Society of Irish Foresters
Study Tour to Bavaria 12 - 16 September 2010

On Sunday, 12 September, 30 members of the Society of Irish Foresters departed for Munich to begin the 67th Annual Study Tour. The group was welcomed at Munich Airport by Frau Gudula Lermer, President of *Bayrischen Forstverein*, the Society of Bavarian Foresters.

Bavaria is the largest state in the Federal Republic of Germany and has a population of approximately 12.5 million. It is similar in size to the Republic of Ireland but it has almost three times the population. The state of Bavaria is heavily forested (36.3% of its land area) and holds 30% of Germany's timber reserves. Norway spruce is the most common species. Nowadays, the main focus of its forest policy is to reduce the reliance on spruce because of the danger of attacks by the spruce bark beetle *Ips typographus*. It is proposed to replace spruce with mixed species crops over time. In 2009, Bavaria's forest industry had sales of €24.8 billion and employed 205,000 people.

Overnight - Mercure Hotel, Freising *Pat OSullivan*

Figure 1: *The tour group outside the headquarters of Bayerische, Staatsforsten in Kelheim.*

Monday, 13th September

The study tour began with a visit to Zentrum Wald-Forst-Holz, a forest/climate research institute located close to Munich. Here we were met by Dr. Wolfgang Falk who explained to us the main impacts that climate change is having on forest practice in Bavaria. This institute has climatic records dating back to 1760 and these records indicate a marked change has occurred in climate since 1980. Detailed records confirm

that the mean annual temperature has increased by 2% with an accompanying 10% increase in precipitation.

Forest planning in Bavaria is influenced by the changing climatic conditions being experienced. Norway spruce, an important species in European forestry over the centuries and particularly in Bavaria, is now proving problematic in areas of high temperatures. Norway spruce plantations are under stress from dry summers, increased bark beetle activity and also increasing vulnerability to storm damage. Bavaria has experienced several severe storms in recent years.

To alleviate the malign influence of climate change on forest practice significant changes have been incorporated since 1980. These hazards have accelerated climate driven conversion practices in forest planning.

The predominance of Norway spruce has been reduced and is being replaced by alternative, more suitable species such as beech, Scots pine, oak, European larch, silver fir, sycamore and Douglas fir. It is hoped that these alternative species will produce mixed, well adapted forests in the future. Currently, Norway spruce accounts for approximately 50% of the total forested area in Bavaria while beech, Scots pine and oak are the main species in the remaining area.

The group then departed Zentrum Wald-Forst-Holz and travelled to visit a privately owned forest of high quality spruce and beech. The owner, Baron Freiherr von Gravenruth welcomed the visit of the Society of Irish Foresters to his estate. He is the President of the Bavarian Forest Owners Association and he has been active at national and European level, representing private forest owners and ensuring that there is a forest owner input to forest certification. He expressed some regret that, while the number of private growers in Bavaria is high, they do not communicate well - with the result that the lobbying power of the forest industry is quite weak.

His forest is 1,064 ha in extent. The soil is mainly brown earth and the altitude is 450-550 m above sea-level. The region experiences an average yearly temperature of 7.5°C, in summer the temperatures are in the range 14-15°C. Precipitation is 750-800 mm/year (50% in summertime). These conditions produce a climate which is suited to the growth of forest trees, especially spruce.

This forest has a mixture of tree species, 79% conifers (69% spruce, 7% pine, 2% larch, 0.3% silver fir and 0.3% Douglas fir). Broadleaves account for 21% and comprise 10% beech, 3% oak and 8% maple, ash and cherry. The new management plans are prepared in order to produce stable forest stands taking into consideration the changing climatic conditions; it is thought that a new mixture of 75% conifers and 25% broadleaves will produce these desired stands.

The silvicultural management of the forest is based on natural regeneration. The Forstassessor Michael Reissmann explained the silvicultural management in some detail when he took the party through an area of Norway spruce which had a promising cover of natural regeneration on the forest floor. There is competition from briar growth and grass during natural regeneration and the areas must be monitored carefully to ensure that plants are not suppressed in the early stages by this competitive invasion.

Crown thinning is carried out with the natural regeneration in mind, benefiting the new regeneration as far as possible. The rotation period for a crop of Norway spruce

is 90 years, so the natural regeneration is evenly established by that stage and can replace the felled trees. Natural regeneration and selective tree cutting is an important part of the silvicultural management of the forest and the benefits of each, combined with technology to produce a low management cost, are what enables the forest to be managed by one forester, one worker and one secretary!

This visit concluded with a visit to the Baron's castle where we were treated royally and thus ended the activities of the first day of the tour, and the party commenced the journey to spend the night at Ingolstadt.

Figure 2: *Forstassessor Michael Reissmann in Baron Freiherr von Gravenreuth's forest near Affing.*

Overnight - Altstadthotel, Ingolstadt. *Frank Nugent*

Tuesday, 14th September

We headed to Kelheim to visit the Bavarian Forestry School where we were met by Manfred Schwarzfisher, Head of the School and Katharina Fottner who is a forester at the centre. The school, which was established in 2004, has a 600 ha forest which is used for practical training programmes. A total of 2,300 students pass through the school annually on a wide variety of courses.

The Bavarian Forest Administration pays €0.9 million towards the cost of teachers, trainers and administrative staff. A further €0.6 million of funding comes from the Association of Bavarian Forest Owners and this is used to purchase and maintain training course equipment, office equipment and meet some staff costs.

In Bavaria 54% of the forests are private, 31% state owned and the remaining 15% are community or municipal forests. There are 700,000 private growers in Bavaria

with forests ranging from <2 ha to 2,000 ha. About 35% of owners are members of forest associations but they tend to own the larger forests and make up 75% of the forest area. However, the average forest size is less than 2 ha.

The main focus of the courses is to teach practical silviculture to forest owners. Timber classification is also emphasised. Chain-saw courses and felling techniques are an integral part of the curriculum, as is skidding with tractors and attachments. Safety instruction is vital as 20 people are killed in forestry accidents in Bavaria every year. The Forest Association's raison d'etre is primarily to sell timber but it also lobbies political decision makers and ultimately to educate forest owners.

There is a trend towards continuous forest cover and the Forest Association is a member of PEFC[1]. The trend towards warmer summers, with a consequent reduction in the amount of water available to spruce, is putting pressure on this species and leaving it vulnerable to attack from the spruce bark beetle. Many owners are abandoning spruce in favour of broadleaved trees which carry higher grants and premiums.

Following a sumptuous meal at the school we departed for the headquarters of BaySF, the Bavarian State Forestry Company in Regensburg where we were welcomed by Dr. Konrad Prelmeier, from the company's public relations department. Bavaria has 2.55 million ha of forests and approximately one third of that (820,000 ha) is owned and managed by BaySF. The company was established in 2004 and has a management structure which is quite similar to that of Coillte. Annual timber growth is 6.1 million m^3; the annual cut is 5.2 million m^3 and they maintain 25,000 km of forest roads. The company has an annual turnover of €305 million and 2,912 employees. Profit for the current year was €35.1 million. There is one big difference with Coillte in that 91% of their income comes from timber sales and BaySF has been directed by its board to retain that position. The motto appears to be *'timber is our business – keep to that'*.

The company is acutely aware of environmental issues and it aims to abandon clear-felling, and instead to practice selective cutting and natural regeneration. The silvicultural objective is for mixed forests adapted to the locality, the climate and the soil. An analysis of the press comments when the company was established showed that 25% of all articles were negative, today following a lot of work in communication only 7% of articles are negative. It was pointed out that forestry suffers from the 'slaughter house effect'; the public likes animals and it likes meat but abhors the slaughter house. Similarly with forestry, people love trees and admire beautiful furniture but are uncomfortable with the harvesting phase.

Looking to the principal threats in the future, BaySF sees climate change as a major challenge, to be met by overcoming the threat of the spruce bark beetle, wind blow and drought. It also fears the rationalisation of the paper industry and Bavaria's dependence on sawmills in Austria. BaySF also envisages greater conflicts between production and conservation and between production and carbon sinks.

[1] Programme for the Endorsement of Forest Certification.

Figure 3: *At the Bavarian forestry school: Manfred Schwarzfisher, Pat Farrington, George Hipwell, Christoph Haas and Dermot O'Brien.*

Overnight - Hotel Donauhof, Deggendorf. *John McLoughlin*

Wednesday, 15th September

The tour now moved into the more mountainous part of Bavaria, close to the border with Austria. We were introduced to Mr Albert Pauli, a senior manager in the Bavarian Forest Enterprise, Mr Franz Pokorny, the Forest Manager, and Ms Barbara Krautlehas, an English teacher who acted as translator for the visit. Mr Pauli explained that until 2005 publicly owned forests were under direct state control but in that year the commercial Bavarian Forest Enterprise was set up to manage these forests. The Ministry of Agriculture still retains responsibility for privately owned forests. The Forest Enterprise has a staff of 3,000 and is responsible for the management of 800,000 ha of forest which are divided into 41 districts. We visited Neuberger Forest District which has a lot of recreational usage. The species composition is Norway spruce 37%, silver fir 14%, beech 14% and oak 8%.

A major concern in Neuberger Forest is the level of attack by the bark beetle on Norway spruce. This insect is indigenous to the area but over the last few years incidences of attack have intensified. The bark beetle only attacks Norway spruce and largely ignores other species. However, since Norway spruce accounts for almost 40% of crops in this area it is a major cause of concern to foresters. Symptoms of a new attack are a brown powder appearing at the base of the affected tree. Beetles eat the bark and it eventually falls off – it does not affect the timber but does, in time, kill the tree. As a result of global warming, beetle attacks are moving higher and higher up the Alps. The beetle does not like cold and wet summers but thrives in warm and dry ones. Their method of dealing with outbreaks is to fell and remove affected trees and also a number of other trees beside them. The timber is sold as minor quality and used for shuttering but is not sold for construction. The lop-and-top is also cleared from the

site and together with the bark is made into wood pellets. Insecticide control is used only in cases of very serious attack.

Because of the generally drier and warmer summers due to global warming, it is felt that forests in southern Bavaria are becoming less suitable for Norway spruce. It is also accepted that Norway spruce is at the southern extreme of its natural distribution in any event. The long term aim is to increase the amount of Douglas fir to approx 4%, and also increase the percentages of oak and beech.

Neuberger Forest has an annual production of 20,580 m^3 of which 17,300 m^3 is spruce and fir and approx 3,000 m^3 is beech. Forest inventory is carried out by the Ministry of Agriculture and is based on 8,000 fixed circular plots of 20 m^2. The Felling Plan is drawn up by the district forest manager and is updated every 10 years.

Harvesting is carried out by felling single lines of trees 30 metres apart, with selective thinning between the lines. These lines are referred to as 'skid lines' and extraction machinery is allowed along these lines only; this is to limit the extent of soil compaction. Tree felling is primarily done by chainsaw - approx. 66% with the rest carried out by processor. This District employs 40 chainsaw workers on what are known as 'life time' contracts.

Continuous Cover Forestry through natural regeneration is practised in this forest district. On areas where there is an insufficient strike of natural regeneration, Douglas fir and oak are planted. After about 6 years, the natural regeneration is reduced to 1,800 stems/ha using brush cutters. Deer are culled annually. The Ministry of Agriculture carries out an annual survey of tree damage and this determines the level of cull for that year.

On our final stop in Neuberger Forest, the group visited a mature stand of beech which had an average age of 135 years and carried a volume of 380 m^3 per ha. Approximately 59% of the regeneration was beech, but the foresters would have preferred to have a better mixture of spruce, fir and beech. The aim is to grow quality beech for furniture and veneer, although the results in this stand were disappointing as quite a number of the mature beech had bark damage which was caused by falling hail and sleet in winter. On average, lower quality beech was being sold for €60 per m^3, furniture quality beech makes up to €120 per m^3, while veneer quality beech can sell for €300 to €1,000 per m^3 depending on its quality.

Overnight - Hotel Donauhof, Deggendorf. *Eugene Griffin*

Thursday, 16th September

On our final day of the study tour, we visited Loher Interiors, an up-market joinery business which specialises in producing very high quality furniture for the aviation, home, office and yacht market. As well as designing and producing the furniture, Loher's own craftsmen travel to the client's home, office, aircraft or yacht to install it. The company was set up in 1931 and now employs 180 people. Customers come mainly from Europe, Russia and the Middle East. We saw top quality timber stacked and ready for sawing. The moisture content was maintained at 8-12%. However, the moisture content required depends on the final use, for example wood used for furniture or joinery on yachts may have a higher moisture content. A striking aspect of

Figure 4: *In the 135-year-old beech forest in Neuberger, Passau: Albert Pauli, Franz Pokorny, Pat O'Sullivan, Barbara Krautlehas and Pat Farrington.*

the factory was its conspicuous cleanliness; it looked more like an operating theatre than a joinery factory. The premises are cleaned four times each day and management regards this as critically important.

This industry appears to be recession proof. To date, there has been no fall-off in orders but we were reminded several times that this industry has an unusually a long lead-in time, anything up to two years, so that the worst effects of the current down-turn may not have appeared yet. Loher Interiors has three main competitors in this niche business but Loher is the leader in the aviation market as it has the "Competence Certificates" and these are very difficult to attain and hold on to. Looking around the factory one was struck by the meticulous attention to detail of all the employees. Loher Interiors produces its own electricity by burning wood waste and there are plans to build a larger, more modern boiler facility close by.

Next we visited a farm-forest at Rottal-Inn and we were welcomed by Jakob Merk who is the manager of the local co-operative of small scale private forest owners and Lorenz Freiherr Klein von Weisenberg from a neighbouring farm forest organisation. The local co-operative has 950 members who pay an annual membership fee of €20 each. The Bavarian government also pays 35 cent to the co-operative for every cubic metre of timber it sells. In 2009 it recorded sales of approximately 20,000 m^3. However, there are significant challenges. The forests are very small - less than 2 ha on average while the largest would be only 10 ha in extent. Forest owners frequently encounter difficulties with Rights of Way and there are many disputes with neighbours where the co-operative tries to mediate between the opposing sides. In privately owned forests there is now a trend towards a more diverse species composition in the

hope of reducing the incidence of attack by the spruce bark beetle. State grants are higher for beech and oak. The site we visited was a pure spruce stand which was being clear-felled because it was damaged by the spruce bark beetle. This site, like many in Bavaria, was too fertile for pine.

The village of Wildthurn was the final stop of our 2010 tour. Here we visited a pure broadleaved farm-forest owned by Christoph Lermer, a brother of our tour leader, Gudula Lermer, which was planted 21 years ago. The entire area of 64 ha was planted and neighbours were at the time bemused at his decision. The area was machine planted using 2,700 plants/ha and plant spacing was 2.5 m x 1.5 m. No herbicides or plastic tubes were used. The owner underestimated the roe deer problem and he had to fence 10 km and also employ very intensive hunting for a period. The grey squirrel was present in the area but it was not a problem. The owner is now making a small income from firewood sales. His plan was to thin approximately 10 ha/annum on a five-year cycle. Herr Lermer has already selected 60-80 final crop trees per ha. He also demonstrated his wood chipper which can process up to 80 m^3 per hour. The wood chips are mostly used to heat his own house and there is a small surplus for sale each year. We then retired to their beautiful house where we were, once again, treated to wonderful hospitality by the whole family. We then boarded the bus for Munich airport and the flight home to Dublin.

John Mc Loughlin

Date	*Recorder*	*Accommodation*
Sunday, 12 September	Pat O'Sullivan	Mercure Hotel, Freising
Monday, 13 September	Frank Nugent	Altstadthotel, Ingolstadt
Tuesday, 14 September	John Mc Loughlin	Hotel Danouhof, Deggendorf
Wednesday, 15 September	Eugene Griffin	Hotel Danouhof, Deggendorf
Thursday, 16 September	John McLoughlin	Tour end. Return to Dublin

Tour Participants

John Bardon, PJ Bruton, Richard Clear, John Conneff, John Connelly, James Crowley, Ken Ellis, Pat Farrington, Jerry Fleming, Gerhardt Gallagher, Tony Gallinagh, Eugene Griffin, John Guinan, George Hipwell, Kevin Kenny, David Knox, Tony Mannion, Eugene McKenna, Willie McKenna, John Mc Loughlin, PJ Morrissey, Liam Murphy, Frank Nugent, Benny O'Brien, Dermot O'Brien, Michael O'Brien, Derry O'Hegarty, Paddy O'Kelly, Tim O'Regan, and Pat O'Sullivan.