

Society of Irish Foresters Study Tour to Estonia 9–13 October 2012

The 2012 Study Tour visited Estonia – a small, sparsely populated country which has a forested area of 2.24 million ha (51% of the land area) and an annual harvest of almost 8 million m³. Estonia is slightly more than half the size of Ireland and has a population of 1.3 million. Beginning in Tallinn, with an introductory lecture on forestry in Estonia, the tour group headed south to the university city of Tartu, stopping off at several well-managed forests en route. The group also visited a variety of wood-using industries, from the giant UPM-Kymmene plywood mill near Otepää to the Strauss family's small, wood-craft "factory" in the village of Avinurme, which relies on traditional wood-working skills of the villagers to produce an astonishing range of wooden toys, kitchen utensils and small furniture for export. In summary, this 69th Annual SIF Study Tour was a memorable one. We are deeply indebted to the hard working staff at Fest-Forest who organised, guided and educated us during our short visit to their beautiful country.

Overnight – Radisson BLU Hotel, Tallinn

Pat O'Sullivan, Tour Convenor

Wednesday, 10th October 2012

As we headed out of Tallinn on the motorway towards St. Petersburg, we were joined on the coach by Felix Karthaus, our host from Fest Forest, who gave us an overview of the history of Estonia and the impact of this turbulent history on Estonian forestry. Forest cover was reduced to 30% of land area by the end of the 19th century. Estonia continued to be largely an agricultural country up to the mid 20th century. However, collective farms were established during the Soviet era (1941 to 1991) which resulted in large tracts of land being afforested. The agricultural reforms, which followed independence in 1991, resulted in 30% of agricultural land being removed from active use. Much of this land has since reverted to forestry with the result that 51% of the country is now forested. State forests account for 37% of the forest area.

The species distribution in Estonian forests is as follows: Scots pine (*Pinus sylvestris* L.; 32%), birch (*Betula* spp.; 31%), Norway spruce (*Picea abies* (L.) H.Karst.; 19%), grey alder (*Alnus incana* Mill.; 8.5%), aspen (*Populus tremula* L.; 5%), others (4.5%). Birch accounts for 80% of the forest cover in the east of the country and conifers constitute 60% of the species in the State-owned forests. The country is largely flat and low-lying. The highest point is a mere 365 m and average height above sea-level is only 50 m. The south of the country tends to have more gentle rolling hills than the north. Forest road building is rarely a problem and forest access is facilitated by an extensive network of dirt roads.

Our first stop was a 10 ha site of mixed forest comprised of birch, spruce and

Table 1: *Minimum age and height for the sanctioning of clearfells for the three most common species in Estonia.*

Species	Age (yrs)	Height (m)
Pine	90	28
Birch	60	26
Spruce	70	24

alder near Tooma, where harvesting was being carried out by guillotine. Our host, Toomas Kams, explained how the understory of scrub was first removed to give the harvesting operator a clear view of the base of the tree. This brush was removed to the roadside for green chipping. The chips were used for fuelling heating systems, such as centralised community-heating schemes. However, the harvesting of such brush is just about financially justifiable. The brush was sold for €5 to €6 per m³. Clear felling is allowed based on age or height of the crop (Table 1), whichever comes first.

Up to 30 m³ per ha for a single property or 3 m³ per ha over several properties can be extracted without felling permission. On this site the basal area was 11 m² per ha which was considered low, whereas 20 m² per ha would be normal for Norway spruce across Estonia. Disease is not a major concern as mixed forests are healthier and disease, where it occurs, is regarded as part of the normal forest environment. The spruce bark beetle is not a particular problem. Pulp wood was being sold for €33–€38 m⁻³ (delivered). Commercial logs were making €70 m⁻³, delivered. Log haulage costs approximately €5 m⁻³ per 80 km. There can be up to 15 different assortments on a site depending on the species mix. By law every lorry must have a timber movement docket to permit timber transportation.

Our second stop was at the E. Strauss AS Woodcraft Centre in the village of Avinurme (Figure 1). This company employs 20 people who produce a huge range of handcrafted wooden products for the sauna, kitchen and home. Most of the products are exported to Finland, but the company also exports to Sweden, Norway, Germany and Japan. Examples of production levels are 2,000 sauna buckets per month and 800 large fuel baskets per month. The plant is based on local, traditional, wood working skills. Lunch at the visitor centre consisted of solyanka, a thick, spicy traditional Estonian soup served with local rye breads.

Our third stop was on a restocked site in Ratsepa, which had been clearfelled over a number of years. Clearfell coups are capped at 7 ha and a maximum width of 100 m. In coniferous stands there must be five years between fellings and two years between fellings in broadleaved stands. After felling, a forest must be re-established within seven years of felling and there must be evidence of sufficient stocking within five years. Planting costs are considered high at €1,000 ha⁻¹ and are avoided where possible. Thus, a “wait and see” approach is adopted in the hope that sufficient natural regeneration occurs. If a viable crop has not been established after seven years, the State has the right to plant a clearfelled area at the owner’s expense.

Our final stop was in Fest-Forest’s headquarters in Tartu. Here the manager



Figure 1: Skilled local craft workers produce a wide range of wooden household items at the Strauss family's Woodcraft Centre in the village of Avinurme.

presented a comprehensive account of its business model in Estonia. The basis of the client's investment was the current undervaluation of plantations in Estonia. Projections were based on likely growth in the value of land and timber rather than volume growth. Land values had fallen substantially in recent years to €500 ha⁻¹. The hierarchy of preferred species for investment purposes are Norway spruce, birch, aspen and alder. The wood-burning heating system used in the building was demonstrated to the group. It comprised two large water cylinders. The wood burner heated the water and this in turn heated the house. Sensors which recorded ambient temperatures both inside and outside the building controlled the distribution of heat. The system was highly efficient and used only 15 m³ of timber per annum.

After checking into our hotel, the group was taken on a guided tour of the old city of Tartu, which is an important university city and is regarded as Estonia's intellectual and cultural hub. Students at the various universities and vocational colleges account for almost one third of its population. Our hotel, Hotel Antonius was directly opposite the imposing facade of the University of Tartu. During the tour of Tartu we saw the sculpture of the two Wilde's chatting – Oscar (1854–1900) and Eduard (1865–1933) (Figure 2). A most interesting day of professional and cultural education ended with dinner in the Gunpowder Cellar Restaurant.

Overnight – Hotel Antonius and Barclay Hotel, Tartu

Pacelli Breathnach



Figure 2: Oscar Wilde, Gerhardt Gallagher and Eduard Wilde¹ take a break at Vallikravi Street during our walking tour of Tartu's Old City. There is an identical statue at the corner of Shop/William Street in Galway. It was presented by the people of Tartu to Galway when Estonia joined the European Union on 1st May 2004.

Thursday, 11th October 2012

On Thursday morning we were met by Professor Hardi Tullus of the Department of Silviculture, Estonian Institute of Forestry and Rural Engineering in Tartu, who brought us to see a research trial of hybrid aspen (*Populus tremulus* L. × *P. tremuloides* Michx) which was planted on abandoned farmland. During our short bus trip to the experimental plots, we were treated to a condensed history of forestry education in Estonia and the pivotal role of Tartu University in forestry education and research. These experimental plots were our first introduction to plantation forestry in Estonia and Professor Tullus pointed out that continental forestry is rapidly moving towards plantation forestry in its quest for ever greater crop yields. The site had been ploughed and planted with hybrid aspen at a stocking level of 1,300 ha⁻¹ with the following objectives:

- To monitor changes in chemical and physical soil properties;
- To study successional changes in the understory vegetation (vascular plants and bryophytes);

¹ Eduard Wilde (1865–1933) was a revered Estonian writer and diplomat. His better known works include *The War in Mahtra* and *The Milkman from Mäeküla*. In addition to being a prolific writer he was an outspoken critic of Tsarist rule and of the German land-owning class in Estonia. When the first Estonian Republic was established in 1919, he served as its ambassador in Berlin for several years.

- To estimate biomass production, allocation concentration and content (as well as calorific value) of major minerals, nutrients, cellulose, hemi-cellulose and lignin;
- To analyse foliar nutrient concentrations in order to identify and evaluate nutritional conditions of forests and potential limiting growth factors.

The first assessment of the understory plant-cover was carried out when the plantation was six years-old. In total, 33 vascular plant and five bryophyte species were found on four vegetation plots. The coverage of the field layer was 71% and bryophytes covered 4%. The second survey was undertaken when the plantation was 12 years-old. Altogether, 35 vascular plant species were found, the coverage had decreased to 25%. The coverage of the bryophyte layer had increased to 6%.

We then returned to Tartu and headed south to Otepää where we saw some low hills for the first time since coming to Estonia. In Otepää we visited the huge plywood mill owned by UPM-Kymmene and Otepää AS. We were brought on a tour of the mill by Ando Jukk, the mill manager. This is the only plywood mill in Estonia and the second largest plywood maker in the Baltic countries. A total of 195 people are employed in the mill and the UPM group employs 23,000 people globally. Our first impression of the mill was of a vast log-yard of veneer quality birch logs (Figure 3) – not a familiar sight for Irish foresters! Birch logs for plywood are procured from local forests within a maximum haulage distance of 100 km. Between 125,000 m³ and 130,000 m³ of logs are required annually. In addition to standard plywood, the mill also processes top quality WISA plywood for use in the automotive, transport, furniture and construction industries. The expansion and modernisation of production has improved the manufacturing efficiency of the mill. Annual base plywood production capacity has increased to 50,000 m³. A plywood



Figure 3: *High quality birch logs at UPM-Kymmene's plywood mill at Otepää.*

coating line was added to the mill at the beginning of 2009. Just over 90% of the mill's production is exported, mainly to central Europe. Otepää's location in the Baltic rim means that deliveries can reach its main customers in the northern parts of central Europe within a day. This year the mill was ranked the third-best company in Estonia by the Estonian business paper, *Äripäev*.

After another traditional lunch at the panoramic Nuustaku, it was onwards again to the Vulga State forests which are managed by RMK (the Estonian state forest management organisation), where our host was Risto Sepp. RMK manages 1.12 million ha or approx 40% of all the forests of Estonia. RMK has achieved both FSC and PEFC certification on the timber produce from its forest estate. It has a target of 15% biodiversity. The site we visited was in a National Park where a non-commercial thinning had occurred (Figure 4). It was termed a “sanitary thinning”, in which only poor quality Norway spruce, deadwood and stems which were damaged by moose through bark stripping are removed, leaving the better Scots pine to grow on. The thinning volume was approximately $20 \text{ m}^3 \text{ ha}^{-1}$ and was being carried out using a John Deere 770D. This was the crop's third thinning; the crop will not be clearfelled as this is a protected area.

At the next site we were shown a good example of a mesotrophic pine forest i.e. native forests where “zero intervention” was the management regime. These native forest areas are identified clearly with large signs along the roadside. Finally, Risto showed us a nearby site from which the scrub had been removed and stacked for green chipping for pellet manufacture. The site was semi-natural grassland that is



Figure 4: A fine stand of Scots pine remained after the sanitary thinning had been carried out.



Figure 5: Late autumn colours are reflected in one of the many small lakes at Pilkuse Jarv recreation area.

EU designated for the protection of the corncrake, buzzard and eagle. The plan is to manage it as grassland and to lease it on an annual basis to farmers. The brash, which was harvested and stacked, was not in demand this year and the grazing rights may not be availed of either. There was EU funding for this project and the group questioned if it was sustainable without such support.

The final stop was a recreation site in Pilkuse jarv, a beautiful lake in a woodland setting (Figure 5). This site, which provides car-parking for 10 cars, a jetty and a log cabin/sauna had 12,000 visitors last year. On our way back to Tartu, we stopped briefly at the new Tehvandi Ski Jumping Centre of Excellence on the outskirts of Otepää where athletes come to train for competitions. Otepää is the home of Estonian ski jumping and both the current men's and women's Olympic champions are from this area.

We ended the day with a specially arranged performance by a local choir in Tartu's historic Town Hall. Several of the Fest-Forest foresters are members of this choir, which treated us to a memorable performance of traditional songs of love, loss and of days spent working in the forest. Our President, John McLoughlin replied eloquently "as Gaeilge" and thanked the choir for its wonderful performance in this grand setting.

Overnight – Hotel Antonius and Barclay Hotel, Tartu

Kieran Moloney

Friday, 12th October 2012

Our first stop was an area of abandoned farmland close to Tartu, where we were introduced to Joel Peetsu who works for Est Kinnisvara OV, a property development company. Here the company has 13 sites for sale with planning permission for one house on each plot. The plots incorporated agricultural and forested land and varied in size from 2 to 3 ha. Est Kinnisvara OV builds the service roads, but the purchaser must install the sewerage, electricity and water, which commonly cost about €9,000 for all three services. The site cost varies from €10,000 to €12,000, depending on the location and the quality of the forest being sold with the land. The cost of building an average-sized house here was approximately €80,000. The purchasers of these plots tended to be from the area and working in Tartu. Est Kinnisvara OV sourced its plots exclusively from Fest-Forest and has built up a portfolio of 150 plots throughout Estonia in recent years. Some of their more remote rural plots are sold as holiday home sites. The rate of agricultural land-tax is €4 to €5 ha⁻¹ per year, whereas a house site incurs a tax of €20 ha⁻¹ per year.

... We made a brief stop outside the Stora Enso Eesti Imavere sawmill where Tanu, our guide for the day explained that this is the largest saw-mill in the country and was built in 1995. It takes in 600,000 m³ per annum of pine and spruce timber, but has the capacity to process 700,000 m³. The plant employs 300 staff. There are four separate mills on the site; one is a standard sawmill, one makes glulam beams for use for windows and doors, one makes glulam beams for house building in Japan, and a final one produces chips for paper manufacture. Stora Enso purchases its timber supplies from both RMK (the State Forest Service) and from Fest-Forest. They take in logs with a minimum diameter of 11 cm and lengths from 3.4 to 6.1 m. Current prices are €72 m⁻³ at millgate for pine of 25 cm diameter, and from €65 to €68 m⁻³ at millgate for 30–32 cm diameter spruce logs. More than 90% of production is exported, mainly to Germany. Due to the unseasonably wet summer this year, log supply was down significantly.

Our final stop of the day was a visit to the Balcas Eesti's sawmill outside Tallinn. The mill manager, Inderec, explained that the Balcas involvement began here in 1995. The mill is a second-hand plant bought from Sweden. It has no electronic scanners and is therefore quite labour intensive. In 2008, the mill processed 180,000 m³ of timber, but they are now processing only 60,000 m³ per annum. The workforce has also decreased from 200 to only 34 at present. The two main reasons for this decline are the high price of Russian logs and the difficult export market for sawn timber. Currently, Russian logs cost €85 m⁻³ at dockside plus an additional €10 m⁻³ to load and transport the logs to the mill; this is why Balcas is not buying any of this timber. Instead, they source their spruce and pine logs from RMK (50%) and private growers (50%), and their current millgate price is €65 m⁻³ underbark. He has a preference for spruce logs as this is the species most suited to market requirements. The average haulage distance to the mill is 90 km.

Balcas Eesti has long-term purchase agreements with RMK, which are reviewed each year. Their log supply has also been negatively affected by the very wet summer this year. We were then shown around the plant and saw the log diameter grading system which has 30 separate bins, the sawmilling section, the area where

stress grading is carried out (grades C12 and C16 and DR 26 for roof trusses), and the boiler which generates 2 MW of power from sawdust and is capable of supplying the total energy requirements of the mill, including its eight drying kilns. All of the sawn timber is exported either to the UK or Ireland. All their chips are exported to Finland for paper manufacture, bark is also sold to Finland for the horticulture industry and the sawdust is sold to local pellet and chip-board manufacturers.

Overnight – Radisson BLU Hotel, Tallinn

Eugene Griffin

Saturday, 13th October 2012

The party assembled early on Saturday morning for a walking tour of Tallinn's old city (Figure 6). This would be the final stage of a tour which revealed Estonia as a multi-faceted country with a rich history and a diverse culture rooted in centuries-old traditions.

Tallinn, the oldest capital city in northern Europe, is an old hanseatic city with well-preserved medieval walls. Large sections of these city walls, originally 2.4 km in length and supported by 26 defensive towers, still stand today. The Old Town area is now a UNESCO World Heritage Site. The focal point of Tallinn is the Old Town Square which is dominated by a late Gothic town-hall dating back to the early thirteenth century. The world's first Christmas tree was erected in the Old Town Square in 1441. Toompea Hill is another important landmark and is the site of Estonia's government buildings and Toompea Castle, the seat of Estonia's Parliament.



Figure 6: *A rooftop view of the Old City area of Tallinn.*

Tallinn has always had a close connection to sea trade and maritime affairs since it's port does not freeze during the long Baltic winter. The spire of St. Olaf's Church, the tallest church in Estonia, was a welcome first sight of land for returning sailors over the centuries. In modern times the aquatic events of the 1980 Moscow Olympic Games were held at Tallinn.

In recent years the Rotermann Quarter, an area of abandoned industrial buildings in the heart of Tallinn, has been developed in line with the principles of modern urban planning and has attracted much praise for the admirable quality of its contemporary architecture. The careful merging of medieval and modern buildings has produced a very pleasant cityscape.

Frank Nugent

Tour Participants (32)

Pacelli Breathnach, Michael Bulfin, Richard Clear, Jim Crowley, Declan Egan, PJ Fitzpatrick, Jerry Fleming, Gerhardt Gallagher, Tony Gallinagh, Eugene Griffin, John Guinan, Marcus Hanbidge, George Hipwell, Mark Hogan, Tim Hynes, Kevin Kenny, Noel Kiernan, Eugene McKenna, Willie McKenna, John Mc Loughlin, Kieran Moloney, Liam Murphy, Frank Nugent, Benny O'Brien, Michael O'Brien, Paddy O'Kelly, Tim O'Regan, Pat O'Sullivan, Gerry Riordan, Richard Whelan, Trevor Wilson, Izabela Witkowska.