassland as well as other species, for example sedges *Carex* species and rushes *Juncus* species as well as cowslips *Primula verris,* ladies smock *Cardamine pratense* and common spotted orchid *Dactylorhiza fuschii.* The disadvantage of small woods is that open spaces, including wide rides, cannot obviously be included in the design due to lack of space. There is therefore an argument for a minimum size of new woodland to enable open glades to be included. Peterken (2000, 298) recommends 3 hectares as a minimum size of a new wood.

The rides in Tom's Wood are in scale with the site but now are shaded by the canopy of beech, field maple, ash and lime (Figs. 13 – 14). This places more importance on the adjoining unimproved grassland that complements the wood (Fig. 25); it is important that it is retained as such. Much of the wildlife that the wood supports, including birds and bats, needs structural diversity provided by this mix of open grassland, shrubs and trees. The south boundary hedgerow, alongside both the field and wood provides important habitat. Additional shrubby habitat could be included by coppicing or pollarding some trees and shrubs along the wood–field boundary. This would also benefit more light demanding edge plant species.

There is an absence of water in the wood or field, though there is a dew pond about 500 metres away.

Management

This small corner of wood relict hedges that has harboured a tiny fragment of woodland for possibly several hundreds of years has provided a source for woodland species to colonise Tom's Wood. The challenge now is to encourage their spread through appropriate management. Future management will have an impact on the continuing colonisation rates. As the canopy continues to increase the number of species on the ground may diminish. The importance of both open and woodland edge habitats has been discussed and can be addressed by layering some of the south and east-facing boundary as well including some coppicing within the wood.

People

An important element of nature conservation is community involvement and the wood, opened to the public from 1985, has enabled local visitors to closely observe the transformation from pasture to woodland, to observe colonising wildlife, and to enjoy the wood as a local amenity.

An amenity for the village and a contribution to wildlife were Tom's stated aims when he planted the wood – we need to continue his work to ensure these aims are carried out.

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Finally, this paper is dedicated to the inspiration and memory of my father, Tom Ware, who planted this wood.

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APPENDIX 1: LIST OF TREE AND SHRUB SPECIES PLANTED IN TOM'S WOOD 1980/81 TO 1992/93

Scientific name	*Common name*	*Notes*
TREES		
Native Species		
Acer campestre	Field maple	
Betula pendula	Silver birch	
Betula pubescens	Downy birch	
Buxus sempervirens	Box	
Carpinus betulus	Hornbeam	
Corylus avellana	Hazel	some filbert (1759) planted in the upper section of the wood
Crataegeus monogyna	Hawthorn	
Fagus sylvatica	Beech	
Fraxinus excelsior	Ash	
Ilex aquifolium	Holly	Girths of holly not measured; numbers excluded from total of 691
Malus sylvestris	crab apple	
Pinus sylvestris	Scots pine	
Quercus robur	Pedunculate oak	
Salix caprea	Goat willow	
Sorbus aria	Whitebeam	
Sorbus aucuparia	Rowan	native and hybrids in the northern end of the wood
Sorbus torminalis	Wild service tree	
Taxus baccata	Yew	Girths of smaller yew trees were not measured during survey 2002
Tilia platyphyllos	Large-leaved lime	
Tilia x europaea	Common lime	
Ulmus glabra	Wych elm	
Ulmus procera	English elm	English elm succombed to Dutch elm disease in 1997

Introduced Species - northern section of the wood (A & B)		*Dates below relate to date of introduction to Britain*
Acer griseum	Paperbark maple	1901
Acer platanoides	Norway maple	1683
Acer saccharinum	Silver maple	1725
Aesculus hippocastanum	Horse chestnut	1616
Aesculus x *carnea*	Pink chestnut	Before 1818
Castanea sativa	Sweet chestnut	Introduced by the Romans
Cercis siliquastrum	Judas-Tree	Pre-1600
Fagus sylvatica 'Heterophylla'	Fern-leaf beech	1820
Fagus sylvatica 'Purpurea'	Copper beech	Pre-1700
Fagus sylvatica 'Zlatia'		1892
Fraxinus Americana	White ash	1724
Fraxinus ornus	Manna ash	Pre-1700
Ginkgo biloba	Maidenhair tree	1758
Juglans regia	Walnut	Early introduction
Larix kaempferi	Japanese larch	1861
Liquidambar styraciflua	Sweet gum	17th century
Malus domestica	Apple	cider apple seeds from Tintinhull, Somerset
Metasequoia glyptostroboides	Dawn Redwood	1948
Nothofagus obliqua	Roble beech	1902
Nothofagus procera	Rauli beech	1910
Picea abies	Norway spruce	Christmas tree - 1500
Pinus nigra	Austrian pine	1835
Populus alba	White poplar	An early introduction
Populus alba 'pyramidalis'		1872
Prunus species		
Quercus cerris	Turkey oak	1735
Quercus frainetto	Hungarian oak	1838
Quercus ilex	Holm oak	1500
Quercus palustris	Pin oak	Pre-1770
Quercus x *hispanica* 'Lucombeana'	Lucombe oak	1762

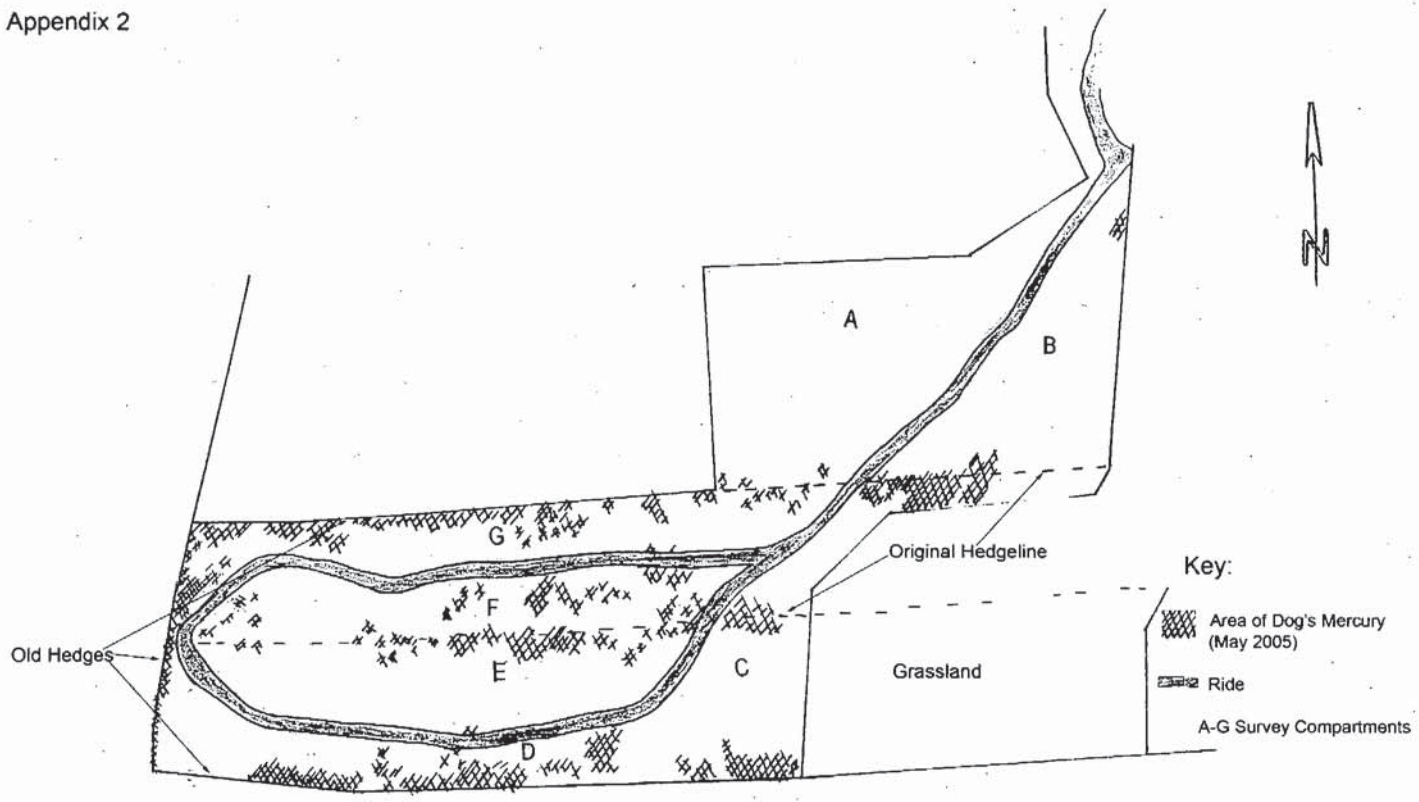
Sequoiadendron giganteum	Giant sequoia	1853
Thuja plicata	Western Red cedar	1853
Zelkova serrata	Japanese elm	1862

SHRUBS

Cornus mas	Cornelian cherry	Introduced species
Cornus sanguinea	Dogwood	
Euonymus europaeus	Spindle	
Euonymus europaeus 'Red Cascade'	Spindle cv	Cultivar
Frangula alnus	Alder buckthorn	
Ligustrum vulgare	Common privet	
Prunus laurocerasus	Laurel	1576 – Planted along northern boundaries not inside the wood
Rhamnus cathartica	Buckthorn	
Sambucus nigra	Elder	Self sown
Viburnum lantana	Wayfaring tree	
Viburnum opulus	Guelder rose	

Source for dates of introductions Mitchell (1994)

Appendix 2



Tom's Wood
Plan showing distribution of Dog's mercury Mercurialis perennis in relation to old hedgerows and woodland planted between 1980 to 1993 on former pasture..
Scale 1:1500

APPENDIX 2: DISTRIBUTION MAP OF DOG'S MERCURY