

Wessex Silvicultural Group Visit Report

Meeting 3: 16 June 2022

Study subject: Silviculture for biodiversity

Location: Clarendon Park Estate, Grid Ref SU190290

Soils

Mostly 12ts/12tg (Argillic Brown Earth, stoney and gleyed); 12b (Calcareous Brown Earth) to East and West of site (Kennedy, 2002).

Site

	2022	2080
Accumulated temperature ¹	1844	3000
Exposure ¹	12	12
Moisture deficit ¹	181	266
Soil moisture regime ¹	3(Very moist)	3(Very moist)
Soil nutrient regime ¹	3 (Medium)	3 (Medium)
Rainfall ²	800 mm	-
Elevation ³	1844	

¹ ESC version 4; ² UK Met. Office; ³ site notes

Background and objectives of the day

Clarendon Park Estate, located on the peripheries of Salisbury Plain and the New Forest, is a mixed rural enterprise, around 1700 hectares in total, with arable and livestock farming, a mixed shoot, fine residential property and 488 hectares of forestry. Of this, 356 hectares is Ancient Woodland Site (AWS), largely in one unit. In turn, this is part of a much larger wooded and pastoral landscape, extending to the south-east as far as the river Test; something that confers further landscape-level biodiversity advantage on what is, on its own, a significant unit of woodland.

Our historical guide for the day was Professor Tom James of Winchester University, who has studied the Estate's history for over 30 years and helped us to understand the present woods' structure in the context of their illustrious past.

Enclosed by a ten-mile-long bank from the middle of the 13th Century, Clarendon was the largest Royal Hunting Forest and deer park in Britain boasting 4500 deer during the reign of Charles I.

The aims of the present owners are to maintain and enhance the woodlands and wider estate as a capital growth asset as opposed to a capital fund and making the woodlands pay for themselves. As such, the management objectives take long-term production into account but on an equal, if not lesser, footing to aesthetic and biodiversity value.

The main host for the day was Peter Oliver of Canopy Land Use.

The woodland management plan, currently under review, lists the following factors as making up the asset value of the Estate woodlands:

- Timber value (volume, growth rate, quality and accessibility)
- Profitability (cost minimisation)
- Leisure facilities (shooting, riding etc.)
- Landscape appeal
- Amenity value (stream, walks, veteran trees etc.)
- Wildlife and historical interest

The woodland objectives are outlined as follows:

- Develop and maintain a growing capital reserve of high-quality timber
- Ensure that appropriate species are growing on appropriate sites
- Maintain and enhance woodland infrastructure (access tracks etc.)
- Ensure that the woods provide suitable facilities for country sports
- Integrate woodland management with activity on the farm
- Maintain the historical character of the woods
- Ensure that woodland development in years to come is consistent with the woods' prominent position in the local landscape
- Maintain and where possible enhance woodland biological diversity
- Fulfil statutory and common law obligations with respect to public safety
- Generate sufficient year-on-year income through timber sales and grant income to cover the cost of this programme of asset management.

Summary of stops and discussion

Introduction

Wessex Silvicultural Group last visited Clarendon in 2004 when the visit focussed on soil. We were reminded the forestry block lies on clay-with-flints above a quaternary geology, primarily Middle Chalk. Lime induced chlorosis is an ongoing issue with the conifers. This year we were looking at the use of silviculture on Ancient Woodland Sites to increase biodiversity; any policy risks imposing significant opportunity cost on the forestry business. To be considered was how any decisions are made and an overview of the silvicultural techniques used both to restore Ancient Semi-Natural Woodland and to enhance biodiversity under continued commercial objectives.

The estate is dominated by ash largely due to trees in the agricultural landscape. Oak and Douglas fir are the dominant species in the woodland. Future intentions at Clarendon are to develop it as a whole forest ecosystem, dominated by diverse woodland both of native and exotic species. PAWS restoration will be undertaken on significant areas of conifer but, where the high value productive conifers are present work will also involve increasing biodiversity within these productive plantations; as seen at Maiden Bradley in 2021 and Stourhead this year. The approach is like the vision at the Knepp Estate, as seen on a previous meeting. Clarendon will continue to be a kaleidoscope of different ecological niches due to its diverse species combinations and structures. Peter informed the Group that there are currently about 280 different combinations of species, age and structure on the estate, equating to every 1.27 ha being different from the next. Management at Clarendon aims to increase diversity and complexity of stands.. Complexity in turn means opportunity, enabling stands to be *predisposed* to further PAWS restoration and biodiversity enhancement. Complete restoration and maximum biodiversity enhancement is the long-term goal,

but the more immediate objective is getting stands into a state where they will be predisposed to this restoration. 'Predisposition' was the word of the day.

First morning stop - Ancient semi-natural woodland

The first stop was ancient semi-natural woodland typical of the area and dominated by mature oak and other broadleaved species. Ground flora was diverse along with stand structure. The compartment has had ongoing management, most recently coupe felling in 2004 and replanting with oak and cherry as a minor species. The spacing was 3 m, common for that time, so growth and canopy closure has been slow. Formative pruning was carried out in 2012 with subsequent visits every four years. In the 18 years since intervention an understorey of hazel has developed, suppressing further epicormic growth on the oak stems. The species composition, varied structure and timber quality we saw at this first stop, Peter said, was the long-term goal for much of the rest of the estate's woodland.

Second morning stop – PAWS restoration

The next stop looked at restoring PAWS through conifer felling and targeted cluster planting. The sub-compartment we visited had been cleared of larch with veteran broadleaves retained, mostly oak, as well as the hazel understorey. Thanks to previous thinning, coppicing and the light canopy of larch, natural regeneration was already present prior to felling operations, restoration was effectively already taking place. Peter made the point this stand was 'pre-predisposed' to restoration. To ensure the dominance of oak, small clusters were planted in suitable gaps. The clusters were square groups of 16 trees at 1.5-1.8m spacing established throughout aiming to result in 64 groups per hectare and a stocking density of 1100 stems per hectare. There was no formal planting layout with operations and stand density providing the space required. The closely spaced clusters allowed vegetation management to be concentrated so cutting costs, as well as encouraging trees to grow up lessening the need for formative pruning. Other available broadleaf species are planted in separate clusters to increase species diversity e.g., whitebeam. Natural regeneration, primarily Douglas-fir and birch with other conifers and broadleaves, made up the matrix between the planted clusters. Conifer regeneration is managed so that it does not dominate the stand but used as a welcome addition as future productive trees. With an increased species mixture and age structure the stand has been further 'predisposed' to restoration.

The above approach will be repeated in other stands dominated by Douglas-fir, Corsican pine, oak and ash. There is additional urgency where some second-generation Douglas-fir are visibly suffering from chlorosis.

Discussions covered: the need for contractor management when it came to spacings and locations of clusters as they were not always as prescribed; the benefits to tree form and wood quality by additional plantings into the clusters to encourage upward growth instead of just relying on surrounding competition with natural regeneration; restoration methodology and impact on ground flora, primarily those used as key indicator for AWS – opened up quickly and the subsequent rapid impact on and change in ground flora. Restoration objectives will inevitably come up against financial and operational restraints that must be balanced.

First afternoon stop – Ash management

We walked among ash dominated ancient semi-natural woodland en-route to the historic site of Clarendon Palace. Within the woodland some trees displayed resilience to 'Chalara'; was this due to previous thinning which improved air circulation and reduced the inoculum load? Recent

management has involved coppicing followed by selective felling to favour resilience and form. A second coppice was conducted to ensure space for cluster plantings. Opening the woodland increased the light conditions and required post plant spraying of bracken around the planting clusters.

Jo Clarke (Future Trees Trust) described their work on ash and what to look for when identifying resilience. In this case it was difficult to determine if observed resilience was just down to less favourable conditions for infection or the trees were truly resilient. Some remaining ash were in visibly very poor healthy and would soon be contributing towards the estate's deadwood policy. It's all about '*managing the objectives not the species,*' according to Peter.

Second afternoon stop – Corsican pine

Our last silvicultural stop was to view a c5 ha square block of Corsican pine. To protect landscape value, clear felling wasn't an option considered, so coupe felling took place and restocking with western red cedar. The stand is suffering from red-band needle blight and so not putting on any volume. It's landscape value, standing tall among the surrounding broadleaves likely far outweighs the timber value. Thinning is progressed roughly every 12 years, to allow mature broadleaves, mostly ash, to add increment as well as to make space for enrichment cluster planting below. The pine will be removed slowly – health and exposure allowing - to allow for further restoration. Again, we were witnessing a kaleidoscope approach; a combination of slow removal of the overstorey and regeneration of the broadleaf understorey.

Final stop – The palace site

The final stop was a history of the principal royal palace developed by the Norman kings but, unsuitably defensible it fell into disrepair during the Tudor period and was not even fit to accommodate Elizabeth's royal visit. Staring down into the cavernous ruins of the wine cellar helped paint the picture of what a seat of wealth and power it once must have been. Reduced to a mere hunting lodge, it was finally confiscated when the monarchy was briefly abolished, having remained in private ownership since. A new mansion was built nearby in the early 19th Century, and the palace ruins became covered in dense woodland and coppice. Various excavations have taken place since the 1930s with the final clearance in recent years thanks to the efforts of our guide, Professor Tom James, and committed friends of Clarendon Park. The area is now maintained as grassland with alpacas grazing and wonderful views of the surrounding countryside, with Salisbury Cathedral's spire towering above everything in the distance. Viewing that magnificent spire from the palace ruins reminded us how even the most illustrious efforts of man cannot stand against that of time and nature.

Supporting materials made available for WSG visit:

- A map of the study area and notes on the management history of the stands visited
- A georeferenced geological map
- A map of Ancient Woodland Sites across the Estate
- An A3 georeferenced historical map reproduced from a 1540 map
- Plan review: Management plan notes from 2013 revision
- Plan targets for ancient woodland 2023 to 2033

References

Kennedy, F. (2002). *The identification of soils for forest management: field guide*. Forestry Commission.