

## ANNUAL STUDY TOUR 1986

The 1986 Study Tour was based in Galway and took place from the 27th to the 29th of May.

### *Day 1: 27th May*

The first stop of the tour was at Ross state forest in Connemara where we had travelled from Galway city. The President, Michael O'Brien, welcomed all the participants and introduced the local Forest and Wildlife Service Divisional Inspector, Tom de Gruineil. He bid the party welcome to Galway and introduced the local FWS District staff, Matt Cassidy and Christy Hanly, together with the local foresters, Jim Phelan and Billy Berkery. Mr. Phelan welcomed the Society to Ross and outlined the main features of the forest. It is 2,262 ha in extent with an annual planting programme of 100-150 ha. The main soil type is blanket peat over granite which is planted mainly with Sitka spruce and lodgepole pine. There are also some areas of shallow mineral soil over limestone and these mainly carry crops of Sitka spruce and Scots pine.

The subject for the first stop was the treatment of Sitka spruce on western blanket peat. The particular crop was planted in 1971 following double mouldboard ploughing and received an application of 627 kg/ha of ground mineral phosphate at planting. In 1982 and '83 there was a gradual reduction in growth and this led to a foliar analysis being done in 1984 which revealed that both nitrogen and phosphorus were deficient. Both were applied in August 1985 at 400 kg/ha of urea and 350 kg/ha of ground mineral phosphate. They were spread by helicopter at a cost of £165/ha. The crop is expected to grow at Yield Class 18 but there is a possibility that further applications of nitrogen will be needed. The question of thinning the crop arose and local staff were of the opinion that the crop would be thinned using a tracked forwarder. With rain falling thanks were paid to the local staff and the party made its way on through Ross and into Cloosh Valley state forest.

Here we were met by Martin Coady and Kevin Blehein. Cloosh Valley is one of the largest state forests and was among the first to be established on blanket peat. Planting began in 1952 and has resulted in a forest of just over 5,000 ha. Lodgepole pine is the dominant species occupying over 70% of the area. The forest is in one block and elevation varies from 30 to 150 ha. Blanket peat is the predominant soil type with frequent rock outcrops. The management of lodgepole pine was the theme of the first stop. The crop in question was planted in 1976 and because of basal sweep and high roading costs respacing was done on a small area in 1984. Half of the existing crop was removed with the emphasis on retaining the better stems. Half of the remaining stems were then pruned to 2m. The total cost of the operation was £110/ha. It is expected that pruning to 5m will be carried out on selected stems after a further five years. The point was raised about the danger to the health of the remaining crop caused by respacing where the stems removed in the operation are left on the ground. No diseases or pests have been found but it was pointed out that there had been an outbreak of pine beauty moth in respaced lodgepole pine at

Lough Ennel forest. Another point raised was, should the crop not be grown for pulp without any respacing. The consensus was that at current pulp prices the crop would not pay for itself.

Continuing the theme of crop structure and timber quality the next stop was at a lodgepole pine spacing trial where the hosts were from the Research Branch of the FWS represented by Brendan Fitzsimons, Frank Collins and Padraig O'Halloran. The experiment was planted in 1964 and has five treatments ranging from 1.2 to 3.6m<sup>2</sup> spacings. The main conclusions are:

1. Mean and dominant height are reduced at the widest spacing by 12-15%.
2. Basal area and volume production are reduced by wider spacing but current basal area increments are similar for all treatments.
3. Branch diameters increase at wider spacings but branch number per whorl is not affected.
4. The degree of basal sweep is greater at the wide spacing but the number of stems affected by sweep is independent of spacing.

The crop is growing at Yield Class 16, although about 80% of stems have some degree of lean. Brendan Fitzsimons referred to preliminary results from a conversion study he is doing on lodgepole pine and the results are reasonably encouraging. Some other contributors were sceptical of the future of crops of lodgepole pine with pronounced sweep and a suggestion was that these crops should be clearfelled for pulp and the area replanted to Sitka spruce. After paying thanks to the Research staff it was time to adjourn for lunch down the forest road where strong tea was kindly provided.

Suitably fortified we travelled to the first stop of the afternoon which was a demonstration of site preparation machinery where Christy Hanly was the leader. Double mouldboard and tunnel ploughs were on view, together with a Fiat crawler tractor. The advantages of tunnel ploughing over conventional methods were mentioned as an unbroken forest floor, ease of harvesting and improved rooting. A large part of the 1984 planting programme had been tunnel ploughed. A demonstration of tunnel ploughing was laid on where we saw peat being extruded by the plough in a long continuous ribbon. There was a brief discussion of methods of draining after tunnel ploughing and as rain was again falling it was time to return to the bus and bid farewell to Cloosh Valley forest and its staff.

The bus travelled on through Cloosh where now there is a large forest estate on what thirty years ago some would have regarded as useless bogland. The final stop of the day was down the country road at Formoyle where Greenbelt Ltd. have planted over 240 ha of blanket peat. Tunnel ploughing was the main method of ground preparation used and all of the plantable area received a broadcast application of 350 kg/ha of rock phosphate. A 3:1 mixture of Sitka spruce to Skeena River lodgepole pine is the species selection. The projected Yield Class of the spruce is 18 and further fertiliser inputs may be necessary to attain the projected yield. Tim O'Brien explained that his company's policy in acquiring land was to have a mixture of blanket peat and other soil types. He envisaged that blanket peat would comprise 10-15% of his land portfolio. He was confident of achieving his projected yields. The company had just completed an 800 ha planting programme and planned to continue at this level. At present about 2000 ha is being planted annually under the Western Package Grant Scheme and this should be at least maintained if not increased for the remainder of grant period to 1991. The question of fires in a plantation such as Formoyle arose but it was pointed out that fire insurance is readily available.

After much vigorous discussion it was time for the President and discussion leader for the day, Michael O'Brien, to wind up proceedings by thanking Tim O'Brien and Greenbelt for our visit to their site. The bus took the coast road back to Galway where we enjoyed scenic views of Galway Bay and beyond to the distant hills of the Burren.

Eugene Hendrick.

*Day 2: 28th May*

The first stop of the day was at Derryvokeel in Castledaly state forest on the northern slopes of the Slieve Aughty range. Most of the forest lies between 90 and 360 m elevation on soil types ranging from peaty gleys to blanket peat over 6 m deep. The first planting started in 1956 and the annual planting programme is about 100 ha.

Eugene Hendrick, leader for the morning, introduced the local FWS District staff, John Desmond and Frank Murphy and the Castledaly foresters, Martin Ó Neachtáin and Gerry Farragher. John Desmond led us through the first stop which was a crop of Sitka spruce planted in 1966 at a stocking of 3,100 stems per ha. Thinning was carried out in 1984 and this removed 35% of the stems by taking out every fifth line and every fifth tree in the remaining lines. Extraction was by Mini-Brunnett, parallel to the lines. Thinning and extraction across the lines would probably be more stable, but where contractors are involved it is much easier and less troublesome to let them work on the lines. The problem of stability on peaty gleys was discussed and it was felt that mole draining or ripping at establishment followed by early thinning would be the solution to windthrow on these sites. A system of wind risk assessment would be very beneficial. Should these sites be thinned at all? Wide initial spacing followed by pruning and no thinning is another option. It was emphasised by a number of participants that it most important to start thinning early, even when the crop was only 8 m high. It was also felt that foresters were neglecting their aim of producing prime sawlog timber by adopting a thinning system that predisposes the crop to windthrow.

The second stop of the morning was at Boleyneendorrish where Liam O'Flanagan gave a presentation on mixtures of Sitka spruce and lodgepole pine. Much of the area in the property was planted to mixtures during the 1960s, Lulu Island being the main provenance used. There are some smaller areas of mixtures containing north coastal and interior provenances. There is increasing interest in the use of lodgepole pine as a nurse for Sitka spruce on blanket peat where it can remove the necessity for continual nitrogen fertilisation. This has been a problem in the past where south coastal lodgepole pine was used in mixture. This tends to outgrow and suppress the spruce. The ratio of spruce to pine depends on the site ranging from 3 spruce to 1 pine on good sites to 1:1 on poorer areas. Lulu Island appears the most suitable provenance. Pruning would be needed for the spruce because of the increased spacing. This topic generated much discussion, especially on the mixing intensity of pine and spruce and pine provenance selection for mixtures. The morning session was concluded with thanks being paid to all those who contributed and it was time to make for Coole Park and lunch.

At Coole we were met by Jim Farrelly and Joe Lillis who had kindly provided lunch facilities. After a pleasant lunch and repose in the sun we journeyed through the Park and into the estate garden. The estate itself dates back to 1768 when it was bought by Robert Gregory and remained in the ownership of that family until 1928 when it was sold to the state. The owner at that time was Lady Augusta Gregory, the dramatist and folklorist who was co-founder with W. B. Yeats and Edward Martyn of the Abbey Theatre. Development of Coole Park as an amenity area began in 1972. A nature trail was laid out, part of which we used during our visit. This took us through the pleasure garden, the focal point of which is the famous 'autograph tree', a great copper beech some 150 years old. Lady Gregory invited her literary guests to carve their initials on it and amongst these were those of George Bernard Shaw, Sean O'Casey and many other well known authors and poets. Of particular interest in the garden is a Catalpa which was brought from Ceylon by Sir William Gregory.

After this very interesting excursion the next stop was a stand of ash where Brendan Fitzsimons of Research Branch, FWS, gave a short talk on the production of ash for hurleys. Ideal sites for ash are free draining deep soils. Here ash can attain the three most important features necessary for a good hurley butt, fast growth,

straight stem and good buttressing. The main advantage of ash timber is its ability to absorb shock and hence its use for hurleys and tool handles. Best hurleys are got from stems less than 30 years old with a d.b.h. of 25-28 cm with 6 to 7 rings per inch and knot-free. Spacing should be 3 x 3 m. Protection is needed from hares and an application of 800 kg/ha of 10:10:20 compound fertiliser is beneficial on most sites. The stems must be kept clean to 1.5 m. On suitable sites the profit from an ash crop for hurley production can exceed that from Sitka spruce.

We proceeded from the ash wood to the old orchard which is now a deer enclosure. Here Tim O'Connell, the local Wildlife Management Officer, was our leader. Deer numbers are on the increase, mainly because of increased ground cover resulting from afforestation. Fallow deer are the most numerous, numbering approximately 10,000. All of the Forest and Wildlife Service properties in the Slieve Aughtys have fallow deer at some time during the year. Native red deer are concentrated in Killarney and elsewhere they have hybridised with Sika deer, our third species. Before the Wildlife Act deer were treated as vermin and were unpopular with forest managers because of damage to plantations. At that time they were considered of little economic value. In recent years, however, deer have attained a new status and deer farming has become popular. Venison is sold mainly for export to the Continent. Considerable revenue is generated for the FWS from game lettings. Mrs. E. Collen of the Irish Deer Society mentioned the aims of the Society as backing up the Wildlife Act and conservation of deer. She emphasised that culling must be properly done, taking out the females during the period from November to February.

We returned to the buses and travelled to the last stop of the day where George Hipwell, our leader for the afternoon, introduced Jim Ryan of Conservation Section, FWS. He stated that the aim of the Section was to identify and protect areas of scientific interest. They have an important role to play in the Western Package Scheme in seeing that no money is spent damaging any important wildlife habitat. The Coole-Garryland Nature Reserve comprising 368 ha was established in 1976 to ensure the conservation of the woodland and turlough ecosystems. It contains a variety of habitats, including high forest on pockets of deep soil, dwarf woodland on limestone pavement, bare pavement, a turlough complex in the hollows and Coole lake. The woodland is dominated by native species, mainly oak and ash, with some introduced species. There are a lot of native woody plants including yew, spindle tree, whitebeam, wych elm, guelder rose and purging blackthorn. Some of these, such as the yew-wood on limestone pavements are prime examples of what the region was like thousands of years ago. Turloughs are areas where water level fluctuates widely and are unique to this country. Garryland turlough is unique in having a margin of oak and ash. Coole lake is part of the turlough system and the level fluctuates widely depending on rainfall. This visit ended a very enjoyable day and after paying the customary thanks we set off in the warm evening sun along the eastern edge of the Burren through Kinvara and back to Galway.

Richard Jack

### *Day 3: 29th May*

Leaving the hotel we headed north to the Tuam plant of the Irish Sugar Company to see the new containerised seedling unit. The leader for the day, John Fennessy, introduced Brian Hussey of Woodland Investments which is one of the main partners in the venture. After welcoming the party to Tuam he outlined the main features of containerised seedling production. The facility at Tuam uses the Hiko system developed by Hilleshög of Sweden who are also involved in the venture. At this stage Cyril Colleran manager of the unit was introduced and he led us into the building where container filling and seed sowing are done.

Sitka spruce is the main species grown. Seed quality and weight determine germination success and heavier seed germinate quicker and produce better plants. Seed is purchased from the Forest and Wildlife Service and graded at Hilleshög in Sweden. After grading and cleaning the seed is prechilled for 9 days which increases germination from 21% (for unchilled seed) to 92%. Seeds are then sown into container sets on top of a peat/perlite compost. Fertiliser is not added at this stage as it reduces germination. The composition and compactness of the compost also affect germination success. Two seeds are sown into each tray to ensure that over 95% of the containersets are full. After seeding 2 mls of Higerm are applied to cover the seed and improve germination. Following these operations the containers are moved to an extremely large (300 m long) controlled environment polythene house where heat, light, CO<sub>2</sub> levels, moisture and nutrient levels are continuously monitored and controlled. Maintaining waterbalance is of vital importance and this is done by choosing a compost that gives up its water easily and matching the liquid feed concentration with the amount of water that is applied. The frequency of watering is determined by a sun integrater which measures sunlight intensity and adjusts the amount of water applied accordingly. Before the seedlings are hardened off outside the containersets are thinned to remove doubles from individuals cavities. This takes a team of 20 people about 10 days. The capacity of the house is 1,000,000 seedlings and four sowings are done each year. Damping-off is prevented by spraying with Captan. The seedlings are moved outside 8-10 weeks after seeding. A daily check is kept on the plants and they are watered when necessary with a dilute nutrient solution. Frost is not a major problem. Sitka spruce is frost hardy at 28-30% dry matter and the plants have survived -9°C frosts. Cold east winds are a problem.

Handling, transport and planting of the seedlings was dealt with by Dermot Houlihan of Woodland Investments. The containersets in the greenhouse are placed on specially built metal pallets. These can then be removed to the outside area by a machine with a special lifting arm. These pallets are then used to transport the plants to the planting site. At this stage the seedlings are one year old and are about 25 cm tall. A demonstration of planting using the containersets was given. Each container set fits into a hip bracket and a special planting tool is used which removes a plug to the exact dimension of the seedling. The seedling is removed from the container set and planted and firmed. Planting costs about £50 per 1000 seedlings. The whole operation was carried out quickly and efficiently. A discussion began on the merits of the system with some doubts being expressed about the survival rate of such seedlings planted on exposed sites. Dermot Houlihan assured us that the survival rate of seedlings planted early in the year at a particular site compared very favourably with transplants. After further discussion it was time to leave this very interesting development. John Fennessy paid thanks to the various participants for a comprehensive tour of the plant.

Our next destination was Cong Forest where we were met by Peadar Campbell and Barry Lamb. Peadar Campbell gave us a brief history of the forest. It once formed part of the Guinness Estate and was acquired in 1939. The first planting took place in 1940 and the forest is now 1,174 ha in size. Soils are generally shallow over limestone crag. The main species are Sitka and Norway spruce with some Scots pine and Japanese larch. The present standing volume is about 40,000 m<sup>3</sup>. A lot of the thinning is done by direct harvesting, about 2,200 m<sup>3</sup> in 1985.

The biannual driven woodcock shoots held in late January and early December are particularly well known. In closing his speech Mr. Campbell wished everyone a happy visit to Cong.

At this stage the party divided into two groups to take turns for a visit to Inchnagoill island on Lough Corrib. In sunny weather the first group boarded the small boat owned and operated by Mr. John Lustin. The journey to the island takes about

35 minutes and is extremely pleasant with magnificent views of the surrounding countryside. On arrival we were met by Pat Quigley and Joe Noone of Oughterard Forest. The island is 42 ha in area and is the largest in Lough Corrib. Almost the whole of the island is wooded and it is owned by the state. There is a well sheltered small bay with a good pier on the north eastern side of the island where fairly large boats can dock with safety.

Mr. Quigley led the way from the pier where we had had a pleasant lunch on a walk around the perimeter of the island. The island had a monastic settlement and several remains of this can still be seen. At Teampall-na-Naomh there is a beautiful Romanesque doorway which was reassembled in the 19th century by Sir Benjamin Lee Guinness. In the western corner of the wall there is a remarkable piece of carving of a Greek or Byzantine cross of a type seen on very many ancient Irish tombstones. St. Patrick's church is nearby which is reputed to have been founded by the national saint. Outside the church there is a stone slab cut in the form of a rudimentary cross said to be the most ancient of its kind in Ireland. The island itself was inhabited until 1930.

After the historical tour it was back to forestry and the management of crops of fast growing Sitka and Norway spruce on the island. The crop in question was Sitka and had been respaced in 1981 and was excellent with very good form. After a short discussion it was time for the first party to leave the island. We were met by the second group who had in the meantime a guided tour of the gardens surrounding Ashford Castle. At around 5.15 the day had come to an end and we bid a reluctant farewell to Cong. We headed back to Galway and to the annual dinner where a splendid time was had by all.

Louise O'Reilly

#### *Participants*

Denis Beirne, P. J. Bruton, Bernard Burke, Sean Campbell, Matt Cassidy, Sean Clancy, Tony Clarke, Eamon Cunningham, Lyal Collen, Euphemia Collen, Maureen Cosgrave, Myles Cosgrave, Jim Crowley, B. G. Dean, Michael Davoren, John Desmond, Joe Doyle, Frank Drea, John Duane, Pdraig Egan, John Fennessy, P. J. Fitzpatrick, Lily Furlong, Joe Fahy, Jim Fallon, Gerry Faragher, Ted Farrell, Donal Fitzpatrick, Jim Flaherty, Tony Gallinagh, Frank Gibbons, Pat Giblyn, Tom Gruinell, Christy Hanley, John Haughey, Pat Helbert, Tim Hynes, Eugene Hendrick, George Hipwell, Dermot Houlihan, Richard Jack, John Kelly, Eamon Larkin, Michael Lillis, P. J. Lyons, Philip MacDonnell, Tony Mannion, Jim McHugh, Marie McNamara, Michael McNamara, Sean McNamara, Frank Murphy, J. W. Murren, P. J. Murray, Alan Navratil, Tom Noonan, Michael O'Brien, Tim O'Brien, Jim O'Dowd, Martin Ó Neachtáin, Pat O'Kelly, Brendan O'Neill, Tim O'Regan, Louise O'Reilly, Martin Ruane, Frank Rush, Richard Schaible, Fred Topping, Ari van der Wel, Dan Walsh, Michael Ward.