



Forestry Commission (Research)

Silviculture (South)

Dendrologist's Report on Brechfa Forest Garden - December 1987.

Summary

This report confines itself to the potential value of the exotic species in the garden relative to the British Isles Tree Register. The recreational objectives of the site are being defined elsewhere by Wales Conservancy, but it is considered impossible to entirely separate interpretive value from essential scientific merit here. It is hoped that divergence of opinion in these matters will be minimal. Trees are assessed here for authenticity, specimen quality and conservation potential, in preference to productivity, assessment of which remains a valuable function of the local Silv (N) outstation. The most important part of this report is it's taxonomic evaluation of each plot and individual species seen.

1. Site Assessment and Potential.

The geography of the site can only be described as difficult, almost all of the plots are on very steep slopes. This will always hinder interpretation, but appears to be no impediment to good tree growth (except for the occasional landslide in 1987). The site is remote and because of this relatively safe from interference and malicious damage, although odd christmas trees have been taken. The performance, of conifers particularly, clearly indicates that the climate is affable for tree growth. A subjective assessment is as follows:-

1.1. Scientific strengths.

A large number of taxa are represented  
Taxonomy and nomenclature is about correct  
Origin of seed and planting notes are available for most plots.  
Several or many individuals are present of most species.  
There are many rare species.  
Research Division have an enthusiastic commitment to the project.

1.1.1. Scientific requirements or weaknesses.

Tree identification labels are needed.  
Plot information and orientation signs are needed - origin, species, geography, physiology and location maps.  
In many plots no account is taken of provenance (eg. in some instances the plot may represent the best trees, and in others a poor form).

1.1.2. Interpretation strengths.

No restrictions are placed upon visiting specialists.

### 1.1.3. Interpretation weaknesses.

There is no clear and simple guide to what is available on the site for pre-visit use. An educational field study resource centre would be useful to house equipment, maps, leaflets, etc. There is no interpretive leaflet, guide, or suitable map.

No orientation panels.

No interpretive Ranger Service

Difficult geography. (In places potentially dangerous).

Very difficult access from the nearest public road.

It is probably undesirable to have public vehicular traffic using the forest roads to, and within, the site.

### 1.2. Capacity of the site for wider use.

The garden is clearly under used by researchers and casual visitors at the present time. The capacity of the collection to take greatly increased numbers will require the consideration of re-development, particularly of through plot paths more or less along contours. Erosion is clearly a serious problem and tree root cutting would almost certainly provoke a windthrow problem. Viewing the collection from the existing new forest roads is only of limited value as nothing but (frequently poor) plot edges are seen. Maintenance of such a large and comprehensive collection can only be justified, however, if it is more widely used for a whole range of interpretive purposes.

### 1.3. Potential for growth.

It is suggested that almost no extra land is used for this project on the grounds that 80 or so species are not only enough for local management to maintain, but are more than enough to keep even a specialist visitor happy. It is important that plots regarded at first sight to have failed are examined very carefully. Frequently if only one tree remains alive it is of more value than a re-planted plot of some less valuable species. Beating up plots in this way has caused confusion and losses (from the conservation aspect) in forest gardens elsewhere. Gaps within and between plots from a dendrologists point of view are of considerable value. It is most important that the whole tree can be seen at least from one angle. It is worth remembering that the potential height growth of many species planted at Brechfa is greater than the width of the plot. A plot by plot assessment of the most notable species follows, giving suggestions for removals, replacements or treatment if these are appropriate. The object, presumed here, being to create a dendrological collection of lasting value.

## 2. Plot Assessment.

- \* Wild collected, and of special conservation value.
- NB. "special value" = To a dendrologist.
- "thinning required" = To produce specimen tree/trees.

### Plots

1. \* *Pseudotsuga menziesii*. A good plot in prime valley bottom site, some rough trees but some outstanding ones. Ex Washington.
2. \* *Larix decidua*. Of German origin.
3. \* *Larix potaninii*. (Name change). Plot failed, re-planted with spruce.
4. \* *Tsuga heterophylla*. Good quality and origin (QCI).
5. *Tsuga mertensiana*. Very poor plot, perhaps of poor provenance origin, sadly not worth keeping.
6. *Chamaecyparis lawsoniana*. Very dense plot, of no special value except as a "forest environment". Seed from Monmouth.
7. \* *Thuja plicata*. An outstanding plot, excellent quality. Ladysmith Vancouver.
8. \* *Abies fraseri*. A difficult species to establish. Particular rarity value as known wild origin.
9. Failed plot. *Cupressus macrocarpa*.
10. \* *Sequoiadendron giganteum*. Good plot. Ex California.
11. \* *Sequoia sempervirens*. An outstanding grove on a very steep slope at 29 yrs. 65cm x 17.5m (best tree). Ex California.
12. Failed plot. *Cedrus libani*, one tree left.
13. *Cedrus deodara*. Fair condition but not a good origin. (Italy).
14. *Picea abies*. Very steep exposed plot. Seed collected in Austria.
15. \* *Abies koreana*. An outstanding plot of healthy trees. The best plantation of this species known.
16. \* *Abies grandis*. Some very fine trees, but as would be expected stem cracking on the largest. From Kittitas County, Washington.
17. \* *Abies procera*. As plot 16, also from Washington State.

18. *Abies cephalonica*. Good specimens but taxonomy suspect. Possible *Abies alba* in places. This and the previous 2 plots are very steep with an eroding cliff to the road on the low side.
19. *Abies nordmanniana*. Good plot. Seed collected in Germany.
- 20.\* *Abies concolor*. Many dead and dying. Common in plots of this age elsewhere. It is important that every living specimen is retained. Ex Colorado.
- 21.\* *Abies veitchii*. A good healthy plot, should be opened up to retain green foliage down to eye level. No merit in "pole stage" *A.veitchii*, it is very much a foliage plant. Sanwa Trading Co. Japan.
- 22.\* *Abies concolor* var *lowiana*. A fine plot with many specimens from the *A.concolor* end of the range in Montana.
- 23.\* *Abies homolepis*. Excellent plot. Ex Japan.
- 24.\* *Abies amabilis*. Outstanding. A good example of Silver fir forest environment. Ex Washington.
25. *Abies delavayi*. Collected from Benmore Forest Garden and subject to contamination from other species.
26. Not seen.
- 27.\* *Pinus nigra* ssp *nigra*. Poor condition. Ex Austria.
28. *Pinus muricata*. Very rough plot, of little merit.
29. *Pinus strobus*. Good example of species. Wrong seed lot No., so origin uncertain. (56/695) 56/693 = *P.strobus*.
30. *Pinus resinosa*. A valuable plot of a rare species. Wrong seed lot No., so origin uncertain.
31. *Pinus uncinata*. Of no special value.
32. *Pinus thunbergii*. Not growing very well but so many in one place is worth while.
33. *Quercus petraea*. very small plot in apex between two roads. Seed from this forest.
34. *Quercus robur*. No special merit. Needs thinning out. Ex Cilgwyn (local).
35. *Quercus rubra*. Fairly good quality plants. Needs heavy thinning. Seed from Holland.
- ~~36.\* *Tilia cordata*. A good typical form. Needs heavy thinning, even coppicing some individuals. Of European (Austria) origin.~~
37. *Nothofagus obliqua*.
- ? 38. *Fagus sylvatica*. ~~Nomenclature in doubt.~~

- 39.\* Pinus densiflora. A valuable rare species. Not growing particularly well but very worthwhile. Seed from Japan. One tree survives.
- 40.\* Pinus peuce. A valuable plot showing the potential of this species on this site in direct comparison with 16 other pines. Wrong seed lot No., 56/615 = P.peuce.
41. Pinus pungens. Another valuable pine, poor growth. Origin uncertain.
- 42.\* Pinus ponderosa. Species repeated more widely in other gardens than other pines in adjacent plots to this one. Poor growth. From Susanville, California.
43. Picea asperata. A very small plot, or remnant of original plot. 57(49).
- 44.\* Pinus banksiana. Typical rough type of plot.
45. Pinus mugo. A thick jungle - typical of species. Ex New York State.
46. Pinus mugo var pumilo. Nomenclature in doubt. If correct then not seen. French origin.
- 47.\* Pinus contorta. Of no special value. Longbeach type, rough form.
48. Pinus radiata. Plot almost failed, of no special value.
- 49.\* Pinus jeffreyi. A reasonable plot, of considerable interest. Chester, California.
- 50.\* Cryptomeria japonica. Good, in part spoiled by new road. Ex Japan.
- ? 51. Picea glauca. <sup>1/2 Plot</sup> Very good plot. Valley bottom by road. Of doubtful origin.
- ? 52. Plot failed.
- ? 53. Plot failed.
54. Picea orientalis. Very good quality trees. No special scientific value. Not of wild origin.
55. Picea rubens. A healthy valuable plot. Foliage of this species can only be distinguished from Picea abies when seen as a mass (as in this plot), from which it is possible to stand back. Of doubtful origin (seed number is for Oak!).
56. Picea omorika. This is an endangered species in the wild and wild origin plots of this type are of enormous conservation value. The origin of this plot is uncertain, but it may be wild collected.

- / 57.\* *Picea mariana*. A good, but slow growing plot (perhaps provenance). 57(713) Ontario.
- / 58. Failed plot. *Picea smithiana*.
- / 59.\* *Abies lasiocarpa*. Excellent plot, healthy thick foliage. Oakridge, Oregon.
- / 60.\* *Abies balsamea*. A poor plot, but valuable species.
- / 61. *Acer pennsylvanicum*. No special value.
- / 62. *Ulmus glabra*. No special value.
- / 63. *Quercus canariensis* (name change). A good plot needs opening up to specimen trees.
- / 64. *Acer saccharinum*. Thin out. Check identity in summer - seed collected as *Acer saccharum*.
- / 65. *Quercus lusitanica*. Important species - not common. This collected from Kew where hybrid influence is great.
- / 66. *Quercus cerris*. Thin out heavily.
- / 67. *Acer pseudoplatanus*. Thin heavily. Collected from Slebech, S.Wales.
- / 68. *Acer platanoides*. Thin out almost to final crop so that foliage remains low.
- / 69. *Populus T x T*. not seen in detail.
- / 70. *Tilia cordata*. Valuable plot, thin out. Origin in doubt.
- / 71.\* *Liriodendron tulipifera*. A few surviving trees, well worth keeping. Origin in doubt, given the wrong seed lot number.
- / 72.\* *Castanea sativa*. No special value. Thin out. from France.
- / 73. *Aesculus hippocastanum*. No special value.
- / 74. *Populus*. Not seen.
- / 75. *Picea koyamae*. Not good, but worth keeping.
- / 76. Failed plot.
- / 77.\* *Tilia platyphyllos*. Keep remaining trees. From Austria.
- / 78. *Davidia vilmoriniana*. Not seen.
- / 79. *Robinia pseudoacacia*. Rough, but of interest. Doubtful origin.
- / 80. *Populus*. Not seen.
- / 81. *Populus*. Not seen.

- / 82. ~~Fraxinus~~ ~~excelsior~~. Almost failed. B.U. X  
Cupressocyparis leylandii (Clone II).
- / 83. Betula pendula. Good plot. Distinctive form. Seed  
collected as Betula lenta.
- / 84. Stranvaesia davidiana. Outstanding plot. A clear  
/ indication of how little used this high amenity species is  
on upland sites.
- / 85. Betula pendula. (listed as B.alba).
- / 86. Alnus rubra. failed plot.
- / 87. Betula pendula (Mildenhall). An odd form of curiosity  
/ value.
- / 88.\* Betula maximowicziana. Of no special value now wild  
provenances are available elsewhere. From Nagano, Japan.
- / 89.\* Betula lenta. A good plot. Ex Pennsylvania.