

## **Case Study 23**

### **Cotswold Beechwoods, Gloucestershire**

#### **Location and ownership of woodlands**

This case study deals with several semi-natural beechwoods near Stroud in the Gloucestershire Cotswolds, managed by different owners for a range of objectives:-

1. Workmans Wood, Ebworth [NGR SO 897108] extending to 120 ha (~300 acres) and managed jointly by Natural England (as an NNR) and the National Trust.
2. Popes Wood, Cranham [NGR SO 876127] extending to 67 ha (~165 acres) and managed jointly by Natural England (NNR) and the National Trust.
3. Frith Wood, Slad [NGR SO 876085] extending to 24 ha (~60 acres) and managed jointly by the Gloucestershire Wildlife Trust as their Morley Penistan Reserve.
4. Kingscote Wood, Horsley [NGR ST 830972] extending to 60 ha (~150 acres) and privately owned and self-managed by the Ducker family, who live locally.

All of these woodlands are on Ancient Woodland Sites, although past planting, mainly of beech (with some conifers at Kingscote and Ebworth) has occurred. They are all also on SSSI sites designated for their semi-natural beech woodland interest.

#### **Significance/ reasons for selection as case-study example**

These examples were selected as a case-study in this project for two main reasons:-

1. They represent one of the longest-standing examples of application of selection forestry in Britain, as applied to the production of quality hardwoods (ash/ beech) timber from semi-natural woodlands (adoption scenarios 2,12, 13). Silviculture by the Workman family in several Cotswolds beechwoods over 70-80 years created a unique legacy of carefully managed woodlands under well-developed ATC.
2. They also offer an opportunity to study how alternative silvicultural systems can be deployed to meet a range of different owner/ manager objectives within similar woodland types. Woodlands formerly managed by the Workman family are now operated under variants of ATC for timber production/ conservation (Kingscote, private ownership), amenity/ conservation (Frith Wood, Gloucestershire Wildlife Trust and Penn Wood, Woodland Trust) and a combination of landscape amenity and conservation with some timber (Ebworth and Popes Wood, National Trust)

#### **Owner objectives for management (including adoption of ATC systems)**

These beechwoods have all been managed under selection forestry systems for many years, reflecting their shared heritage of ownership and management since the 1930's by the Workman family, who owned a traditional hardwood sawmill in Stroud. Although ownership has now changed in each case, there remains potential to produce quality timber at each site, sustaining and developing their ATC regimes. At Kingscote Woods, economic timber production remains the main objective of the private owners alongside nature conservation, while in the other woods (which are now owned and managed by Natural England, National Trust and the Gloucestershire Wildlife Trust) conservation objectives are now paramount but with a realisation that sensitive timber production under ATC could be consistent with/ supportive of this.

### **Biophysical characteristics of the sites**

These sites occupy steep limestone escarpment slopes at 100-250 m asl. Despite the generally westerly aspect of the Cotswold escarpment, all aspects occur locally.

The climate of these sites is warm and moist/ fairly dry [ESC AT<sub>5</sub> 1500-1700 dd, MD 130-160 mm, annual rainfall 750-1000 mm] with a sheltered to moderate exposure [DAMS = 9-14]. The solid geology is mainly of Jurassic oolitic limestone but with local Fullers earth, ball and lias clays. The predominant soil type is the shallow, free-draining limestone rendzina [ESC SMR Medium-Sl. Dry; ESC SNR Very Rich-Carbonate] but local calcareous clays have ESC SMR Moist, ESC SNR Very Rich].

Terrain at these sites is characterised by a preponderance of steep slopes which can make for operational difficulties, although in most cases a dense network of extraction tracks had been installed under the Workman ownership, enabling ATC management. The high level of conservation significance and designations on these sites can act as a constraint on active management, especially for modern organisational owners.

### **Stand history and current composition**

The stocking at these sites is dominated by site-native beech, ranging in age from recent regeneration and planted stock to mature beech of 150-200 years. Much of the stock is probably of self-sown origin (or at least local-origin supplementary planting) but there is believed to be a proportion of mature material deriving from Napoleonic era plantings with superior stock from the Foret de Soignes, near the site of the battle of Waterloo. There is also a minority component of ash, which is most significant at Kingscote where it has been augmented by planting. At Kingscote recent plantings have also included oak and cherry for timber production. There were some conifers present, including spruce, Douglas fir and larch, again most notably at Kingscote. Natural regeneration is abundant at all of these sites, generally being dominated by beech, with some ash. At Kingscote, larger gap sizes created in recent years have allowed combined replanting and natural regeneration of a wider range of hardwoods.

### **Silvicultural treatments applied to date and intended future silviculture**

The silvicultural system operated by the Workman family relied on observing the occurrence of patches of beech regeneration in the understorey and harvesting mature beech trees from the canopy above to release this regeneration. Where gaps had formed in the beech canopy, this gave the opportunity for ash and other less shade-tolerant hardwoods to regenerate as a minority component. Beech regeneration was respaced and tended to produce a valuable hardwood growing stock. Where beech regeneration established under a semi-mature canopy (<100 years old) the latter would be prematurely thinned to allow development from below. The regeneration cycle in any one area was typically ~30 years. John Workman had maintained this system in the Ebworth woods until his death, also ensuring effective squirrel control. In those woodlands now managed by conservation organisations, there is a tendency for less frequent removals from the canopy or tending of the beech regeneration, with the consequence that a two-storied shelterwood structure develops over time with a closed canopy over a dense mass of spindly regeneration. This may be sustainable for a period of time but thinning and respacing would need to be resumed in due course to perpetuate the woodlands under a selection forestry system. Securing frequent

targeted ATC interventions is perhaps more difficult under organisational (as compared with personal) management, and the same applies to intensive squirrel control. At Kingscote Woods, the current private owners combine selection felling of mature hardwood stems with harvest of small coupes which are then restocked with quality hardwoods by a combination of regeneration and replanting. There is interest in restocking with Douglas fir, grand fir and red cedar in some hardwood areas at Kingscote which are not affected by SSSI conservation designations.

### **Evaluation of current silvicultural status in terms of ATC adoption/ regeneration**

These are all sites where adoption of alternative silvicultural systems has (or had) reached *developmental category 1* (complete or near-complete transformation). Changes to management approach under different ownerships has implied less intricate working than was formerly the case under the Workmans, especially at Ebworth, where a complex structure was being operated. At Ebworth, Frith Wood and Popes Wood, there is perhaps a tendency for stands to develop a simpler two-storied structure due to less frequent canopy interventions. At Kingscote Wood, the current management combines selection forestry with small-coupe fell-and-regenerate/replant working systems. Nonetheless, these approaches remain consistent at least with *developmental category 2* (progressive/ mature transformation). It is likely that current management systems will continue at Kingscote and it is hoped that more active silvicultural intervention will resume under the National Trust at Ebworth.

### **Commentary on inventory and monitoring protocols/ demonstration potential**

The Workman family woodlands were traditionally managed on an experience-based “by inspection” basis, with limited enumeration, which becomes very difficult to sustain where different managers are involved. Some enumeration was carried out in the past at Ebworth from Oxford University. Current monitoring focuses on habitat condition and conservation aspects, including natural regeneration levels. At Kingscote Wood, there is basic quantitative inventory of the standing crops. These sites have considerable potential for organised visits and self-guided interpretation (the latter excluding Kingscote Woods), perhaps operated on a “local trail” basis, but it would be desirable to institute enumeration using the FCIN45 or AFI protocols.

### **Commentary on economic and operational implications of ATC adoption**

The major constraints on current ATC implementation in these woodlands are (a) the relatively poor market prices for large-dimension beech timber applying since the late 1970's and (b) the administrative complexity of carrying out detailed forestry management on sites owned by conservation bodies. The practicalities of such management were well-established under the previous private (Workman) ownership.

### **Other relevant field examples recorded within the project**

The most relevant comparisons for this example are with those dealing with plantation beechwoods in the Chilterns (Case Study 24), at Dalmeny and Dalkeith Estates (Case Study 21) and, at an earlier stage of development Hooke Park (Case Study 22). It is also interesting to compare the selection silvicultural approaches used for beech with those for oak in the Atlantic Oakwoods (Case Study 1), Wyre Forest and Forest of Dean (Case Study 28) and Salcey Forest and Bradfield Woods (Case Study 29).



## Photographic record



Left: premium mature beech stem.  
Workman's Wood, Ebworth

### **WORKMANS WOOD**

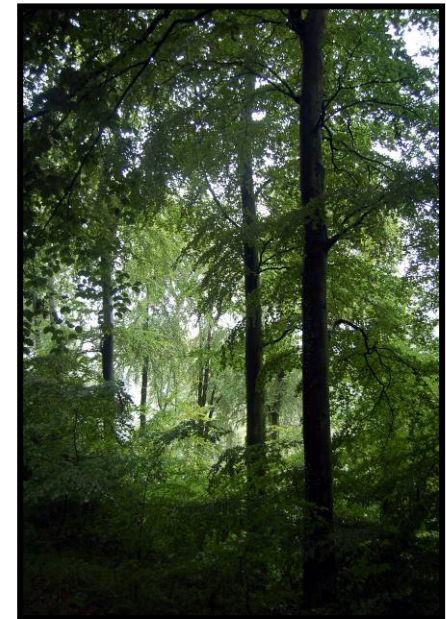
Right: pole stage beech regeneration



Left: dense beech regeneration  
under capital stems in shelterwood

### **POPES WOOD/ PENN WOOD**

Right: uneven-aged low  
intervention stand on steep scarp



Left: beech stand following the  
group system within Morley  
Penistan reserve (photo Gloucs WT)

### **FRITH WOOD/ PENN WOOD**

Right: uneven-aged low  
intervention stand on steep scarp



Left: premium mature beech stem.  
Kingscote Woods

### **KINGSCOTE WOODS**

Right: young hardwood growing  
stock and recently replanted area



Left: premium mature beech stem.  
Kingscote Woods

### **KINGSCOTE WOODS**

Right: uneven-aged stand managed  
on selection system for timber

