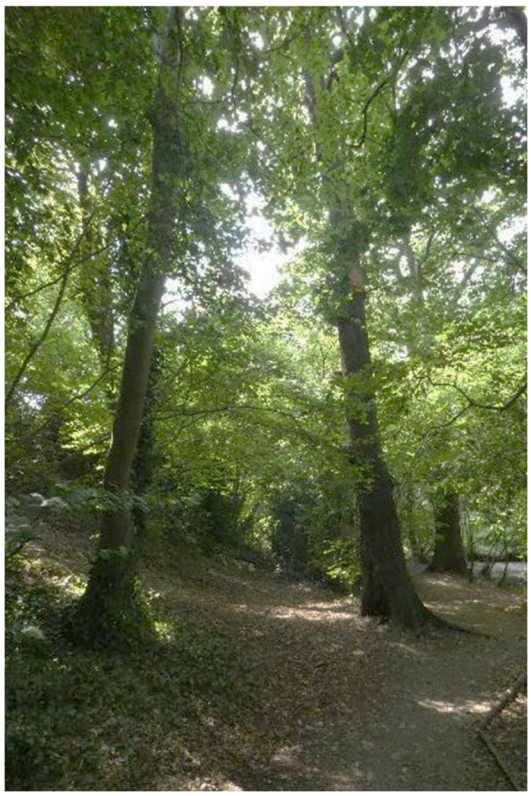
Manor Woods Valley Local Nature Reserve

The Trees of
Manor Woods Valley
Local Nature Reserve
2023



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Manor Woods Valley Group

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1. Introduction and Methodology

In preparing this report, Manor Woods Valley Group member, Peter Loy-Hancocks, surveyed the site during August 2023, and collated publicly available reports and records of trees in Manor Woods Valley Local Nature Reserve. Sources of reports and records included Bristol Regional Environmental Records Centre (BRERC) open access records, iNaturalist online recording records and the National Biodiversity Network atlas (NBN). Some of the aforementioned sources feed their data into the BRERC data base and vice-versa, so there may be some duplication of these records.

The order in which tree families are considered in this report follows that published in 'A new classification and linear sequence of extant gymnosperms' by Christenhusz et al. (2011) and in 'The Linear Angiosperm Phylogeny Group (LAPG) III: a linear sequence of the families in APG III' by Haston et al. (2009).

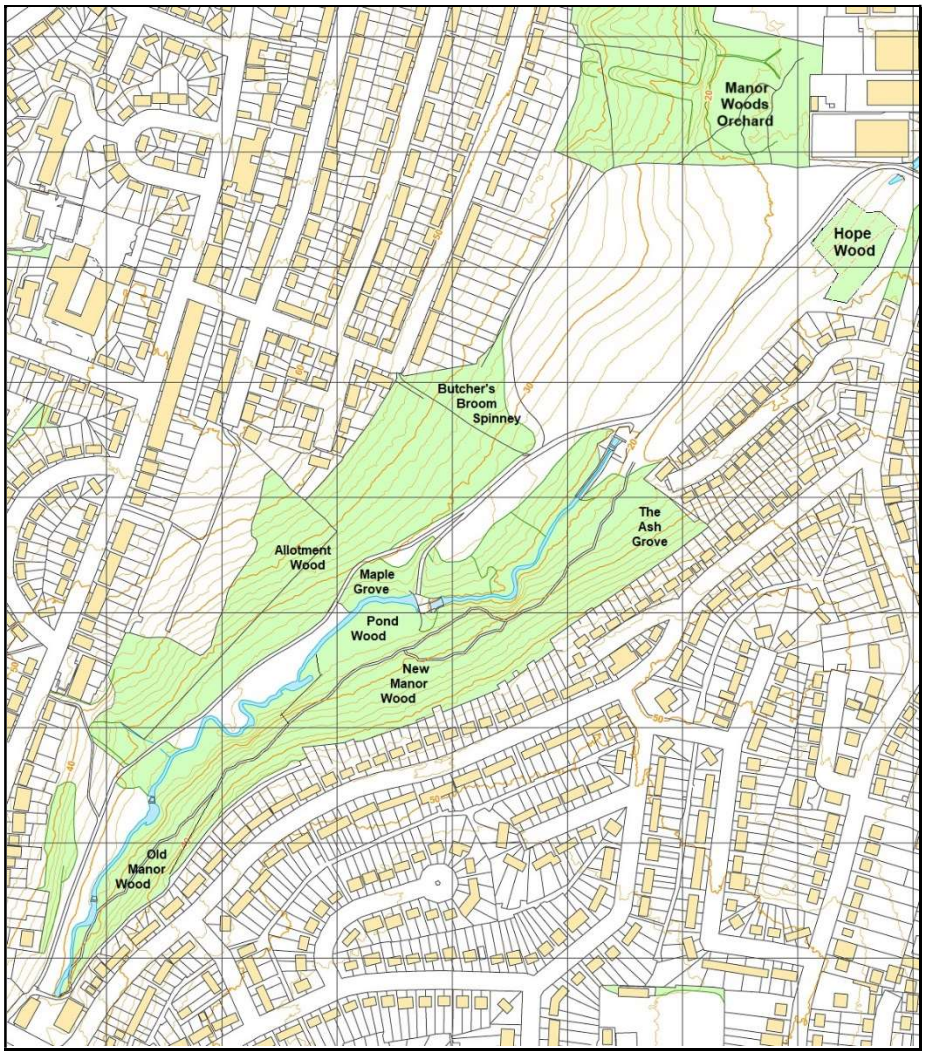

Figure 1: The Woodlands of Manor Woods Valley

The origins of the trees in Manor Woods Valley fall mainly into three distinct groups, those that occur naturally (either as native or naturalised species), those (native species) that were planted as part of the establishment of the site as a park or to

improve the site's ecological function, and those that have been planted as amenity trees for 'beautification' of the site. This report mainly considers the first two groups.

Trees planted as part of the establishment of the site as a park or to improve the site's ecological function include those in Butchers Broom Spinney and Maple Grove (see figure 1 for locations of the woodlands), which were likely planted in the 1970's and/or 1980's, and those planted in 2021 to form Hope Wood.

The planted amenity trees usually occur outside of the woodlands and grow as groups or in lines. These trees are documented by Bristol City Council (BCC) and the Bristol Tree Forum (https://bristoltrees.space/Tree/sitecode/MANOWO). There are 149 trees of 33 species in the database, but some of these are known to have been lost. The majority of the listed trees are of native species, with a few 'exotics'.

In addition to the amenity trees planted by BCC there have been several 'guerilla plantings' of non-native species and varieties around the site. These include two Monterey Pines and an Italian Alder inside a bend in the Malago where the main path is immediately adjacent to the watercourse, and an ornamental form of Mountain Ash on the edge of the scrub between the St Peters Rise and Valley Heights entrances.

Trees provide many environmental benefits, including:

- Trees absorb carbon dioxide and produce oxygen. One person causes about 10 tons of carbon dioxide to be emitted a year. One tree removes about 1 ton of carbon dioxide per year. The forests and woodlands in the UK remove about 10 million tons of carbon from the atmosphere every year. One acre of trees annually absorbs the amount of carbon dioxide equivalent to that produced by driving an average car for 26,000 miles. That same acre of trees also produces enough oxygen for 18 people to breathe for a year.
- Trees, alive or dead, are an essential habitat for insects, birds, mammals, fungi and plants.
- Trees provide shade in the summer. The evaporation of water from the leaf surface has a general cooling effect on surrounding air.
- Trees improve air quality by removing pollutants from the atmosphere including carbon monoxide, particulates, ozone, nitrogen and sulphur dioxide.
- Trees reduce ground water run-off (which reduces the risk of flooding), which in turn reduces erosion and improves water quality by absorbing pollutants.
- Trees both reduce the perception of noise by creating a visual barrier between the source and the hearer, and reduce the actual level of noise by reflection, deflection and absorption of sound.
- Trees mark the changing of the seasons with spring flowers, summer foliage, autumn fruit and bare winter branches.

2. Naturally Occurring Trees

Yew (Taxaceae)

Yew occurs occasionally in New Manor Wood and Allotment Wood. Some of these are just old enough to bear fruit, but there are no large specimens on the site, so it is

likely that these have grown from bird-borne seeds, perhaps originating from the mature trees associated with Bishopsworth Manor House.

Holly (Aquifoliaceae)

Small specimens of Holly occur quite frequently in New Manor Wood and Allotment Wood. Like Yew, this species usually spreads via bird-borne seeds, but it occurs more frequently as a fruiting garden shrub, so may have its origins in local gardens.

Rose (Rosacaea)

The rose family includes most of our well-known fruit species such as apples, pears, plums, damsons, apricots and cherries, as well as Hawthorn, Blackthorn and Mountain Ash.

Hawthorn is usually considered to be a shrub rather than a tree, however single-stem specimens can reach modest tree-like proportions. The Hawthorn is very ecological important. It often occurs during the scrub phase of regeneration woodland establish and is the most commonly occurring hedging plant. It's flowers, 'May Blossom', are an important nectar and pollen source for insects, and its fruit, 'haws', are eaten by a wide range of birds and mammals. The former are the main architects of the spread of Hawthorns.

Hawthorn occurs frequently throughout Manor Woods Valley. Some of the larger specimens survive in remnant (aka 'ghost') hedgerows within New Manor Wood. Others, especially in Allotment Wood, are remnants of the scrub phase of this woodland's establishment. It is notable that many of these shrubs are becoming weaker and dying-back due overshadowing by developing woodland canopies.

A medium sized, standard, Hawthorn has been preserved on the edge of Manor Woods Orchard as a 'wishing tree'. In line with ancient Celtic tradition, members of the public are invited to tie ribbons to the tree and make a wish. When the ribbon rots off the tree, the wish is granted. The Manor Woods Valley Group, who dedicated this tree, make no guarantees as to the veracity of its powers!

There are 31 mature Apple trees in Manor Woods Orchard, and single specimens in scrub near to the interceptor and in Allotment Wood. The latter probably has its origins as a rootstock of a tree planted on a 'Dig for Victory' allotment plot during the Second World War. The other mature apples no-doubt originate from the pips (seeds) held in discarded apple cores. Apples do not come true-to-type (variety) when grown from pips, so as a result none of the resulting trees are recognised varieties.

The Manor Woods Orchard apple trees crop very well. The Manor Woods Valley Group harvests numerous large sacksful each year. These are collected by the Cotswold Cider Company, which delivers back 10-15% as bottled Manor Woods Orchard apple juice. The majority of this juice is donated to a local foodbank, with the rest being drunk by Manor Woods Valley Group volunteers working on the site.

There are six mature pear trees in Manor Woods Orchard. A particularly large specimen is notable for its estimated establishment date of 1908. At that time, it would

have been positioned at the junction of two hedgerows. The pear appears to have survived amidst the later clay pit workings due to its location on a berm between two different pits. The berm itself was a relic of an earlier field boundary, with the clay pits to the north, east and south respecting this boundary. This tree produces delicious large fruit.

Blackthorns sometimes reach an appreciable size and take on a tree-like form; but more often form dense scrub patches. They are frequent in Allotment Wood and slightly less so in New Manor Wood. They form scrub patches at other locations within Manor Woods Valley. Like Hawthorns, their blossom, which is one of the earliest flowers of the year, is important to insects and their fruits, sloes, are an important food source for birds and mammals.

Wild Cherries occur as mature planted trees along the northeast edge of the Valley Road access path and the southeast edge of Allotment Wood. These are probably derived from plantings, but appear to now be established as wild growing trees.

Wild ‘plums’ occur in one or two places, most noticeably along the northwest corner of the large Wildflower Meadow. These latter scrubby trees probably derive from suckers from a rootstock of a planted plum in a garden that backs on to the site.

Elm (Ulmaceae)

English Elm is best known as the tree that was effectively wiped out, as a large tree that dominated many farmland landscapes, by Dutch Elm Disease in the 1970’s. This fungus disease was, or rather is, spread by the Elm Bark Beetle.

Today English Elm is still common in the countryside, but not as a mature tree. Instead, it usually occurs in patches of scrub. These emanate from suckers growing from spreading roots. When these suckers reach an age of 10-20 years, their trunks are sufficiently large to attract Elm Bark Beetles. The beetles then attack the immature trees and infect them with the fungus which kills them, and so the cycle repeats itself.

It is possible that at least some of the large hedgerow trees indicated on Victorian Ordnance Survey maps were English Elms, but all of these appear to have lost prior to the arrival of Elm disease in the 1970’s. Today there are two patches of English Elm that are subject to the cycle of death and regrowth of suckers. The largest of these is on the northern edge of the site between Manor Woods Orchard and the Wildflower Meadow. A second patch is present near to the Valley Road entrance. Large logs from this latter area were used to build the seating area in The Classroom, within Allotment Wood, during the winter of 2021/22.

There are occasional scattered small English Elm stems in New Manor Wood. It is likely that they are remnants of long-lost hedgerow trees.

There are several relatively small, scrubby, Wych Elms in both Old and New Manor Woods. They are slightly less susceptible to Dutch Elm Disease than English Elms, but do not tend to regrow from suckers when affected; they do however grow more readily from seed that the latter species.

Beech (Fagaceae)

The most iconic, and arguably ecologically important tree in Manor Woods Valley is the English (or Common) Oak. There are 43 Oaks in Old and New Manor Woods, with the oldest trees concentrated in the former and in a copse that was maintained on a steep bank to the northeast of the main woodland block. The importance of these trees can be seen during the winter, when foraging flocks of tits and finches occur disproportionately more frequently amongst Oaks that amongst the more abundant Ash trees. In the spring and summer Oaks are favoured by hole-nesting birds. In the autumn, many birds and mammals eat fallen acorns. Jays and Grey Squirrels bury fresh acorns, the former usually in meadows, as a food source during the winter and early spring, but many are not retrieved and subsequently germinate and grow.

There are also several mature and semi-mature Oaks along the northeast edge of Allotment Wood. Younger trees, typically less than 20 years old, are also scattered throughout the site. Seedlings of the year can be seen in meadows throughout the site before they are mown off. Certainly, all of the latterly mentioned seedlings will have originated from acorns buried by Jays.

Birch (Betulaceae)

Silver Birch does not appear to occur naturally on the site, however a single tree that had outgrown its garden site, has recently been planted near to the interceptor. Silver and Downy Birch were part of the Hope Wood 2021 planting mix; however, several of these relatively shallow rooted trees died during 2023, which was characterised by a very dry spring and early summer.

Common Alders area associated with wetland and waterside locations. There are two or three mature Common Alders on the east bank of the Malago near to the southwest entrance to the site. It is perhaps surprising that more Alders are not present downstream of this location.

Common Alders adjacent to the Malago

Hazels are usually considered to be shrubs, but they can grow to tree-like proportions if unmanaged. They are abundant throughout Manor Woods Valley; sometimes as ancient coppiced stools, such as in Old Manor Wood, or as stools of more recent origin such as in New Manor Wood and Allotment Wood. They also occur as part of remnant

hedgerows in the former, sometimes reaching very large sizes. Hazel nuts are the favourite food of Grey Squirrels. The squirrels bury countless nuts each autumn, many of which then germinate and grow.

Willow (Salicaceae)

Willows are usually associated with wetland and waterside areas. In Manor Woods Valley large Crack Willows are present along the banks of the Malago upstream of the dam. A few of the largest of these have toppled over, with their lifted root-plates affecting the course of the stream in places. Where they remain rooted to some extent, these fallen Willows send up rows of shoots from their leaning or horizontal trunks, effectively creating lines of young trees.

Pond Wood, immediately upstream of the dam, formed as the silt-trap pond, established by the building of a dam in 1976, became silt-filled during the 1990's. This carr woodland consists almost entirely of Crack Willows. In anticipation of de-silting of the pond, the developing willow scrub was cleared from the area during the winter of 2009-2010; however, the de-silting did not occur and instead the willows were left to re-grow from their coppiced stools.

Pond Wood in 2009/10 and 2022

There is a single, very small group, of Grey Willows adjacent to the damp area in the center of the Orchard Triangle. This group is regularly mown or otherwise cut-off, but rapidly regrows strongly.

A third species, the Goat Willow, occurs in a couple of small stands on the northwest corner of the large Wildflower Meadow and on the bank of the Malago near the upper weir.

Maple (Aceraceae)

Our only native member of the maple family is the Field Maple. These occur throughout Manor Woods Valley, sometimes as old specimens derived from defunct hedge-lines in Old and New Manor Woods, but more often as naturally occurring seedlings, saplings and trees throughout all of the woodlands.

Sycamore might have been introduced by the Romans, or in the 1500s. Since then, it's widely colonised woodlands and neglected spaces. Large mature specimens are present in Old Manor Wood adjacent to the Malago, and on the site's boundaries, at

the southwest end of the site. Semi-mature and younger specimens occur in all the other woodland areas. Recently Sycamore has started to establish in Pond Wood as this area's deepening damp silt deposits become dry enough to support more dry ground loving species. Young Sycamores are also present in Allotment Wood as the lifting scrub canopy allows true tree species to establish.

Ash (Oleaceae)

The Common Ash is without a doubt the most abundant tree in Manor Woods Valley. There are dense stands of young-mature trees at the northeast end of New Manor Wood, in the area known as the Ash Grove, and along the northwest boundary of Allotment Wood. They also occur as single large mature trees, some perhaps originating as hedgerow trees from when the site was still farmland (pre-1930's). They occur abundantly in a variety of younger stages from seedlings of the year, through to young-mature trees. These are scattered throughout the site.

Ash has distinctive pinnate leaves, typically comprising 3–6 opposite pairs of light green, oval leaflets, plus a single 'terminal' leaflet at the end. The leaves fall when they are still green. The overwintering shoot buds are hard and black, and equally distinctive. The winged seeds ('keys') hang in clusters and are dispersed on the wind and by birds and mammals that feed on them.

The situation with regards to the abundance of Ash in Manor Woods Valley, and everywhere else in the UK, is about to change however. The trees are suffering from Ash Dieback. This fungus disease causes affected trees to lose their leaves and the crown to die back, usually resulting in their death.

Bristol City Council will no doubt fell affected trees in Manor Woods Valley in due course. It is hoped that they will leave the felled timber to rot in-situ. Replanting may follow, however other tree species are likely to grow naturally, in the same way that Ash replaced the scrub species that established first in the likes of New Manor Wood and Allotment Wood.

3. Trees Planted at Establishment of the Site or to Improve the Site's Ecological Function

As well as being naturally abundant, Field Maples occur as mature planted trees in Maple Grove and Butchers Broom Spinney.

Like the Sycamore, the Horse Chestnut is an introduced species, and like this former species, it is naturalised. It readily grows from 'conkers' buried by Grey Squirrels.

There is a mature, likely planted, Horse Chestnut situated above the Malago on the southeast edge of Maple Grove. There are numerous young specimens in New Manor Wood and Allotment Wood.

A small group of probably-planted Grey Alders grow at the northeast end of the site, adjacent to the culverted outfall of the site's drainage water.

In the UK, Common Beech is only considered truly native to south-east England and south-east Wales. It usually grows on drier, free-draining soils, such as chalk, limestone and light loams, conditions that are not generally present in Manor Woods Valley, however in the spring of 2023 a number of small specimens, originating from a removed garden hedge, were planted beneath the dying Ash trees at the extreme northeast end of New Manor Wood.

There are a small number of mature Common Limes scattered throughout the site, mainly on woodland edges. These are presumably planted trees as they rarely occur naturally.

In addition to the 'naturally occurring' mature apple and pear trees in Manor Wood Orchard, this location is also home to several recently planted, know species and variety, fruit trees including apples, pears, plums, cherries, apricots and damsons. In 2019 eight fruit trees were planted, in a circle. Eight more were planted in February 2020, with more added in early 2021 and 2022. There are now c30 young fruit trees in the orchard area.

During February 2021 the One Tree Per Child group planted 700 trees and shrubs into an amenity grass area near the northeast end of the site. This plantation was named Hope Wood. plantation area and a further 40 shrubs in Butchers Broom Spinney. The planting mix represented native broad-leaf species, chosen to reflect the species already thriving on the site and some new varieties to increase diversity. They consisted, Field Maple, Silver Birch, Downy Birch, Dogwood, Hazel, Hawthorn, Spindle, Crab Apple, Wild Cherry, English Oak, Rowan, Small Leaved Lime and Guelder Rose.

4. Abundance of Tree Species

Manor Woods Valley is home to approximately seventeen naturally occurring native trees species, as well as a handful of non-native naturalised species. In addition, there is a wide range of 'exotic' species that form part of the amenity plantings on the site. The largest range of the former two categories of trees occurs near the centre of the site, where there are wide range of different woodland habitats (see figure 2).

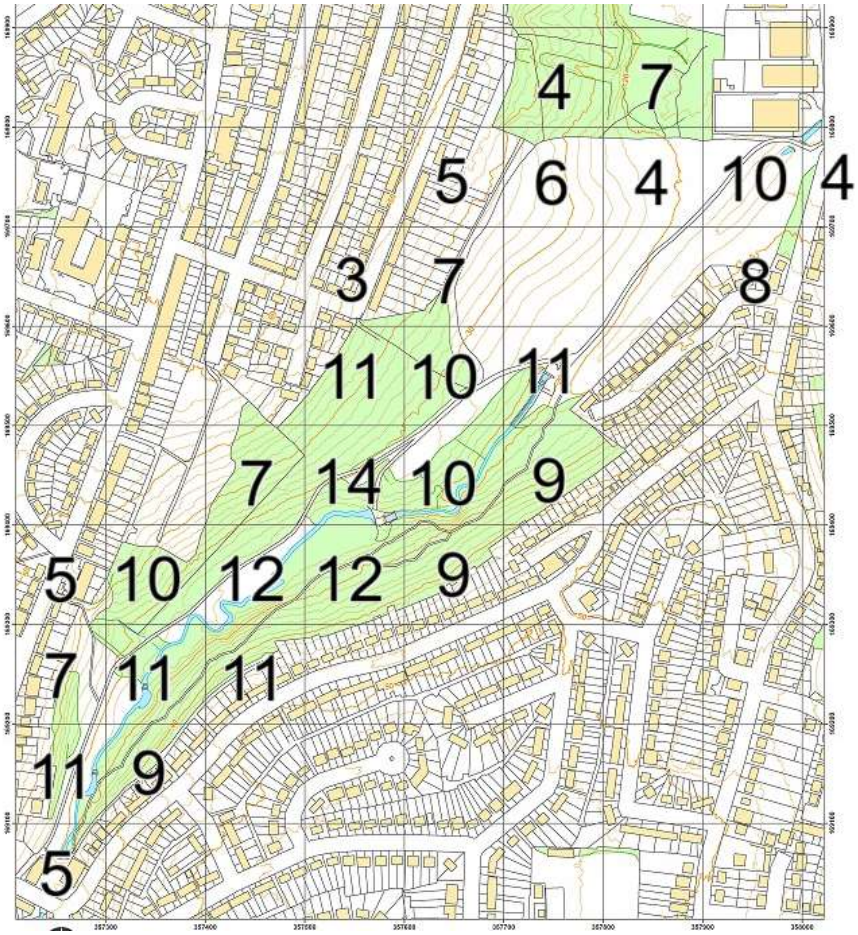

Figure 2: No. of species of non-amenity planting trees/100m grid square

5. Discussion and Conclusions

Trees are the most obvious and arguably most important element of the landscape of Manor Woods Valley. The number of trees and degree of tree cover has increased steadily since the 1930's. This situation in likely to change in the near future, with the advent of Ash Die-back, which is already affecting many of the Ash trees within the woodlands.

New areas of trees, such as Hooe Wood, will continue to develop over the coming years and further add to the biodiversity and amenity of the site.