AWCiP: Habitat Survey Report
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Habitat Survey Report of Manor Valley Woods.

NVC Assessment and analysis of a possible Ancient Woodland Area of Manor Valley Woods, to support and inform the management plan being written for this site.

Acknowledgments

Special thanks to Peter Hancocks who introduced me to the site and walked me through the wood in great detail with the history as well as ecology. Thanks as well for information on the volunteer groups and how they aid the site and their hopes for the site in the future. And finally a thank you for access to the first pages of the management plan proposal, which will be approved by stakeholders before their management plan is developed.

(Photo credit : woodlandtrust.co.uk)

Executive Summery

Manor Valley Woods in Bristol is an important area of ecological interest due to its variety of species rich habitats and is positioning in a very developed area. This report provides ecological support for the assessment of a possible Ancient Woodland area, as well as an analysis of this Maple-Ash type woodland with the use of an NVC in order to provide informed recommendations for their management of the woodland in order to maximise its cultural and ecological value.

Introduction.

Manor Valley Local Nature Reserve contains 2 main areas of woodland, the area in the north-west was converted into allotments in WWII and then returned to woodland after, the south- east sections of woodland has implications of being ancient woodland(Figure1). The geology of this area is characterised by a very steep bank coming down to the Malago river, set on beds of alluvium, clay and silt from past river meanders and lakes, and Mercia mudstone(BGS, 2018) . A woodland in Bishopsworth mentioned in the Domesday book in 1086, fits the size and area of this section of woodland. This could mean that this section of wood could be at least 930 years old, this assessment will consider ancient woodland indicators (AWI) to add some ecological support to this hypothesis. Ancient woodlands are areas which have had woodland cover for centuries with minimal human activity, this cultivates a diverse ecology usually containing species which take a long time to cultivate.

The National Vegetation Classification(NVC) system is a common standard method to classify and describe different British plant communities using floristic tables (Rodwell, 2006).
For this habitat survey an assessment of the flora present and the classification of the woodland will help in the management of the site and also will provide information to the possibility of the woodland being ancient. The species diversity of the site is under studied, reporting on species which are present will prove invaluable in the sites initial writing of a management plan and allow them to design appropriate techniques in site management.
The aim of this study is to assess the woodland type in the area of interest and also record any ancient woodland indicator (AWI) species and consider their presence in association with historic maps to support the possibility that Manor Valley contains ancient woodland.

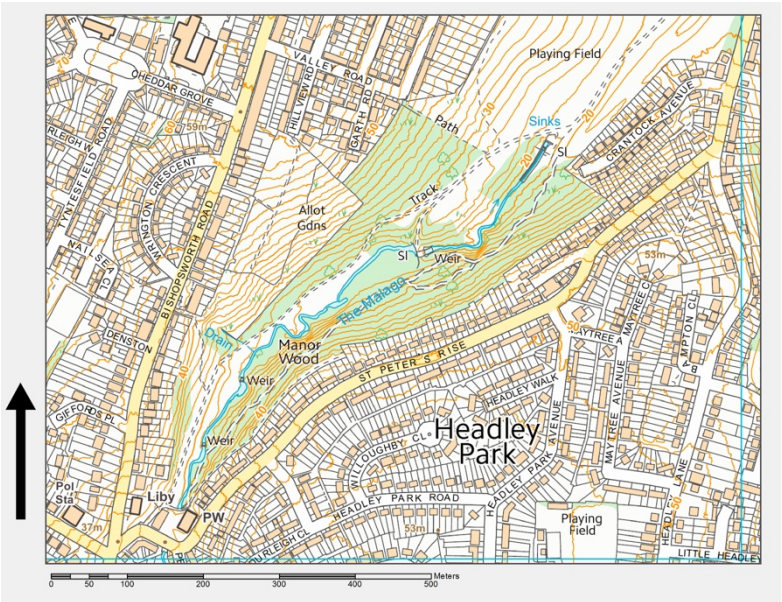

Figure 1 GIS Map of Manor Valley Park created by University of Bristol.

Methods

Familiarisation walks with the reserve's manager and ecologist acquainted me with the reserve and their current plans to develop their first management plan. Walk's though their suspected ancient woodland allowed me to gain initial ecological knowledge and health and safety of the area.

Data was collected over 4 consecutive days at the same time, with the same forecast weather to ensure a minimal change in the site. A sudden flash of rain effecting accessibility, or the start or end of a species blooming could affect the accuracy of the data collection. My survey focused on the area of interest in ancient woodland assessment in the south end of the park (Hall, Kirby & Whitbread, 2004) . Due to health and safety limitations from the very steep, drop to the Malago river on the west side of the path, my survey area concentrated on the wider, east side of the woodland. The vegetation areas narrows toward the end of the path and so it was concluded that my quadratic size choice should be adapted to this(Figure3). Floristic tables and woodland community descriptions from the NVC handbook were used to understand the survey area better and improve identification of species. Due to limiting knowledge of bryophytes, these were excluded from the report(Peterken, 1974).

The NVC handbook suggested that 50x50m square is appropriate for woodland ,and so 4 quadrats of an area of 2500m2 were used with quadrat 1 being narrow but with double the length(Figure3), this was due to topographical restrictions as the path and boundary narrowed the remaining woodland. In these 50m quadrats the top canopy species and abundance was recorded and within that, 2 quadrats of 10mx10m for shrubs and 4 4x4 quadrats for ground flora were then placed (Rodwell, 2006). Abundance of species present in the quadrat was then recorded with the results from the 2m and 4m quadrats being averaged into the final abundance for that area.
The data was then condensed into an average abundance result in the table and presented as 1 quadrat of data (figure4). Abundance was then converted into Domin Scale(Rodwell, 2006) (Figure2).

Cover	Domin
91–100%	10
76-90%	9
51-75%	8
34-50%	7
26-33%	6
11-25%	5
4-10%	4
<4% (many individuals)	3
<4% (several individuals)	2
<4% (few individuals)	1

Figure 2 Table showing the conversion of abundance to the Domin Scale.

Tablefit Is a programme designed to analyse the habitat data and correlate it with the most likely NVC communities, as recorded in Volumes 1–5 of *British Plant Communities* (Rodwell, 1998).The programme gives you the top 5 most likely communities and a goodness-of-fit, which you then analyse with your knowledge of the area and analysis of the individual quadrats to conclude the most likely community and also sub-community of your site(King &

Bennett, 2014). This programme will be the best for this report as it can process data with only a few samples and takes into account the absence of bryophyte and fungi recording (Hall, Kirby & Whitbread, 2004).

Results

The areas surveyed are shown in (figure3),31 species were found over the survey site. The woodland canopy was dominated by Field maple, Sycamore maple, European ash and European elder, no oak was found but during initial walks through the rest of the wood to the area, there are oak trees established in the reserve, showing multiple woodland communities at Manor Valley.

The understory had a high abundance of young European ash and elder as well as being dominated by common hazel. Most sampled of hazel showed minimal evidence of coppicing. The ground flora had some variability between quadrats, with Ramsons and Bramble being consistently in high abundance.

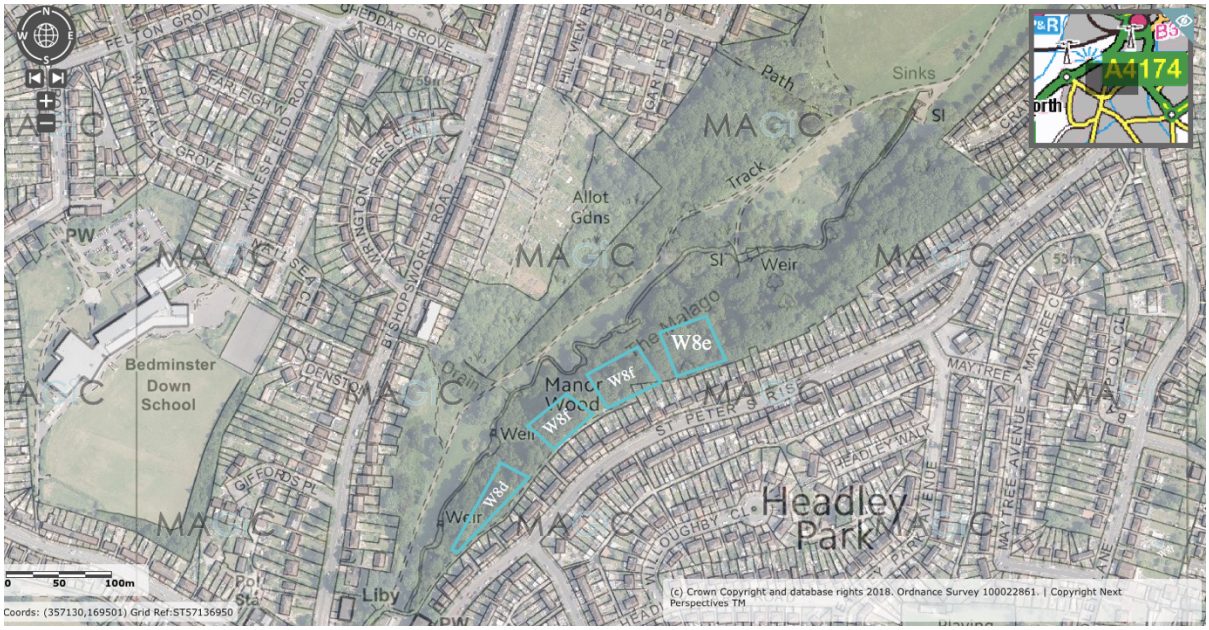

Figure 3 Map showing the quadrats surveyed and their total area.

The output of these results into the program Tablefit, gave W8 woodland as the most likely woodland community. W8 is categorised as *Fraxinus excelsior – Acer campestre – Mercurialis perennis* woodland**.** The sub-community W8f was concluded, a sub-community with *Allium ursinum* as the dominant flora. The goodness-of-fit was fair, with individual analysis of the quadrats this fit may have been hindered by human development and sever fly-tipping in quadrat 1 which could have effected succession and species diversity(Rodwell, 1998).

Over time more repeats would be needed to confirm this result as well as other survey sites to find the community boundary of this W8 site.

Ecological factors that support a classification of ancient woodland include old coppice stools or pollard trees, veteran trees which may be very old stand-alone trees among areas of coppicing, and AWI species(Kimberley et al., 2013) (Rose, 1999). AWI species should be species that are slow at cultivating which supports the idea that the site is older. The species should have a requirement for constant canopy cover and a consistent environment to successfully establish. They would be species unable to grow outside woodland cover which would support their cultivation there and not an opportunistic species that grows in any

nearby community. Having an AWI being easily identifiable also creates a good indicator as it can be more consistently and reliably identified. AWI species in each quadrat were identified(figure5) which ads ecological support to the historical evidence that this site is semi-natural ancient woodland.

Botanical Name	Species		Quadrat / % abundance				Ancient Wood Indicator
			1	2	3	4	
Canopy							
Acer campestre	Field Maple		23%	28%	35%	30%	□
Sambucus nigra	European elder		30%	30%	8%	3%	
Fraxinus excelsior	European ash		40%	45%	45%	45%	
Acer pseudoplatanus	Sycamore maple		12%	5%	22%	30%	
Understory							
Corylus avellana	Common hazel		35%	30%	38%	48%	
Crataegus monogyna	Common hawthorn		3%	10%	23%	25%	
Ulmus minor	Field Elm		/	3%	10%	1%	
Ulmus glabra	Wych Elm		/	/	4%	2%	□
Ligustrum vulgare	Commn Privet		/	/	16%	5%	
Rhamnus cathartica	Common buckthorn		10%	/	22%	8%	□
Ilex aquifolium	Holly		33%	20%	28%	36%	□
Acer pseudoplatanus	Sycamore maple		10%	/	2%	/	
Fraxinus excelsior	European ash		40%	42%	40%	30%	
Acer campestre	Field Maple		5%	10%	23%	10%	
Sambucus nigra	European elder		19%	25%	45%	33%	
Ground Flora							
Asplenium scolopendrium	Hart's-tongue fern		20%	10%	38%	33%	
Heracleum sphondylium	Hogweed		/	/	3%	/	
Arum maculatum	Cuckoo-pint		/	/	1%	5%	
Mercurialis perennis	Dog's Mercury		3%	10%	25%	42%	□
Daldinia concentrica	King Alfred's cakes		/	5%	/	/	
Rubus fruticosus	European bramble		23%	32%	35%	65%	
Rosa canina	Dog-rose		/	20%	40%	32%	
Carex sylvatica	Wood Sedge		28%	15%	30%	/	
Hedera helix	Common ivy		58%	45%	34%	32%	
Conium maculatum	Poisen hemlock		/	/	1%	/	
Dryopteris filix-mas	Male fern		12%	20%	20%	10%	
Geum urbanum	Wood Avens		/	18%	38%	/	
Brachypodium sylvaticum	Slendet False Brome		/	25%	20%	/	
Geranium robertianum	Herb Robert		/	5%	15%	20%	
Allium ursinum	Ramsons		21%	25%	40%	38%	□
Galium aparine	Cleavers		20%	10%	10%	/	
Sanicula europaea	Wood Sanicle		/	12%	12%	/	□
Polystichum setiferum	Soft-shield fern		/	20%	18%	/	□
Urtica dioica	Common Nettle		40%	35%	20%	28%	
Dioscorea communis	Black Bryony		/	5%	12%	12%	

Figure 4 Table of species found and abundance with the AWI species found in each quadrat

	Quadrat			
	1	2	3	4
NVC Code	W8f	W8f	W8f	W8f
AWI	5	6	8	6

Figure 5 Table of the number of AWI species found in each quadrat.

Discussion

The presence of AWI species at the site should be taken into consideration in the development of this sites first published management plan. A repeat study should be performed along with an extended study of the area in order to assess the development of this ancient woodland and where its boundaries lie. (Mumby et al., 2018). A more comprehensive study of the heritage of the site should also be done to add greater support in this woodland status. Possible evidence has already been found in Domesday literature, tithe maps and local records should be reviewed. Access to Bristol archives is recommended for reviewing of records that are not digitised.

Minimal evidence of hazel coppicing was found during the survey, and future plans are quoted as 'informal' by the reserve manager. I rigorous plan needs to be formed taking into account the ecological and social important of the woodland. With hazel being an abundant species which requires proper management for the health of the wood(Rackham, 2008), techniques other than current voluntary efforts are recommended. In order to maintaining the sensitive ancient biodiversity of the site professional involvement will ensure its proper care and be able to educate volunteers for the future(Gov.co.uk, 2018).
The Malago Conservation Group which helps coordinate volunteer groups should hold specific training days and have a more regular timetable of volunteer aid in bramble clearing and coppicing, to regulate and maintain a routine of management.

The current woodland management draft has coppicing and removal of self-sown trees as the only techniques planned for future management.
Invasive species should also be a core element for a potential priority site such as this. The survey showed the presence of Black Bryony. Black Bryony could be very damaging to the ecology and succession of the site with it strangling younger plants and out competing others. A non-chemical approach is recommended due to its integration with a biodiverse area. Bramble colonised areas also require active management to ensure the biodiversity of the ground flora is maintained and access to light isn't lost.

Two large fly-tipping sites were observed in area between quadrats 1-2 and 3-4, most likely coming from the road running down the reserve boundary which is very secluded. Plastics, metals and waste material pose a serious hazard to the health of the woodland community and also the public(Ryan, 2012). The fly-tipping seemed most prevalent at these 2 sites due to damage to the boundary fence, in order for this to be managed in the future the fence should be repaired and also the whole boundary should be assessed for repairs or improvements to hinder future offences. The developers of the management proposal should produce a comprehensive plan to remove the waste as well as improve the damaged woodland. Social support would be beneficial such as volunteer clean up days as well as prohibitive signage and alerting of authorities when cases of fly-tipping are found.

The result of this survey shows that Manor Valley Wood is of key ecological interest as well as cultural importance due to its heritage. The surveyed site requires immediate management as well as a development of an active management plan in order to maintain its diversity, improve vandalised areas and its boundaries which, may be effected by the increasing development creating environment change and resource pressure(Naughton-

Treves, Holland & Brandon, 2005). With proper implementation this wood has the capacity to become a safe haven for wildlife as well as the public.

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Appendix

Botanical Name	Species	Domin Score			
		1	2	3	4
Canopy					
Acer campestre	Field Maple	6	6	7	6
Sambucus nigra	European elder	6	6	4	7
Fraxinus excelsior	European ash	7	7	7	7
Acer pseudoplatanus	Sycamore maple	5	4	5	6
Understory					
Corylus avellana	Common hazel	7	6	7	7
Crataegus monogyna	Common hawthorn	3	4	5	5
Ulmus minor	Field Elm	0	3	4	2
Ulmus glabra	Wych Elm	0	0	4	2
Ligustrum vulgare	Commn Privet	0	0	5	4
Rhamnus cathartica	Common buckthorn	5	0	5	4
Ilex aquifolium	Holly	6	5	6	7
Acer pseudoplatanus	Sycamore maple	4	/	2	/
Fraxinus excelsior	European ash	7	7	7	6
Acer campestre	Field Maple	4	4	5	4
Sambucus nigra	European elder	5	5	7	6
Ground Flora					
Asplenium scolopendrium	Hart's-tongue fern	5	4	7	6
Heracleum sphondylium	Hogweed	0	0	3	0
Arum maculatum	Cuckoo-pint	0	0	2	4
Mercurialis perennis	Dog's Mercury	3	4	5	7
Daldinia concentrica	King Alfred's cakes	0	4	0	0
Rubus fruticosus	European bramble	5	6	7	8
Rosa canina	Dog-rose	0	5	7	7
Carex sylvatica	Wood Sedge	6	5	6	0
Hedera helix	Common ivy	8	7	7	6
Conium maculatum	Poisen hemlock	0	0	1	0
Dryopteris filix-mas	Male fern	5	5	5	4
Geum urbanum	Wood Avens	0	5	7	0
Brachypodium sylvaticum	Slender False Brome	0	5	5	0
Geranium robertianum	Herb Robert	0	4	5	5
Allium ursinum	Ramsons	5	5	7	7
Galium aparine	Cleavers	5	4	4	0
Sanicula europaea	Wood Sanicle	0	5	5	0
Polystichum setiferum	Soft-shield fern	0	5	5	0
Urtica dioica	Common Nettle	7	7	5	6
Dioscorea communis	Black Bryony	0	4	5	5

Figure 6 Results with domin scale conversion