CCFG England Meeting to Tavistock & the Bradford-Hutt System
20th September 2018

This meeting in Devon in September proved a popular one; all were keen to know more about Tavistock Estate’s unique ‘Bradford-Hutt’ system for transforming young even-aged stands to achieve continuous cover. The following is an outline of how the system works and some of its pros and cons, as discussed on the day.

What is it?

Devised by the sixth Earl of Bradford and his forester Phil Hutt in the 1960s, the system sought to achieve high quality timber production and protect the forest from soil erosion, pests and pathogens, frost, and wind. The 228 hectares managed under the system on Tavistock Estate is now arguably the best documented, most continuously managed example of long-term transformation to CCF that we have in the UK.

Figure 1 shows the grid layout of the system, which was implemented across a variety of even-aged stands of mainly Scots pine, larch and Douglas fir. Stands were divided into ‘Units’ (measuring 18m x 18m) and, within each Unit, a series of nine ‘Plots’ (6m x 6m). To start the transformation the central Plot in all the Units was felled and replanted with nine trees at 2m x 2m spacing. Six years later the next Plot was felled and replanted, and so on in a spiral pattern until finally Plot 9 was formed after 48 years. 4m-wide racks, evenly distributed between the rows of Units, have provided good access for frequent and fully mechanised harvesting to control competition within and between Plots.

Figure 1: Layout of the Bradford–Hutt system showing Plots, Units and parallel extraction racks. (Image from Kerr et al., 2016)
Quirks of the system

The system was specifically designed for growing Douglas fir, but in practice the Earl of Bradford and Hutt were prevented from planting the species in Plots 1-3, as there were concerns about its ability to take the shade of the existing crop. Shade bearers western hemlock and western red cedar were planted instead, and Douglas was planted in later Plots. However it was not always suited to the site conditions and a lack of basal area control has in the past limited its success in the system, although Figure 2 shows an area where Douglas is showing promise.

Interestingly the system has a mathematical basis. The idea was that each Plot would produce one final crop tree after 54 years, and 6m x 6m was the square dimension of the crown required to produce a sufficiently large tree in this time, all based on data from even-aged yield models. While it was thought that the central tree in each Plot would be the final crop tree, in reality that hasn’t always worked due to numerous variables, such as plant quality, weed control, light, and soil fertility. And with there being only nine trees in a Plot, many if not all of the other eight could be edge trees.

Has it worked?

Having seen what the forester Mark Snellgrove described as “the good, the bad and the really, really bad”, on balance it is clear that the system has been successful in creating a diverse species composition and structure. This must be due in large part to having a clear vision for the forest and continuity of management, as well as an excellent infrastructure of regularly spaced extraction racks.
With the system having served its purpose, the group discussed moving towards a more freestyle management approach as a next step, to deal with the increasingly diverse structure and species composition emerging. This could involve amalgamating Units into larger compartments to accommodate larger groups of trees with the potential to grow higher quality timber. Also, abandoning the 54-year rotation period would provide the opportunity to grow larger, more valuable timber.

Thanks
Thanks to the Tavistock Estate for hosting the group, and to Mark Snellgrove and Gary Kerr for organising the event and giving us a candid look at the system.

Image ref:

Jonathan Tompson