

Monocla 3 P74 (IUFRO 33 seed origins) with NPD. This has had 2 seasons of growth since I last saw it and during this time Elatobium has dramatically reduced vigour in the intensive section. This is particularly apparent on the inherently slower-growing Alaskan and Skeena River origins, whereas on the southern lots which had a greater foliage mass when the Elatobium attack began, leader growth has been less affected and the trees now appear much denser in the crown (see photos). Did the latter have a greater proportion of stored food reserves to aid recovery? In the extensive section the Elatobium attack has had less effect on growth and in the best plots the height of the tallest trees at 3 years must be nearly 4 m. There has been some early autumn frost damage (affecting current years needles) to a few trees of some southern provenances eg Newport and Florence Oregon. There is pronounced lammas growth showing as vertically growing "candles" on the Californian seed origin 3019 Big Lagoon. Differences in width of crown relative to tree height are again very evident in this experiment with several of the Southern Oregon lots such as 3016 Denmark and 3017 Gold Beach having narrow crowns whereas 3048 Masset has much broader crowns and heavier side branching. Noted again the quite different appearance of the Skeena River lot 3032 Kitwanga which is particularly sparsely foliated at the moment after heavy Elatobium attack. One of the peculiarities of the experimental results is that no 3020 Crescent City, California is very poor in the intensive section and second tallest in the extensive section. It seems likely that the reason for this may be that the intensive section is much more liable to frost damage whereas it so happens that the 2 plots of this origin in the extensives are situated on a high part of the experiment which probably sheds cold air.

Roger Lines
1 December 1981

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*A. Blokes' initiative? (The Danby?)
Research Forester Neville Danby.*

Brechfa Forest Garden P57-63 with NPD. In the short time available we looked briefly at 34 of the approximately 90 plots which make up the forest garden, the initiative for which is believed to have come from J H James. The Garden is full of interest and fits well into the project for establishing a range of species comparisons on sites all over Britain so as to evaluate alternatives to the main species. It is still under Conservancy control, but I understand their interest is somewhat inactive, apart from recent construction of a road which cut through part of the Forest Garden at the southern end. Access at the northern end involves crossing a stream which at this time of year is quite deep.

Plots 8-15?

ABIES. GF, NF, A. amabilis, A. Nordmanniana, A. veitchii, A. lasiocarpa, and A. homoleis are all growing well. "A. cephalonica" is growing well but does not look like this species. A. lowiana ex Montana is poor - moderate, while A. concolor, Colorado is a virtual failure.

PINUS nigra var austriaca mediocre. P. muricata some gaps, very vigorous, form variable. According to D. Fourt seed origin is probably 55/125 ex Eire, the blue form. P. strobus growing well, no obvious Cronartium, some resin bleeding at the nodes. P. resinosa few survivors. P. Thunbergii gappy and rather poor form but looks healthy. P. densiflora killed by 1978/79 winter? Except for one tree. P. peuce excellent survival and form, colour good, current growth rate 20 cm, some resin bleeding at the nodes. P. pungens 20 survivors, growth and form poor, unusual hooked cones. P. ponderosa fair stocking, does not look very happy.

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P. jeffreyi fair stocking but now rapidly dying out. P. Banksiana, well stocked, form fair, form poor. P. mugo well stocked, slow-growing, P. contorta ex Long Beach, well stocked, basal bow absent, some stem lean, has been growing at up to 1 m per annum. Crowns now small, not self-thinning. P. radiata only 9 alive form rough but a few huge stems.

Other species Leyland cypress healthy and vigorous (replanted in plot 82 after ash failed?). Alnus rubra severe die-back and currently regrowth is being severely restricted by Chionaspis salicis scale. Betula maximowiczii adjacent to A. rubra fair growth, good stocking, one tree with squirrel damage. Betula lenta, fairly well stocked and looks healthy, form poor and dull bark makes it unattractive. Nothofagus obliqua very variable form mostly very poor, but largest trees are 45 cm in BHD and a few look quite healthy. Tilia cordata slow and bushy form, but healthy.

Roger Lines
2 December 1981

Pembrey 3 P72 (open-cast coal tip). With NPD. A quick visit because of my interest in the different species performance on this very low nitrogen site. I was surprised to see how much better CP grows here, compared with a south coastal origin of LP which looks like LP on muskeg. JL is just as bad (though the form is very good) and SS is in severe check. A small look-see fertilizer trial has produced dramatic improvement in leader growth and needle colour on the LP. In the surrounding area where ever there is a group of 10-12 Alnus rubra the colour of the CP has improved dramatically. The alder also looks healthy.

Roger Lines
2 December 1981

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START OF ROGER LINES 30 NOVEMBER - 2 DECEMBER 1931

Margam 1 P55 (SS/WH Long-term mixtures) with N P Emby. SS is now apparently being caught up in growth by the WH, although the pure WH for example in Rep 2, is still not fully ready for shearing, whereas in the mixture plots it is in the pole stage. Unfortunately, the multi-stemmed WH are continuing with several dominant stems with little tendency for one to assume dominance. In retrospect, as all the stems spring from the base it might have been worthwhile singling them, once they were above the level of sheep damage. All that can be done with the experiment now is to use it for coil studies (Mark Anderson) and for the observation of SS as it enters the phase when growth slow-down and perhaps "bent top" is to be expected. In general growth has improved greatly since my last visit in 1929.

Roger Lines
30 November 1931

Margam 11 P79 (Nothofagus seed origins) with NPD. This site is very exposed to salt spray and pollution from the steel works and oil refinery. This has resulted in frequent die-back to the shoot apices and appears worst on the *N. obliqua*. It seems unlikely to be frost damage, particularly as nothing like this occurred at Drummond Hill 32 P79 which has experienced more severe frosts this autumn. In general the *N. obliqua* are taller and have suffered less die-back over the last 3 years compared with the *N. procera*. The home collected seed lots appear superior to those direct from South America. Although there have been some losses survival is good on the whole and the trees should now be getting above the stage when they require further weeding. Three year height assessment has just been completed.

Roger Lines
30 November 1931

Margam (Michaelston) 3763 (JL underplanting) with NPD. Seen only at dusk and from the main road opposite. Much of the larch crop remains. Although this experiment has now been handed back to Conservancy it is still of some interest for the 2 underplanted species.

Roger Lines
30 November 1931

Rheola 3 P30 (SS seed origins) with NPD. Blocks I and II in compartment 50 on the SMB ploughing have gone back severely in condition since I last saw it in 1974. I had hoped that it would be possible to establish basal area plots in this experiment as it is well replicated and the plots are 144 plants. However the current growth varies from the extremely poor Alaskan lots, some of which are only 3-4 m tall at 22 years, to the best plots of Jutland (ex Washington), Sooke and Jewell which were growing quite rapidly until 5 or 6 years ago and were then devastated by Elatobium and are now showing "bent top". waterlogging and windthrow is starting on trees only 8 m tall. Water is lying in all the furrows being held up by massive dams of SS litter as a result of persistent attack by Elatobium. It is rather odd that there is no water standing in the furrows either above or below the experiment. These filler areas were planted with WH at the same time as the SS and grew much more slowly and were badly damaged by sheep. After being in semi-check for 10 years they were interplanted with south coastal LP and both these species are now looking full of vigour and it would not be surprising if they grew taller than the SS before long. There is no water in the furrows either above or below the SS.

Blocks III and IV in compartment 87 are on a somewhat better site with lower exposure. Growth has been better throughout and there is also much less waterlogging especially on the part of block IV which has been ploughed with DMB Cuthbertson. The filler at each end of WH/SLP is also much taller with leaders double the length of those on the SS. How much of the poor growth of SS is due to Elatobium and how much to the general "Pennant problem" is uncertain. We climbed to the Cairn above the experiment to take photographs. This Cairn had a tatter flag right on the top of it (Rheola 4) which gave a grossly misleading tatter rate for this section of Rheola (17 cm sq/day) in the Forest Record 108 on the "Pennant" problems. It is now clear that we shall get little more seed origin information from this experiment as it is all liable to blow over within the next 10 years, though it forms a useful example with a recorded history of the Pennant problem. Trees are rooting less than 10 cm deep on the SMB ridges, judging from root plates of blown trees. The question which arises is whether a tree with 70-80% of its foliage lost to Elatobium has enough food reserves to be capable of regenerating roots which are lost in normal turnover on a waterlogged site. If not then they may not take up enough water to stop the site getting more and more waterlogged in a rainfall of 1800 mm.

Roger Lines
1 December 1981

Rheola 1 P42 with NPD. This old conservancy mixture trial in a sheltered fertile valley has 3 replicates of mixtures of SP/NS, SP/DF, and SP/WH plus pure plots. Some thinning of SP to favour other species was done about 20 years ago and it is not been touched recently. On this site all 4 species are reaching final crop proportions at 39 years. It might give some useful information on later stages of self-thinning mixtures as the amount of thinning of SP has probably had little effect. The WH are mainly of good stem form, though the lower butts are seldom circular in cross section. DF is more variable in size with the best stems of considerable diameter (above 50 cm). It is interesting that they have relatively fine branching in the lower 4 m (when the SP in mixture would have been having the greatest effect) whereas at 12 m the dominant trees look rather coarse-branched. We did not find the SS/NS plots.

Roger Lines
1 December 1981