PHILIP SANSUM

Woodland vascular plant and vegetation data

I stress that due to the timing of the visit the woodland species lists generated by me in 2018 are incomplete, with various vernal species undetectable by July (especially in the exceptionally hot drought conditions of 2018). Where species were detected it was generally not possible to assess their true contributions to the vegetation or be able to map or identify NVC communities.

However, the records do significantly augment previous surveys adding species to the recorded woodland flora omitted or overlooked in the existing baseline lists[1]. Attached is a summary of the vascular plant species recorded in the two woods. Records made in July 2018 complement the previous early-season records made in April 2007[2] and March 2012[3].

As would be expected for a much larger wood with rides and open areas, Weights Wood generally is more species rich than Four Acre Shaw but from a purely woodland perspective the smaller wood is the more diverse. Four Acre Shaw has a higher proportion of the specialist species characteristic of good quality semi-natural woodland. This is shown in the count of 34 AWVPs[4], a high number for a wood of this size, especially bearing in mind that the parts outside Great Dixter ownership were not searched in detail and the survey was not undertaken at the optimum time.

Observations of the flora also do suggest the existing assessment of both woods as NVC community W10b[5] simplifies a more complex mosaic of habitats; there are certainly significant areas of W8 present alongside the W10 with wet woodland communities also[6] locally represented[7]. This should be recognised in management plans. For example within the management strategy's "Maximise environmental benefits" provisions, it would be appropriate to retain as a lower intervention area a small stand of alder woodland including large coppice-derived multi-stemmed trees and standing dead stems, in the southern part of Four Acre Shaw.

Both woods have a veteran tree resource including large old coppice stools[8]of ash, maple and hornbeam, stubs or low pollards of hornbeam and old maidens of ash and wild cherry.

Hawthorn[9], Midland Hawthorn[10] and intermediates.

[1] Donald Insall Associates et al, 2007: Hastings Botany Group 2012.
[2] Donald Insall Associates et al, 2007.
[3] Hastings Botany Group 2012.
[4] Ancient woodland vascular plant species - please see attached summary table.
[5] Donald Insall Associates et al, 2007.
[6] W6, W7 and transitional types.
[7] Although it was impossible to determine these to sub-community level or map them.
[8] Occasionally exceeding 200 cms diameter.
[9] Crataegus monogyna.
[10] Crataegus laevigata.

The apparent presence of a significant population of Midland or Woodland Hawthorn within Four Acre Shaw is being investigated. This ancient woodland specialist species is an important historical-ecological feature, distinctive of semi-natural woods on the Wadhurst Clay, whose conservation deserves attention.

Initial field examinations were based on the key characteristics of style and pyrene number per fruit and degree of leaf lobing[11] and indicate the persistence of 'pure' *Crataegus laevigata* populations at Great Dixter in spite of the frequent presence of *Crataegus monogyna* in close proximity to the plants, including in shaded situations within woodland. However, it is generally hypothesised[12] that pure *C. laevigata* populations are now rare or non-existent due to hybridisation and introgression with *C. monogyna* and indeed many other plants were encountered that exhibited obvious intermediacy or hybrid-like character sets.

The timing of my fieldwork was ideal for investigating the hawthorn species present within the wood and adjacent hedges because many plants were fruiting freely. Samples from 20 plants at various positions on the spectrum between *C. monogyna* and *C. laevigata* have been pressed for more detailed analysis using a hybridity index based on measurement of multiple leaf and fruit characters[13]. This should determine more confidently if there is evidence for introgression of C. *monogyna* genes in the apparent *C. laevigata* phenotype found at Great Dixter.

If this concludes that there is a relict population of pure, or near pure, *C. laevigata* plants in Four Acre Shaw some adjustment to management plans in order to help it persist may be appropriate. This could take the form of selective removal of *Crataegus monogyna* from the understorey of the wood in an attempt to restrict opportunities for cross pollination. Management could also consider reserving mature *Crataegus laevigata* specimens when coppicing work is undertaken; coppicing of woodland is likely to increase rates of intermixing of the two species and could over time lead to the loss of *C. laevigata*, both through hybridisation and through direct competition with monogyna under a regime favouring the less shade-adapted species.

<u>Lepidoptera</u>

The timing of my visit coincided with a warm series of nights in July ideal for lepidoptera sampling, and advantage was made of this to investigate the fauna of Four Acre Shaw (I understand an independent programme of moth surveying in Weights Wood is ongoing) using a series of lightweight UV LED powered non-lethal traps along the woodland margin. This, augmented by daytime observations, produced records for approximately 100 Lepidoptera taxa[14], including the nationally scarce Kent Black Arches (probably utilising brambles in the wood's locally well-developed scrubby fringe) and 10 other locally distributed species.

[11] Stace, 2010.
[12] Byatt, 1975.
[13] Gosler, 2010.
[14] [Records incorporated into the species list – Ed],

This is of course likely to be a minority of the species present around the wood but the assemblage evidences the quality of the habitat and may provide a baseline if there are few previous records from the shaw), with several more specialised species of woodland, scrub and woodland edge habitats in evidence (e.g. Least Carpet, Small Scallop, Maple Pug, Scorched Carpet, Sharp-angled Peacock, Black Arches, Rosy Footman, Double Kidney). The traps operated have a low radius of attraction and most captures are likely to represent the species breeding locally on site.

Invasive species

In spite of the ecological connectivity between the gill woodlands and the gardens upstream there were no obvious signs of invasion by non-native species of horticultural origin into the woodland vegetation, the non-natives recorded being those typical of woodland in the wider countryside of this district.

Gill hydrology

Whether the abstraction of groundwater from a borehole to supply the garden at Great Dixter has any effect on the hydrology of the gills is unknown. The gills are spring fed systems whose ecology is strongly influenced by the moisture and humidity arising from constant water supply. The impact of abstraction of water generally within gill stream catchments on the microclimatic conditions of gill woods has not been quantified. The British Geological Survey onshore geoindex gives the depth of the Great Dixter borehole as 87 m[15].

In both Four Acre Shaw and Weights Wood the riparian vegetation is generally not luxuriant[16] and in the former there are areas of wet woodland in apparent decline. This may be entirely natural or a feature of long-term climate changes; historically water-eroded gill systems which are today only seasonally wet are found elsewhere in the High Weald. However, the question is raised: if borehole abstraction causes water pressure in the aquifer underlying Great Dixter to fall, or alters the direction of water flow within the aquifer, could this weaken spring flow in the gills with consequent ecological effects?

Under most climate change scenarios the South-east will experience longer growing seasons and increased likelihood of summer drought and lower summer rainfall so if ground water extraction is influencing the gills the potential for it to do so is likely to increase.

Woodland edge

[15] https://www.bgs.ac.uk/geoindex/

[16] For example the stands of ferns typical of the banks of humid gills are of rather restricted extent and diversity.

The Four Acre Shaw/Bottom Meadow[17] woodland boundary contains a good diversity of tree and shrub species and as a boundary which interfaces with grassland under the estate's control[18] is of particular conservation importance. Interesting transitional scrubby habitat developing here supports valuable species[19] and is likely to be a key nectar resource for numerous pollinator species.

There is scope to capitalise on this existing resource and encourage the development of a valuable continuum of mature woodland, regenerating woodland and scrub, underscrub and open habitat without significant detriment to the grassland interest of the field. High quality scrub is a relatively poorly represented habitat and further enhancing the complex transitions between the Ancient Semi – natural Woodland and adjacent grassland could create a valuable biodiversity asset.

BIBLIOGRAPHY

- Byatt, J. I. (1975) Hybridization between Crataegus monogyna Jaeq. and C. laevigata (Poiret) DC. in southeastern England. Watsonia 10, 253-264.
- Donald Insall Associates, The Landscape Agency and Julia Holberry Associates. 2007. Great Dixter House and Gardens, Northiam, Rye. Ecological survey and assessment. Unpublished document.
- Gosler, A. G. (1990) Introgressive hybridization between Crataegus monogyna Jacq. and C. laevigata (Poiret) DC. in the Upper Thames Valley, England. Watsonia 18, 49-62.
- Hastings Botany Group . 26.3.12. Great dixter – Four Acre Shaw. [Plant list in Great Dixter archive].
- Rodwell, J. S. (ed) (1991) British Plant Communities, Volume 1: Woodland and scrub. Cambridge, Cambridge University Press.
- Stace Clive. 2010 New Flora of the British Isles. Cambridge University Press.

[17] [This is the Southern Meadow in the estate map – Ed.].
[18] Unlike Weight's Wood.
[19] E.g. Kent Black Arches (bramble) and Double Kidney (willow).

Great Dixter Woods - summary vascular plant lists showing AWVPs (ancient woodland vascular plants or 'Ancient Woodland Indicators')

			Four Acre Shaw			Weights Wood	
SPECIES	English name	AWVP species (SE England list)	2007 (Table 7: Great Dixter Conservation Management Plan)	2012 (Hastings Flora Group Record)	2018 (Biodiversity Audit fieldwork)	2007 (Table 8: Great Dixter Conservation Management Plan)	2017-2018 (Biodiversity Audit fieldwork)
Acer campestre	Field Maple	x			•		•
Adoxa moschatellina	Moschatel	x		•	•		
Agrostis capillaris	Common Bent		•			•	•
Agrostis stolonifera	Creeping Bent					•	•
Ajuga reptans	Bugle			•		•	•
Alliaria petiolata	Garlic Mustard				•		•
Allium ursinum	Ramsons	x	•	•	•		
Alnus glutinosa	Alder			•	•		•
Anemone nemorosa	Wood Anemone	x	•	•	•	•	•
Angelica sylvestris	Wild Angelica						•
Anthriscus sylvestris	Cow Parsley						•
Arctium minus	Lesser Burdock					•	•
Arum maculatum	Lords-and-Ladies		•	•	•	•	•
Asplenium scolopendrium	Hart's-tongue	x			•		•
Athyrium filix-femina	Lady-fern						•
Bellis perennis	Daisy					•	
Betula pendula	Silver Birch		•		•	•	
Betula pubescens	Downy Birch				•		•
Brachypodium sylvaticum	False-brome		•		•	•	•
Bromus hordeaceus	Soft-brome						•
Calystegia sepium	Hedge Bindweed						•
Cardamine flexuosa	Wavy Bitter-cress				•	•	•
Cardamine pratensis	Cuckooflower		•	•		•	•
Carex divulsa	Grey Sedge						•
Carex hirta	Hairy Sedge						•
Carex pendula	Pendulous Sedge	x		•	•	•	•
Carex hirta	Hairy Sedge				•		•

Great Dixter Woods - summary vascular plant lists showing AWVPs (ancient woodland vascular plants or 'Ancient Woodland Indicators')

			Four Acre Shaw			Weights Wood	
SPECIES	English name	AWVP species (SE England list)	2007 (Table 7: Great Dixter Conservation Management Plan)	2012 (Hastings Flora Group Record)	2018 (Biodiversity Audit fieldwork)	2007 (Table 8: Great Dixter Conservation Management Plan)	2017-2018 (Biodiversity Audit fieldwork)
Carex remota	Remote Sedge	x			•		•
Carex sylvatica	Wood-sedge	x			•	•	•
Carpinus betulus	Hornbeam	x	•	•	•	•	•
Castanea sativa	Sweet Chestnut		•	•	•	•	•
Centaurium erythraea	Common Centaury						•
Chamerion angustifolium	Rosebay Willowherb			•			•
Chrysosplenium oppositifolium	Opposite-leaved Golden-saxifrage	x		•	•	•	•
Circaea lutetiana	Enchanter's-nightshade				•		•
Cirsium arvense	Creeping Thistle						•
Cirsium palustre	Marsh Thistle		•	•		•	•
Cirsium vulgare	Spear Thistle				•	•	
Conopodium majus	Pignut	x	•	•	•		
Corylus avellana	Hazel						•
Crataegus laevigata	Midland Hawthorn	x			•		
Crataegus monogyna	Hawthorn		•		•	•	•
Crataegus x media	hybrid hawthorn				•		
Crataegus sp.	hawthorn			•	•		
Cytisus scoparius	Broom					•	•
Dactylis glomerata	Cock's-foot						•
Dactylorhiza fuchsii	Common Spotted-orchid						•
Digitalis purpurea	Foxglove			•			•
Dryopteris affinis	Scaly Male-fern	x		•	•		•
Dryopteris dilatata	Broad Buckler-fern		•	•	•		•
Dryopteris filix-mas	Male-fern				•	•	•
Elytrigia repens	Common Couch						•
Epilobium hirsutum	Great Willowherb					•	•

Great Dixter Woods - summary vascular plant lists showing AWVPs (ancient woodland vascular plants or 'Ancient Woodland Indicators')

			Four Acre Shaw			Weights Wood	
SPECIES	English name	AWVP species (SE England list)	2007 (Table 7: Great Dixter Conservation Management Plan)	2012 (Hastings Flora Group Record)	2018 (Biodiversity Audit fieldwork)	2007 (Table 8: Great Dixter Conservation Management Plan)	2017-2018 (Biodiversity Audit fieldwork)
Epilobium montanum	Broad-leaved Willowherb						•
Epilobium parviflorum	Hoary Willowherb						•
Euonymus europaeus	Spindle				•		
Fagus sylvatica	Beech					•	
Festuca rubra agg.	Red Fescue					•	
Ficaria verna	Lesser Celandine		•	•		•	
Fragaria vesca	Wild Strawberry					•	
Fraxinus excelsior	Ash		•	•	•		•
Galium aparine	Cleavers		•	•	•		•
Galium palustre	Marsh-bedstraw						•
Geranium robertianum	Herb-Robert			•	•		•
Geum urbanum	Wood Avens				•		•
Glechoma hederacea	Ground-ivy				•		
Glyceria fluitans	Floating Sweet-grass						•
Hedera helix	Common Ivy		•	•	•	•	•
Heracleum sphondylium	Hogweed		•		•		
Holcus lanatus	Yorkshire-fog			•	•		•
Holcus mollis	Creeping Soft-grass	x			•		
Hyacinthoides non-scripta	Bluebell	x	•	•	•	•	•
Hypericum androsaemum	Tutsan	x					•
Hypericum perforatum	Perforate St John's-wort				•		
Hypericum pulchrum	Slender St John's-wort	x					•
Hypochaeris radicata	Cat's-ear						•
Ilex aquifolium	Holly	x	•	•	•	•	•
Iris foetidissima	Stinking Iris	x			•		
Juncus bufonius	Toad Rush						•
Juncus effusus	Soft-rush					•	•

Great Dixter Woods - summary vascular plant lists showing AWVPs (ancient woodland vascular plants or 'Ancient Woodland Indicators')

			Four Acre Shaw			Weights Wood	
SPECIES	English name	AWVP species (SE England list)	2007 (Table 7: Great Dixter Conservation Management Plan)	2012 (Hastings Flora Group Record)	2018 (Biodiversity Audit fieldwork)	2007 (Table 8: Great Dixter Conservation Management Plan)	2017-2018 (Biodiversity Audit fieldwork)
Lamiastrum galeobdolon	Yellow Archangel	x		•	•	•	•
Lapsana communis	Nipplewort				•		•
Leucanthemum vulgare	Oxeye Daisy						•
Lolium perenne	Perennial Rye-grass						•
Lonicera periclymenum	Honeysuckle		•	•		•	•
Luzula pilosa	Hairy Wood-rush	x			•		•
Lysimachia nemorum	Yellow Pimpernel	x					•
Medicago arabica	Spotted Medick						•
Medicago lupulina	Black Medick						•
Melica uniflora	Wood Melick	x			•		•
Mercurialis perennis	Dog's Mercury		•	•	•	•	•
Moehringia trinervia	Three-nerved Sandwort	x			•		
Myosotis arvensis	Field Forget-me-not				•		
Orchis mascula	Early-purple Orchid	x	•	•	•	•	
Oxalis acetosella	Wood-sorrel	x		•	•		•
Persicaria maculosa	Redshank						•
Plantago major	Greater Plantain					•	•
Poa annua	Annual Meadow-grass					•	
Poa trivialis	Rough Meadow-grass						•
Polypodium vulgare	Polypody	x					•
Polystichum setiferum	Soft Shield-fern	x	•	•	•	•	
Populus tremula	Aspen	x				•	•
Potentilla sterilis	Barren Strawberry	x		•	•		•
Primula vulgaris	Primrose	x	•	•	•	•	•
Prunella vulgaris	Selfheal			•		•	•
Prunus avium	Wild Cherry	x			•		
Prunus spinosa	Blackthorn		•				

Great Dixter Woods - summary vascular plant lists showing AWVPs (ancient woodland vascular plants or 'Ancient Woodland Indicators')

			Four Acre Shaw			Weights Wood	
SPECIES	English name	AWVP species (SE England list)	2007 (Table 7: Great Dixter Conservation Management Plan)	2012 (Hastings Flora Group Record)	2018 (Biodiversity Audit fieldwork)	2007 (Table 8: Great Dixter Conservation Management Plan)	2017-2018 (Biodiversity Audit fieldwork)
Pteridium aquilinum	Bracken						•
Pulicaria dysenterica	Common Fleabane						•
Quercus robur	Pedunculate Oak		•	•	•	•	
Ranunculus acris	Meadow Buttercup		•				
Ranunculus flammula	Lesser Spearwort					•	•
Ranunculus repens	Creeping Buttercup			•	•	•	•
Ribes rubrum	Red Currant	x		•	•		
Ribes uva-crispa	Gooseberry						•
Rosa arvensis	Field-rose	x	•		•	•	•
Rosa canina agg.	Dog Rose		•		•		•
Rosa sp.	rose			•			
Rubus fruticosus agg.	Bramble		•	•	•	•	•
Rubus idaeus	Raspberry			•	•		•
Rumex conglomeratus	Clustered Dock		•				
Rumex sanguineus	Wood Dock		•		•	•	•
Salix caprea	Goat Willow		•		•	•	•
Salix sp.	willow			•			
Salix x fragilis sens. lat.	Crack Willow				•		
Sambucus nigra	Elder			•	•	•	•
Sanicula europaea	Sanicle	x		•			
Scrophularia auriculata	Water Figwort				•		
Scrophularia nodosa	Common Figwort				•		•
Senecio jacobaea	Common Ragwort			•	•		•
Silene dioica	Red Campion		•	•	•		
Solanum dulcamara	Bittersweet				•		
Sorbus torminalis	Wild Service-tree	x					•
Stachys sylvatica	Hedge Woundwort			•	•		•

Great Dixter Woods - summary vascular plant lists showing AWVPs (ancient woodland vascular plants or 'Ancient Woodland Indicators')

			Four Acre Shaw			Weights Wood	
SPECIES	English name	AWVP species (SE England list)	2007 (Table 7: Great Dixter Conservation Management Plan)	2012 (Hastings Flora Group Record)	2018 (Biodiversity Audit fieldwork)	2007 (Table 8: Great Dixter Conservation Management Plan)	2017-2018 (Biodiversity Audit fieldwork)
Stellaria media	Common Chickweed				•		
Stellaria graminea (as S. pallida in Table 8)	Lesser Stitchwort					•	
Tamus communis	Black Bryony	x			•		•
Taraxacum agg.	Dandelion						•
Torilis japonica	Upright Hedge-parsley				•		
Ulmus sp.	Elm (suckering, non identifiable)				•		
Urtica dioica	Common Nettle			•	•	•	•
Veronica chamaedrys	Germander Speedwell			•			•
Veronica montana	Wood Speedwell	x			•	•	•
Veronica officinalis	Heath Speedwell				•		
Veronica serpyllifolia	Thyme-leaved Speedwell			•			•
Vicia cracca	Tufted Vetch						•
Vicia hirsuta	Hairy Tare				•		
Vicia sepium	Bush Vetch	x		•	•		
Viola reichenbachiana	Early Dog-violet	x		•	•		
Viola riviniana	Common Dog-violet		•	•	•	•	•
Vascular Plant species recorded	**(of which 'Ancient Woodland Vascular Plants')**		**36 (10)**	**53 (20)**	**83 (33)**	**52 (14)**	**104 (26)**