

Case Study 5

Ffrwdgrech Estate, Brecon, Powys

Location and ownership of woodlands

These woodlands, comprising Held Wood and a number of smaller blocks along rivers, lie to the south of the town of Brecon, mid-Wales. Their total current extent is 89 ha (~220 acres) with Held Wood at 25 ha. NGR for Held Wood is SO 035271.

The woodlands are within the Ffrwdgrech Estate, a small private estate owned by the Evans family for over 100 years, having formerly been under the Cawdors. The Evans family live nearby in a neighbouring mansion with a significant gardens interest. The woodlands are now managed with retained advice of Pryor and Rickett Silviculture.

Much of the site (~40 ha), including Held Wood, is an Ancient Woodland Site per the Ancient Woodland Inventory, with most of that area being regarded as replanted, although as plantings are of long-standing (pre WWI), they are not treated as PAWS.

Significance/ reasons for selection as case-study example

This example was selected as a case-study within this project for two main reasons:-

1. It is one of the longest-running examples in Wales of the more sophisticated group selection approach to silviculture in coniferous plantations. It highlights the use of ATC to manage mixed, high-value crops of mature Douglas fir and red cedar (adopt scenarios 7, 9 and 10) and also the situation of mature stands of pine and larch where the risk of disease impacts is significant and diversification with a medium-tolerant hardwood understory is advisable (adoption scenarios 4, 5, 11)
2. It is also a good example of the role that can be played in successful adoption of ATC by a combination of (a) a committed private landowner with a long-term approach to woodlands and (b) a sequence of knowledgeable forestry agents. Ffrwdgrech has been in the same family, with a strong forestry heritage, over many years and benefited from the input of CCF specialist, the late Talis Kalnars.

Owner objectives for management (including adoption of ATC systems)

Ffrwdgrech Estate is an obvious example of the importance of owner and manager silvicultural interest in initiating and sustaining the adoption of alternative silvicultural systems. These woodlands are managed for a combination of objectives - centred on the production of high value hardwood and softwood timber, combined with personal and visitor amenity. However the silvicultural regime that is in place owes much to the enthusiasm of the Evans family over many decades and to the advice of Talis Kalnars and the current forest managers, Pryor & Rickett Silviculture. The original aim of the silviculture was to restock areas of old pine, larch and hardwood plantation woodlands (originally established under the Cawdor family) which had been felled during both world wars. It was desired to use a wider variety of tree species, to produce individual stems of high value and to perpetuate tree cover.

Biophysical characteristics of the site

The site is of the upland fringe type, at 160-270m asl. Terrain is variable, with moderate slopes and easy access within Held Wood, but with some potentially difficult and less accessible steep slopes along watercourses in other estate woods.

The climate of the site is fairly warm and moist [ESC AT₅ ~1460 dd, MD 111mm, annual rainfall ~1200 mm] with a moderately exposed wind regime [DAMS = 15]. The solid geology is of Devonian (lower Old Red) sandstone. This produces largely favourable, freely-draining, brown earth forest soils of moderate fertility [ESC SMR Fresh, ESC SNR Medium] with some locally moister, more fertile “receiving sites”.

Access throughout the site is over a dense network of estate forestry tracks, which double as attractive recreational paths. These give egress onto minor public roads for timber movements. The internal track network is suitable for the gradualist, low impact type of working employed in these woodlands, but might not stand up to high volume clearfell working over a concentrated time period, especially following wet weather. Impacts on the neighbouring gardens and watercourses have to be avoided.

Stand history and current composition

There are records of woodlands at Ffrwdgrech at least as far back as the 1840's, with Victorian and Edwardian planted stocking comprising “gentlemen's” mixtures” of Scots pine, larch, oak and beech. Much of this material was felled during World War I, with a further 50% felling off by area during World War II. From 1916 onwards replanting has been with small groups of conifers (80%) and broadleaves (20%). Numerous species have been used, with the preferred conifers being Douglas fir, western red cedar, Sitka spruce, Corsican pine and Japanese larch (overall YC 14). Of these Douglas fir (YC>20) and western red cedar form the main perpetuated component, with Sitka spruce declining following damage to even-aged blocks in the 1991 storm. Some younger even-aged Douglas fir thus occupies gaps formed by storms in 1989-1991. Older premium Douglas fir in mixed stands with western red cedar reaches 80-90 years of age. Old Corsican pine and larch survive as a high canopy over mixed hardwoods. The main hardwoods employed have been oak (YC 6), notable high quality ash and spontaneous beech/ sycamore (formerly also elm).

Silvicultural treatments applied to date and intended future silviculture

The Ffrwdgrech Estate woodlands have been explicitly managed on an ATC/ selection forestry basis since 1959 (54 year record), although management from 1916 to 1959 also had common elements with this. The current silvicultural prescription, developed with advice from the late Talis Kalnars, combines small group selective felling and replanting operations with selective thinnings of mature stock on an individual tree basis. There is increasing dependence on natural regeneration in the older stands, which includes Douglas fir, western red cedar, ash and sycamore. Oak is sustained by enrichment planting. Past losses of larger areas to storm damage have been replaced by Douglas fir blocks (now at ~ 20-25 years) which are being thinned and which will be brought back onto selective working systems as they mature. The aim is to sustain yield, assessed on a volume, basis across the forest and to maintain

broadly the current species composition. Total yield is assessed on a five-yearly enumeration cycle, determining the allowable cut. The forest as a whole produces an estimated 1500m³ of timber annually, of which some 1000m³ form final harvest, with most of the remaining increment coming out as thinnings. The working system has been primarily for shortwood logs, due to difficulties with full-length extraction. The same basic silvicultural approaches are expected to be carried into the future, with Douglas fir and western red cedar now regarded as desirable conifers and oak and sycamore the preferred hardwoods. Regrettably ash, Corsican pine and Japanese larch may not be able to be sustained as main crop elements in the face of current disease threats. An increasing emphasis will be placed on tending younger stands of planted conifers and particularly of natural regeneration - for example respacing fir and cedar.

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

Silvicultural work at Ffrwdgrech over many years has achieved *developmental category 1* (complete or near-complete transformation) for the forest as a whole. Most older stands have developed permanently irregular/ complex structure, although some areas are still operated as small even-aged groups, especially of Douglas fir. Areas with a sparse high canopy of pine or larch may lose this shelter if disease impacts are felt. There is abundant, tended natural regeneration of Douglas fir, western red cedar and desirable hardwoods, although localised enrichment under-planting is used. There is no current likelihood of ATC silviculture being interrupted as the guiding approach.

Commentary on inventory and monitoring protocols/ demonstration potential

The Ffrwdgrech woodlands have been subject to periodic inventory enumeration for many years, essentially on a five-year cycle, recording stocking by species, standing volume, intervening increment and capital value. This information is held by the forest managers. This record, together with an open approach to public access and existing interpretation panels/ way-marked trails, makes Ffrwdgrech an excellent and attractive potential guided (and with agreement, self-guided) ATC demonstration site.

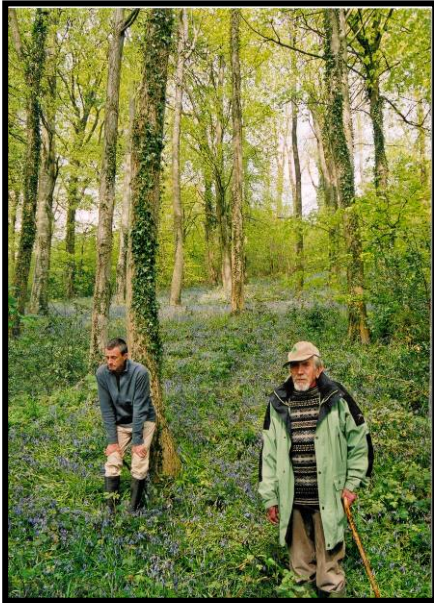
Commentary on economic and operational implications of ATC adoption

Management works are carried out by local forestry contractors supervised by the experienced forestry agents. No formal economic comparison has been made with conventional working, but management costs are likely to be higher than for a simpler conifer plantation of equivalent area managed on a uniform basis. However the capital value of the growing stock will also be that much higher. It is unlikely that clearfell/ restock working would be contemplated other than in circumstances of storm/ disease.

Other relevant field examples recorded within the project

Due to the block-wise group selection methods used at Ffrwdgrech Estate, there are obvious comparisons with Cirencester Park Estate (Case Study 2), Tavistock Estate and Dartington Hall (Case Study 18). However the mix of coniferous and hardwood species used also invokes comparison with Bowhill and Eildon Estates (Case Study 19), Longleat Estate (Case Study 14) and Weasenham Woods (Case Study 30). Unusually, Ffrwdgrech carries this type of ATC working into the upland fringes.

Photographic record



Left: demonstrating alternative silviculture at Ffrwdgrech - the late Talis Kalars explains management in a high quality sycamore stand

Right: demonstrating alternative silviculture at Ffrwdgrech - Pryor & Rickett Silviculture public interpretation panel

Held Wood

A model for forestry management

The 25 hectare Held Wood has been in woodland cover for 200 years. Much replanting occurred, however, following compulsory clear felling during the two world wars (40% WW1, 60% WW2).

Replanted in small sections of various species (main species Douglas fir, Japanese larch, Corsican pine, red cedar, ash, beech and oak) the wood has multiple layers in parts and is managed on a selection system as a perpetual forest. This approach has contributed to the estate receiving a number of national forestry management awards.

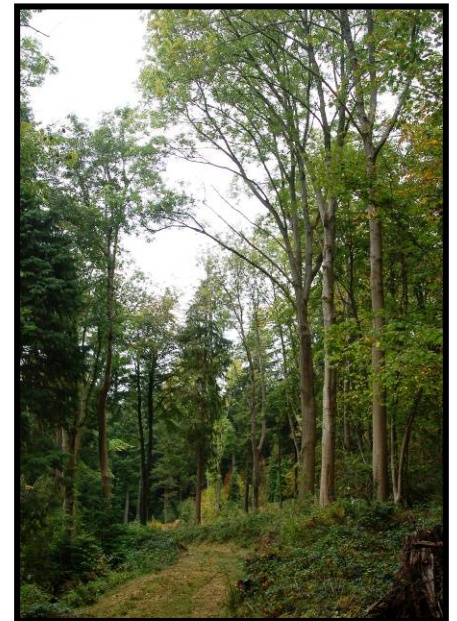


The variety of woodland types also allows the development of a rich diversity of flora and fauna. In some areas generous carpets of bluebells flourish. Recent years have seen a marked increase in butterflies. The woodland and adjoining parkland are essential feeding areas for the internationally threatened lesser horseshoe bat. A remarkable variety of big life is also found here, especially during the spring and summer months.



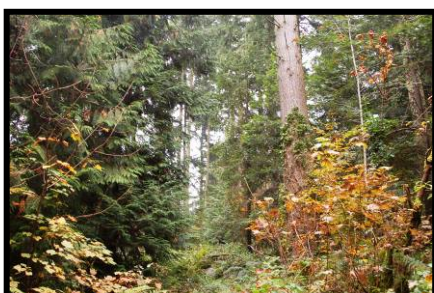
Left: mature high value growing stock - Douglas fir and red cedar

Right: mature high value growing stock - sycamore, ash and mixed conifers



Left: group selection and replant working with Douglas fir

Right: group selection and naturally regenerate working with mixed conifers and hardwoods



Left: irregular shelterwood style regeneration under mature Douglas fir and red cedar stands

Right: irregular shelterwood style regeneration under mature Corsican pine and Japanese larch

