

Society Activities

Society Annual Study Tour, 1978: Donegal/Tyrone

TUESDAY, SEPTEMBER 19, MORNING

Our first stop was at Raphoe Forest, where we were met by the tour leader, Mr. Ernest Johnston. The President of the Society, Mr. Fergal Mulloy, formally opened the proceedings and Mr. Johnston introduced the local Forester-in-charge, Mr. S. O. Domhnaill who, having welcomed us in Irish, gave details of the Mongorry Property, where our first stop was located. This was a Sitka spruce stand, P1954 (YC24, stems/ha 1150, vol. 300m^3 , mean volume tree 0.26m^3). The stand was due a third thinning in 1979, but there was no problem in selling thinnings which were, for the most part, exported across the border to be used as fencing posts. This land was good agricultural land and was ploughed with an agricultural plough before planting. Dr. Dick McCarthy described an exposed soil profile. The soil was a gley derived from glacial drift, similar to the Leitrim gleys, but not as sticky and very fertile. He was of the opinion that the minimum of soil disturbance was desirable here. Mr. Dillon, remarking that root penetration seemed shallow, advocated shallow ploughing only, if ploughing must be done. Good management, especially in relation to thinning was important on this site.

The next stop was a P1958 stand of lodgepole pine (coastal) (YC18, stems/ha 3700, vol. 150m^3 , mean tree volume 0.041m^3). Mr. Noel Foley explained that a line thinning of 1 in 7, with a selective thinning in between had been carried out on this crop. He was of the opinion that this was preferable to a 1 line in 3 thinning. Dr. P. M. Joyce asked why LP was planted on this site since SS was growing so well nearby. Mr. John Haughey explained that when the LP was planted 29 years ago the site was growing a heather/grass mixture and that LP represented a conventional species selection at that time. The wisdom of this selection was vindicated by the stand in question, in the view of Mr. Mulloy. In the course of a discussion on the relative merits of the two species, Mr. Tom Purcell pointed out that the coastal provenance growing here was atypical and was a much superior strain of coastal. Mr. Tony Mannion likened it to the Mt. Ranier strain found in Kilworth Forest and Mr. Joe Freeman suggested that this strain deserved further investigation.

At the next stop. Woodquarter Property of Mulroy Forest, Mr. Johnston introduced the local Forester-in-charge, Mr. D. O'Sullivan, who explained that the site had previously grown oak, Scots pine and European larch. There are now 18 species in this property. Mr. Johnston mentioned that eel grass (*Zostera* spp) was growing beneath the nearby seawater. Eel grass is not common in Ireland and is a source of food for geese, many of whom, together with duck and several species of wader, overwinter here.

LIAM QUINN

WEDNESDAY, SEPTEMBER 20, MORNING

Day two of our tour and we left Donegal behind as we headed for Killeter Forest in west Tyrone. A light drizzle hardly dampened the enthusiasm of those in a profession where a wet sock in a wet boot is not exceptional. Mr. Dick O'Donovan, chairman for the morning session introduced the staff of the Forest Service of the Ministry of Agriculture for Northern Ireland, who were our hosts for the day. Mr. Cecil Kilpatrick, Chief Forest Officer; Mr. John Philips, tour leader for the day; Mr. William Bryan, District Officer for west Tyrone and Mr. James Mackin, Head

Forester at Killeter Forest. Mr. Kilpatrick welcomed the Society to Killeter Forest and congratulated it on the choice of the Donegal/Tyrone venue. Both he and Mr. Bryan went on to outline the main features of Killeter Forest.

Killeter is one of the largest forests in Northern Ireland comprising some 4500ha of which about 3000ha are planted. With the adjoining properties of Bournesmore, Killygordan, Lettercran and Lough Eske of the Forest and Wildlife Service, these areas total about 9200ha of which 6500ha are planted. This area is one of the largest blocks of continuous forest in the country and its extent is increasing annually. At Killeter 150ha are being planted each year. The rainfall here is very high and over 2500mm have been recorded, indeed in the week preceding our visit over 100mm fell. Most of the forest lies between 150 metres and 300 metres elevation. Sitka spruce has been used extensively, comprising over 90% of the planted area. In recent years, however, there has been a swing towards lodgepole pine (of Cloosh Valley origin) and in 1977 it accounted for 40% of the planting programme, a dramatic increase from 2% in 1972. Yield classes for Sitka spruce range from YC8 to YC24 (average YC16) and for lodgepole pine from YC8 to YC14 (average 11). These figures are all based on estimates from very young crops. Most of the area is covered with oligotrophic blanket peat with areas of mesotrophic peat where some flushing occurs, with occasional hollows of eutrophic peat. Part of the higher elevation peats are dystrophic.

Mr. Mackin outlined the fertilizer regime thusfar for Sitka spruce at Killeter. We were surprised to learn that no nitrogen has yet been applied as top dressing but it is still early days from a nitrogen deficiency standpoint as most of the plantations are less than fifteen years old. The Sitka spruce we were standing near still looked quite vigorous and showed no signs of nitrogen deficiency. It was planted in 1964 and before planting the area received a broadcast application of CRP fertilizer at 500kg/ha. In 1972 it was refertilized with 630kg/ha CRP. Current practice is a preplanting broadcast application of 750kg/ha of CRP. This compares with the 500kg/ha broadcast application of CRP used on similar sites by the Forest and Wildlife Service.

The biggest difference, perhaps, in management between the two Services is the adoption of a no thinning policy by Northern Ireland. This was sure to stimulate discussion so it was adjourned until the afternoon session. Another conspicuous difference is that at Killeter extraction racks are left every 24 metres or so, about 4 metres wide.

Mr. Stan Milner, Research Officer, Forest Service took over and led us to a provenance experiment on eroded peat. It is not possible to plough eroded peats so the plants were planted on turves where they were available, or directly into the mineral soil on bare areas. Seven provenances of lodgepole pine and two of Sitka spruce are included in the experiment. No growth differences have been found between provenances but it was clear that the Long Beach, Washington and Newport, Oregon provenances of lodgepole pine were showing the greatest vigour but also had poor form. Terrace, B.C. provenance of lodgepole shows promise in that it has reasonable vigour and good form. Apart from the provenance experiment itself, it was interesting to note the success of this crop on eroded peat, 500kg/ha CRP were applied at planting in 1967 followed by 500kg/ha CRP and 250kg/ha muriate of potash in 1975. A discussion on the merits and demerits of lodgepole pine provenances followed. The alternatives seem to be low production and good form or high production and bad form. This may be an oversimplification, however, and provenances such as Mount Rainier may be a suitable compromise on some sites. It was generally agreed that if it were decided what was to be the end use of the crop it would make choice of provenance far easier. Nobody was willing to recommend one provenance to the exclusion of all others and it is clear that this particular discussion will continue for some time.

After enjoying the view of the surrounding countryside from Cross Hill we made our way to Sheskinawaddy where Mr. Mackin and Dr. Tom Hassard of Queens

University took us over the area which had examples of the vegetation types and microtopographies which were used in preparing site maps of the forest. Mr. Mackin outlined the basis of the mapping. It started in 1961 when it was felt that some form of vegetation mapping might be useful in the future for manurial treatment recommendations. Seven vegetation classes were used to map most of the forest area prior to planting.

Dr. Hassard dealt with his work on the relationships between the different vegetation types and various measurements of fertility, peat moisture content, measures of exposure and topography. When the vegetation types were examined in terms of the differences between them in terms of various fertility, site and growth criteria, major differences could be explained on the basis of two nutrient-enrichment phenomena: flushing and the influence of the material (mica-schist). It was concluded therefore that the vegetation pattern at Killeter can be explained in terms of "topographically controlled nutrient enrichment".

Further details of Dr. Hassard's work can be found in: Hasaard, T. H. (1978). The application of some methods of multivariate statistical analysis to the study of the growth-environment relationships of Sitka spruce in Northern Ireland. (Ph.D. Thesis, The Queen's University, Belfast).

After some discussion of the potential value of site mapping for afforestation the party made its way back to the car-park where tea was kindly provided by the forest staff. Full credit to Mr. Mackin and company for slaking our thirsts and providing seating in one of the buildings at Sheskinawaddy.

EUGENE HENDRICK

WEDNESDAY, SEPTEMBER 20, AFTERNOON

On two of the four stops, wildlife reared its head, albeit imaginary. Unfortunately, we did not see a real head of either of the two animals discussed, the deer and the Greenland white-fronted goose.

Stop 3 Whilst we did not see any of the 20-30 deer thought to be present at Killeter Forest, one had the impression that some of them were up there on the hillsides laughing and leering at us from behind the safety of cover, mostly hardwood. They might have known that the experts below in the valley were confused as to what to do about them. Anxiety was expressed that the damage to hardwoods, caused by deer, whilst not serious now, might in time, become so if deer control measures were not enforced. One opinion, expressed by several participants, was that it was much too early to make decisions regarding control, since the population was too small. Another opinion was that Red deer do more damage than Sika deer in large populations and that control of the Red-dominated population in Killeter Forest should be done now before it is too late. A method of reducing damage by deer was suggested (C. Crowley), whereby zones within grazing areas chosen by the deer themselves, are fenced in, where shelter and food are then propagated and maintained. The discussion ended with no one disagreeing that there was still a lot to learn about deer control.

Stop 4 We departed the deer haven and sought the higher reaches to what was referred to as a goose lawn. Mr. J. Philips told us that Ireland was the main wintering place of the Greenland white-fronted goose, staying about eight months in this country. Mr. J. Mackin estimated that 130-140 geese frequent the area in flocks of about 30 and he referred to speculation by a Walter Davis from Wales to account for why they came to this area at all. According to this speculation, the geese are attracted to areas featuring *Rhynchospora alba*, which harbour nutrient-rich capsules. The geese prefer remote areas, preferably elevated, where they can see people approaching. Cultural practices, such as ploughing, drainage and fertilization would lead to the disappearance of those plants favoured by the geese. Some hard questions on forest policy will have to be answered if further conservation of the species is to be pursued.

Stop 5 Mr. W. Bryan then brought us to see a tunnel plough and a ditcher in action. The plough, which operates only on peat, creates a tunnel about 1m below the surface. It does not restrict rooting as do conventional furrows. Results after 15 years of experimentation with the plough showed no increase in height growth as a result of using it, but rooting at depth was greatly improved. Mr. E. Hendrick listed the three main requirements for use of the tunnel plough: (1) peat should not be less than 1.3m deep; (2) the peat should be fibrous; and (3) the topography should be generally flat. The enthusiasm of Messrs Dillon and Hendrick for the machine was not shared by their counterparts in the North. Mr. Bryan claimed the plough had severe limitations which had forced them, in his district, to revert to the DMB on occasions. While this discussion was in progress, the tunnel plough worked merrily away, disgorging impressive long slivers of Killeter peat at our feet. Mr. Bryan seemed to summarise for all when he said "She's a damn good machine if you have a suitable site".

Stop 6 From the Marvellous Mayo Machine, Mr. Bryan took us to see another metal model, the Merry Ditcher, which came, not too seductively from Sweden at a cost of £15,000 in 1976 (£28,000 in 1978). The main function of the machine is to clean and maintain drains, but new drains can be made simply by making two runs. Two men are required to operate the machine which was pulled by a Ford County 764 tractor in this demonstration. The main part of the machine consists of heavy discs which are set at approximately 45° and these spit off chunks of peat which make onlookers keep their distance. It is suitable for operation on peat soils only and on such sites the output is 200-300m per machine hour which is up to ten times more efficient than manual cleaning of drains. The chairman of the afternoon session, Dr. P. M. Joyce, was determined not to let our northern friends go without justifying their no-thinning policy and so an unpremeditated(?) discussion commenced. The result of this after-hours session could be termed a high scoring draw. The northerners confine this policy to surface-water gleys and blanket peats in recognition of the high wind risks on these soils in the province; the Republic's foresters appear willing to accept wind casualties in the expectation of gaining more saw-log material through thinning.

Finally, the chairman and president of the society thanked all those present or absent from the Northern Ireland Forest Service for making our day in Killeter such an enjoyable one. Mr. Cecil Kilpatrick replied, emphasising that we are all one family and that we were to come back again soon.

DICK MCCARTHY

THURSDAY, SEPTEMBER 21, MORNING

Meenglas Property — Barnesmore Forest

At Meenglas Property, our first stop, the President, Mr. Molloy introduced Mr. Arthur Simpson as Chairman for the morning session. Mr. P. Hand, District Inspector, explained that the South Donegal District, comprising some 18000ha, extended from Ballybofey, in the north to Bundoran in the south, and from Killeter in the east to Glencolmkil in the west.

Forester-in-charge, Mr. McBride, outlined the history of Meenglas. The property comprises 900ha. First planting took place in 1947, Sitka spruce is the main species and is of good performance. All harvesting was done by forest staff, which practice afforded greater control of thinning operations. Mr. Hand pointed out that the absence of a harvesting tradition in the area contributed to a policy of direct harvesting. Mr. T. Mannion, stressed the importance of staff training with particular emphasis on safety precautions, so that harvesting would be both safe and economical. The skill of the chain-saw operative, and the intelligent presentation of the log in the extraction-rack were of extreme importance to the efficiency of the operation.

Extraction here was via a Ford County 754, 4 equal-wheel drive tractor, mounted with an Igland double-drum winch, capable of carrying an average load of .7m³ to

1.6m³. Outlining some harvesting costs, based on an average haul distance of 200m, Mr. Mannion said that felling and extraction of first thinnings cost £7.75 per m³. For second thinnings the figure was £5.75; for third thinnings £4.75; and for clearfell, £2 to £3.50 per m³.

In response to Mr. Gerhardt Gallagher's query on the method of first thinning, Mr. Mannion stated that 1 line in 3 — one third of the crop — was removed. Extraction racks, so created, were critical to the low costs. The President, Mr. Molloy, enquired as to the level of damage during extraction. Replying, Mr. Mannion said that by reducing the load during extraction, damage could be minimised. Dr. J. Gardiner enquired as to the ability of the tractor to deal with difficult ground conditions and was assured that its versatility enabled it to deal with most situations.

In reply to a question from Dr. Joyce, Mr. Mannion stated that 25% of first thinnings were suitable for pallet-board. This fact increased substantially, the profitability of first thinnings.

Mr. M. Peoples, a chain-saw instructor, gave a practical demonstration of correct tree-felling and snedding operations. Efficiency of movement, effort and energy expended were clearly evident. Mr. E. Martin demonstrated correct extraction procedure.

Our next stop was at Croaghonagh property where, on deep peat, a fertilizer experiment on lodgepole pine (coastal) prompted lively discussion. The area was planted in 1953. Mr. J. Freeman outlined that the experiment trial was laid down in 1973. While the provenance was not known, the characteristics of the south coastal provenance were very evident.

Mr. E. Hendrick stated that the object here was to determine the profitability of fertilizing pole-stage LP(C) on deep peat to obtain reasonable volume production. Results were not conclusive, but responses in height-growth warranted further investigation.

Dealing with soil fertility in the area, Dr. McCarthy indicated that in two pits P and K levels were very low. The deficiency in K was surprising as the area had a high rainfall. The President, Mr. Molloy felt that some leaching of K had taken place, creating a deficiency. Dr. McCarthy concurred and added that in his view, K from rainwater was available only during the growing season. Mr. Hand raised the question of K requirements in Donegal. Dr. McCarthy commented that in general, good leader-growth and sufficient rainfall indicated the presence of healthy levels.

The basal sweep characteristics of LP(C) came in for some discussion. Mr. Hendrick posed two theories, (a) that it was a genetic trait; (b) that it was cultural. However, a reference to Forest Commission experiments indicate a genetic origin.

It was also observed that here that root systems of LP(C) reached down to a ½m in depth. Mr. Mannion, referring to other experiments, said that with lowering of water-table through drainage, rooting depths followed up to 1m.

Moving to a stand of LP(C), aged 25 years YC10, Mr. Hand invited comments on management options, with a crop of this nature. A number of suggestions followed. Mr. Johnson suggested complete tree utilisation as a longterm policy. Mr. M. O'Brien offered the possibility of selecting and pruning of 400 stems per ha for commercial purposes. This was in keeping with practices of stem selection of *Pinus radiata* in New Zealand. Supporting this view, Dr. Gallagher said that stress-grading studies on LP were very encouraging, eliminating fears as to its suitability for joinery work. Dr. Gardiner commented that LP was a very versatile timber which found more outlets as a general purpose timber in the U.S. and Canada than Sitka spruce.

Lough Eske Demesne

Lough Eske Forest (F/C Mr. A. Connolly; A/F Mr. D. Gallagher) provided a picturesque setting for lunch. Mr. Connolly, in welcoming members, commented that the amenity development at Lough Eske was to some extent attributable to the Society's "Guided Forest Walks".

Mr. E. Johnston referred to a stand of Redwoods (*Sequoia sempervirens*). He pointed out that it was management policy to retain this stand.

Afternoon chairman Mr. P. Crowe, on behalf of members extended his appreciation to all concerned.

DENIS GALLAGHER

THURSDAY, SEPTEMBER 21, AFTERNOON

The first stop of the afternoon was at Monellan property, Killygordon Forest, where Mr. Peter Crowe, Chairman, introduced the local forest staff, Forester-in-charge, Mr. C. J. Jeffers, Deputy P. Dalton, Assistant M. Regan. After Mr. C. J. Jeffers welcomed the party to Killygordon Forest and gave a brief history of Monellan property we moved on to our next stop where Dr. R. McCarthy described the soil of the property as a Brown Podsollic with a tendency to gleying and as good if not better than a Brown Earth. The pH at 4.1 was low and there was little *Fomes annosus*. At stop three, Mr. E. Johnson posed the question of the day "when do we fell this excellent crop?" He described how the SS stand, 13.4ha planted in 1939/40 (Yield Class 20) was fully mature for the best prices available and was approaching critical height. It would take three years to clear-fell the SS crop. The very much larger area of NS (37.5ha) planted 1939/40 YC 18 would not be fully mature for another 10 years, but removing the SS crop now could put the adjoining NS at risk of windblow, worth as it stands today over £250,000. The entire clear-fell operation would take approximately seven years to complete. The mean diameter of the NS was currently only 27cms and this is well below the top price range category.

Dr. Padric Joyce thought we should not be stampeded into felling the NS and suggested the rotation of maximum MAI for this species, and commence felling the SS now. Mr. O'Brien felt a 30% reduction in the age of maximum MAI of the NS could be made without loss. The crop at that stage would have a mean diameter of about 33cms. Mr. O'Donovan supported Dr. Joyce's view.

In answer to a question from Mr. F. Mulloy concerning the most utilisable size for NS, Mr. T. Purcell stated this would be about a mean diameter of 34cm dbh and would be reached about age 50 years. Mr. Johnston pointed out a mean dbh of 34cm will give diameter sizes ranging from 26cm to 46cm and once the mean of 34cm is past the price per cubic metre may start to drop. Dr. Joyce then modified his view and he said he favoured removing the larger diameter trees in the Norway crop as a control of mean diameter size. Dr. G. Gallagher stated "Price size curves" used to determine time of felling indicated that when trees reached sawlog category it becomes uneconomical to hold the crop on financial grounds. Mr. J. Gillespie stated that the age of maximum financial return for the SS was 40 years. Mr. R. Tottenham asked could the NS have been more heavily thinned giving larger diameters, to which Mr. Donovan pointed out the crop was in fact thinned close to the line suggested in the BFC Management tables as present stocking and volume confirmed. In answer to a question from Mr. van der Wel on direction of felling coupe Mr. N. Foley suggested felling the NE side of the crop first. Mr. T. Mannion pointed out that a serious climatic factor in the area is the velocity and frequency of winds. The prevailing winds are from the South and West, especially in the period October to March. Records show that in this period winds of force 8 or more can be expected on at least 34 days, but very severe storms can also blow from North to West and this is the gamble that has to be taken. In answer to Dr. Joyce's question why rotation of maximum MAI was not the most profitable Dr. G. Gallagher replied the chief reasons were interest rates and the return on capital. Mr. D. Mangan thought the position where a lesser price was paid for a greater size category of timber might not always prevail and he favoured "felling before the wind fells for you". Mr. A. Mannion thought the NS might suffer from die-back if the SS were removed from it. At this point the Chairman called the discussion to a halt summarising it was difficult to come to a decision and thought the problem might best be left to local management.

Our final stop was the Farm Training Centre at Ballyfofey, owed by the County Committee of Agriculture. Before introducing the local staff here the Chairman thanked Killygordon Forester-in-charge, Mr. C. J. Jeffers and his staff for their co-operation. We were welcomed to the Farm Training Centre by Messrs John O'Sullivan, Pat Mulloy and A. Gallinagh. The centre, which was acquired in 1964, totals an area of 10 acres, 6 acres of which are used as a nursery to supply trees and hedge plants for the shelter belt scheme in the County. Approximately 150,000 plants are supplied annually from the nursery to an average of 500 applicants. 100 trees is the minimum number supplied to any applicant and 2000 the maximum. The grant for the scheme is comparable to the Forest and Wildlife's grant scheme for private planting. The County Committee employs an instructor in forestry and he inspects each site before plants are sent out. Demonstrations are given in planting methods etc. and night-classes are held in nine centres throughout the county which encourages the 'green belt parish'. The buildings at the centre consist of an office block, lecture hall, and farm kitchen and courses are provided here for farmers and housewives. After the introductions by Mr. Mulloy and Mr. Gallinagh the party was then led through the garden plots by Mr. J. O'Sullivan.

Long flowering shrubs like *Cydonia Japonica*, *Spirea Anthony Waterer*, the comparatively rare plant *Berberis condula* and many others made an interesting change from the usual forest trees. The most common species in the nursery section were SS, NS and Lawson's Cypress, with some LP; and *Pinus radiata*. The latter species, Mr. O'Sullivan stated, they found difficult to establish in Co. Donegal. Frost was a serious problem here particularly with such species as *Oleria traversii*, *Escallonia* and *Griselinia*.

The President, Mr. F. Mulloy, thanking the staff, stated that Donegal County Committee of Agriculture had done a lot of tree planting over the years and helped bring about, as it were, a marriage between forestry and agriculture. In concluding, he thanked all present.

Another successful tour was ended.

PAT DOOLIN

STUDY TOUR PARTICIPANTS 1978

John Carmody, Peter Crowe, Charlie Crowley, Jim Crowley, Michael Davoren, Jim Dillon, John Flynn, *Lily Furlong, Dr. Gerhardt Gallagher, Dr. Jack Gardiner, John Gillespie, Pat Hackett, Pat Helbert, Eugene Hendrick, Ernest Johnston, Dr. Padraic Joyce, Joe Kilbride, Dermot Mangan, John Martin, Fergal Mulloy, Dr. Dick McCarthy, Mick O'Brien, Pat O'Callaghan, Mick O'Donovan, Martin O'Neachtain, Tom Purcell, Kevin Quinlan, P. J. Quinlan, Liam Quinn, Arthur Simpson, Freddie Shekleton, *Jane Tottenham, *Robert Tottenham, *Harry van der Wel, William Berkery, Richard Browne, Aidan Connolly, Pat Doolan, Frank Drea, Noel Foley, Joe Freeman, P. J. Friel, Denis Gallagher, John Gatens, Paul Hand, George Harney, John Haughey, John Higgins, Tom Kavanagh, James Lowry, Tony Mannion, P. J. Morrissey, Nicholas McCormack, John McEvey, Frank Nugent, T. J. O'Regan, Jim O'Dowd, Martin Ruane, Noel Ryan.