

Wales visit to Cloaenog 15th October 2014 Nick Hill and James Walmsley

Background

Clocaenog Forest covers an area of 4,166 ha of which approximately 50% is designated to Lower Impact Silvicultural Systems (LISS). The forest also hosts the Continuous Cover Forestry (CCF) area (www.forestry.gov.uk/fr/INFD-94LCMR), established in 2002 in collaboration with Bangor University and Forest Research. Clocaenog is an upland site, ranging from 300 m to 500 m above sea level and underlain by Silurian slates and shales. The species composition is dominated by Sitka spruce (61% by area) and Norway spruce (11% by area).

The management priorities are conservation (maintenance of red squirrel and black grouse habitat), and timber production. Public usage is relatively limited. Substantial pockets of windthrow were sustained during winter 2013/2014, providing challenges and opportunities for Dave Williams and his team in Natural Resources Wales. These formed the basis for a major part of the site visit.

Sites

Stop 1 offered a distinct a comparison between two Sitka shelterwood stands, at different stages of regeneration and a 3rd stand which had been entirely wind-thrown during winter 2013/2014. The decision to replace the upturned root plates into their holes was readily discussed. Would the increase in habitat diversity created by stump hollows, had they been left unfilled, outweighed the challenges of future machinery movements?

Stop 2 was at a P38 Norway Spruce stand (DAMS score 18). The canopy was deliberately dense to encourage red squirrel movement, however patches had been cut (30 m diameter, 10 in a 10 ha plot) and planted with a Sitka spruce and pine mix in 2007. The group discussed letting the wind create holes in the thick canopy, as an alternative strategy.

Stop 3 commenced at a P51 Sitka spruce stand which had been under-planted with European silver fir, of German origin. Evidence of *Dendroctonus micans* (the great spruce bark beetle) was highlighted and its biology explained to the group, which included some 20 students in the second week of their MSc Environmental Forestry degree.



Picture 1: Alec Dauncey of Bangor University amongst prolific regeneration of spruce and pine (photo courtesy of James Walmsley).

At a nearby stand with a more complex and irregular structure, the group discussed the implications of more regular interventions on rack infrastructure: both environmental and financial. It was clear that Clocaenog as a forest requires huge extraction infrastructure (and maintenance), partly as a result of the frequent interventions required for LISS, but also as a result of hosting various rally events!

Stop 4 was at the Tyfiant Coed experimental plots. The group visited an under-story planting species trial site. Silver fir, noble fir and Douglas fir had all been planted under Sitka Spruce in 2007. Notably, the Douglas had made a good start but had since slowed and showed signs of stress. It was suggested that variations in the shade tolerance of coastal and interior origins explained this observation.



Picture 2: Group discussion at site 1 (photo courtesy of James Walmsley).

Discussion Topics

As part of the transition from a conventional clear fell system to a CCF system, selected trees often need to be retained beyond original target specifications, in order to provide essential control of light levels to enable adequate natural regeneration. There have been several transition strategies trialled at Clocaenog, each clearly illustrating different light regimes and their associated benefits and challenges. At *stop 1*, uncontrolled light levels under windblown shelterwood stands have allowed a dense, even aged, thicket of natural regeneration and planted stock to get away. This is a quick and cheap method of restocking, but will require some intensive respacing. In other stands, at stops 3 and 4, canopy gaps are being expanded incrementally, in systematic strips or selective circular patches. Regeneration towards the centre of these gaps is benefiting from longer period of direct sunlight, whereas regeneration levels are much sparser towards the perimeter. Hence, gap regeneration is naturally of a broad size class distribution, potentially aiding a transition to a more complex stand structure.

Growing large diameter trees presents two main challenges at Clocaenog: exposure to wind; and marketing of large timber. The financial risk associated with windthrow was reportedly diminishing with the advancement of mechanical harvesting equipment. The challenge of selling large timber however, will take cooperation at a large scale. There is a growing need for the forestry sector to pool forecasted harvest quantities and specifications, thereby enabling the market to plan for changes in wood production and create a more favourable environment for larger dimension material derived from CCF systems.

Carefully balancing habitat management with other management objectives is becoming an increasingly common element of forestry management and is particularly apparent at Clocaenog. The requirement to maintain areas of dense canopy cover for Red squirrel movement is, in some areas, conflicting with achieving target basal areas required for natural regeneration as part of a LISS. At the same time, it also presents an exciting opportunity to demonstrate how far a patchy, complex CCF system can be manipulated to simultaneously meet habitat priorities and quality timber production.

Thanks

The meeting drew a substantial and diverse group of professionals, academics and students. The collection of practical experience and theoretical knowledge made for some healthy and lively debate. A special thanks is made, on behalf of the attending students from Bangor University, to Dave Williams and the CCFG as a whole for their clear explanations and warm welcome.

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