Farming Connect Management Exchange

Sonia Winder

21st Century Silviculture in Germany

Germany

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1 Background

I am a Chartered Forester and have worked for Tilhill Forestry in Wales for 20 years. Currently I manage 800 hectares of mixed forest, as well as doing woodland creation and forestry contract work. I chose to go to Germany because its species and forest practice are similar to Wales, but they have been practising continuous cover silviculture for longer.

Wales as a whole has 306,000 ha of forest, of which 41% is owned and managed by the State, mostly NRW, and the remainder is in private hands. The forest in the Rhine-Sieg-Erft district which I visited covers 60,000 hectares, but the breakdown is similar, being 43% state forest and 57% private. The climate is similar too, with average temperatures in that area of 7-10 degrees celsuis and average rainfall of 700 – 1100 mm per annum (Wales varies from 1065mm in Cardiff to 1800 mm in my local area). Rhine-Sieg-Erft district comprises 61% broadleaved woodland and 39% conifer; in Wales it is approximately ½ and ½. Tilhill Forestry directly manage 19,000 hectares of forest, or 10% of that which is privately owned, mostly coniferous.

In Wales, for the most part private forests are managed privately, and state forests by the state. In Germany, private forest owners can group together and form a Forest Association which pays a state forest manager to look after it. By doing this they seek to ensure consistent and professional management at low cost to the landowner.

The management aims in Rhine-Sieg-Erft seem refreshingly clear. Their goal is the creation, maintenance and management of ecologically stable, functional, highly efficient forests **with the highest possible production of valuable wood.** There is a desire to convert even-aged high forest to multi-layered, uneven-aged mixed stands, but with economic objectives also not forgotten. The timber production and timber quality priorities seem recently to have been downgraded in Wales, with a government focus on restoration of PAWS sites, peat bogs, deforestation for wind farms, and with the majority of new planting being with broadleaved species. Broadleaves in Wales are being planted for habitat creation rather than timber production objectives.

The aim of my exchange was to see how our German counterparts look after their woodlands and face the same challenges with environmental and biodiversity constraints, as well as facing the same new challenges posed by climate change and pest and diseases. A secondary objective was to look at German use of non-timber products, such as venison, wild boar, seeds, foliage and firewood, which all provide additional sources of income for forest owners.

2 Itinerary

I was hosted by 2 different foresters, Janine Tolle and Marc Redemann, both employed by Landesbetrieb Wald und Holz Nordrhein-Westfalen.

They and colleagues took me out to look at different forests within a 2 hour drive of Cologne each day. Each forest and each area is different and as always each manager has different views and ideas. However the practice of silviculture and the requirements of Certification are the same as ours at home. I was based in the small town of Rheinbach, which is similar in size and character to Llandeilo.

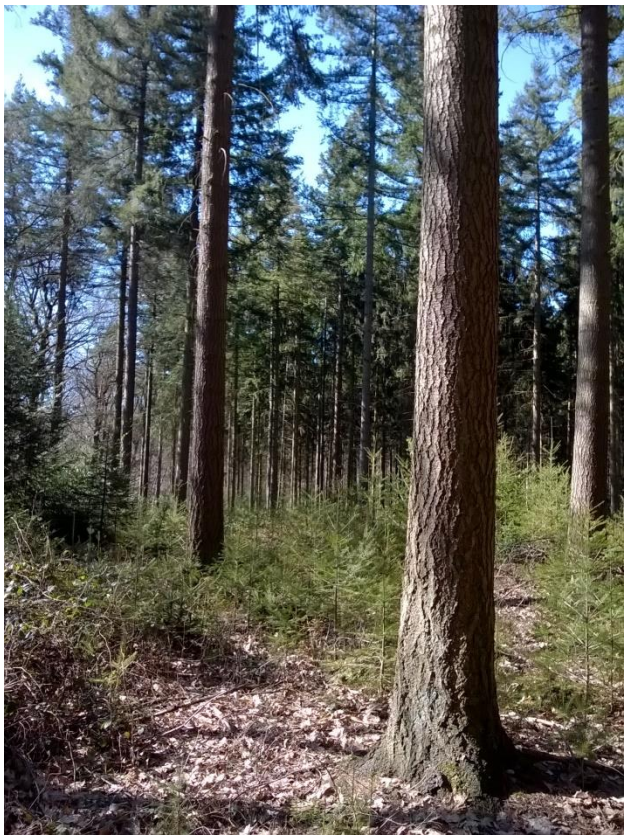
My 5 days out were as follows:

Monday 27th March

I spent the day around Rheinbach community forest. Only 3 foresters have managed the Rheinbach community forest in the last 70 years – Sebastien Tolle is the current manager. The forest costs €300k per year to run, with 5 full time staff, but it earns this amount in sales of timber, seed and hunting rights. It is PEFC Certified and its annual increment gain is ½ more than its annual cut, so it's sustainably managed. Machine access is easy with networks of roads, and permanent forwarder routes marked through the forest. Work in the forest is small scale. The forest around the town is very well used by locals for dog walking, cycling & horse riding. There is a forest school in the middle of the forest – children are outside all year.

Firewood awaiting collection for domestic use – the lowest value forest product (€50/cubic metre)

A registered seed stand of wild cherry. The crowns are good, and GF planted under the cherry grows slower (= less shake) and also isn't able to grow through the crown of the cherry, making clean cherry butts and good quality GF. Form is typical of Wild Cherry – i.e. with fluting at the base and not very straight.



Open grown Douglas Fir stand in transition from CF/RP system to CCF. Crowns are carefully managed for depth light and seed production, and timber to be removed is all marked.

There was an abundance of Douglas fir natural regeneration on the forest floor.

Tuesday 28th March

Venne Forest and Kottenforst – on the outskirts of Bonn city. Very high levels of public use, by nordic walkers, dog walkers and mountain bikers. This is an area of windblow which regenerated with birch. The manager has made €15 per tree for young men to cut 4m saplings down and dress them as a "Valentine" for their loved one on 1st April each year. This local tradition has earned very good money for some years. There are signs of wild boar here.

Gap planting with DF/GF under oak/beech mixed forest. The ground is cleared and the plants are planted at 1.5m spacing into gaps. Long canes stiffen the transplants and stop them from being frayed by roe deer as they grow. Sheeps wool is carefully placed on the terminal bud of the sapling (it needs to be moved up each year) to discourage the deer from browsing it – "nobody likes to have hair in their dinner" says the forest manager. This is seen as an old fashioned but effective remedy – cheaper than deer fencing. Chemical browsing repellents are also sometimes used.

An experimental *EXCLOSURE* demonstrating the effect of excluding deer from a small area. There's conflict between the hunters ("we never see any deer") and the forest manager ("they're eating all my oak"). The oak regen comes up like grass and grows to 30cm and then all disappears. Only beech and hornbeam survive the deer browsing and grow on. Drastic measures are needed to control the deer, which have increased in number over recent years. Driven hunts are used to take out the

necessary numbers of deer – single stalkers with high seats taking out single deer do not have enough effect on the population

Wednesday 29th March

The annual regional hardwood timber auction occurs each March in Kottenforst. Oak, beech, ash, and sycamore. Photo shows a few logs still awaiting uplift. Best quality logs are sold individually, second quality logs are sold in batches. Prices vary, with €6,000 being the top price paid for one oak log which went for veneer. Ash timber quality will be affected by Chalara disease. Oak can be affected by shake in the grain.

Me standing in a mixed stand of red oak and Douglas fir (both North American imported species) with abundant douglas fir, spruce and beech regeneration underneath. Bracken and bramble compete with the young trees, as they do in Wales.

Hambach open cast coal mine, a lignite (brown coal) mine in the Ruhr valley which is 2 miles long and 300m deep. The mine employs approx 1000 people. Brown coal still produces 25% of Germany's energy. Mining and restoration have been progressing for the last 40 years.

Restoration - After mining, the loess soils have to be replaced to a depth of at least 2 metres. The area is then profiled by loose tipping and grading with a wire rope stretched between 2 bulldozers to avoid compaction. It's planted at 2 x 1m spacing (5,000 stems/ha) with a mixture of beech, birch, oak, poplar, and shrubs – elder, dogwood, blackthorn, rose, rowan, broom – all things which will attract bees and other insects. There is also standing deadwood installed as poles. This is to attract Bechsteins bats, which are European Protected Species and found in some of our woods in Wales. No chemical weeding is permitted which makes tree establishment significantly slower.

A stand of high quality oak 40 years after restoration, which has just been thinned for the 4th time. The trees remaining are final crop trees. Roe deer numbers have increased in the area and all current natural regeneration is being browsed, which will be a problem for CCF management.

Thursday 30th March

Uwe Schelmerich, District Manager, and Aline, assistant, in the forest at Rottgen. This area is managed to favour a mixture of species through selective felling and natural regeneration. The area opposite is natural reserve and so is managed on a non-intervention basis.

Beech stand being thinned by forestry apprentices. Beech with a 'fiddleback' character is not worth as much as sycamore with the same rippling. Trees are motor-manual felled (by chainsaw) and extracted by winch to roadside. Lorries pick up from roadside. Roads are 3m wide (ours are 3.4m minimum running surface) – lorries are smaller. If machinery causes ruts deeper than 30cm, extraction is stopped to prevent soil damage.

"Needle trees" are felled all year. "Leaf trees" are only felled when they're not in leaf. This is because of bird nesting, because timber stains when the sap is rising, and also for safety. It's dangerous to fell leaf trees when the chainsaw operator can't see into the crowns. However beech for export to China commands a higher value in summer/early autumn when shipping containers are cheaper. Conflict between higher timber prices and operator safety.

A veteran elm tree outside the forest office building with Marc Redemann, forest manager. Dutch elm disease swept through Germany, as here, so mature elms are very rare there too.

Friday 31st March

Forest machinery – a small (agricultural) forwarding tractor– all wheeled vehicles and small scale, though pieces of timber are large.

A winch tractor with timber grab. Note that the vehicles stay on the forest road, and band tracks are not required.

1.2 m correx tree tubes being used to protect Sweet chestnut (Castanea sativa) saplings from roe deer in a private forest area.

These trees are planted at 1.5m spacing – 4,400 trees/ha – much denser than our 2,500 trees/ha.

The state forest vehicles are Skoda Yetis – the same as mine here!

There is still damage in the forest from WW2. Below is a picture of an old bomb crater. There is metal in many of the older trees, which causes problems when felling and processing them. Blue staining in the timber is usually a clue that there is metal somewhere within the wood.

Manage the light correctly from the forest canopy, and beech seedlings grow in abundance. Keeping the regen depends on maintaining light levels and (as always) controlling the deer.

The forested landscape. Note coupe shapes of the larch and the spruce. Both larch and spruce are not native to this area, and so are being gradually removed to leave only the brown 'leaf trees'. The landscape will look significantly different without them.

3 Next Steps

I have shared my experiences the knowledge with my colleagues within Tilhill, and plan to share them too with the Institute of Chartered Foresters, which is my professional organisation.

I have kept in contact with my exchange hosts and we will continue to learn from each other over the years.

4 Key Messages to the industry

1. Restocking done today isn't for your own benefit, it's for the benefit of future generations. With broadleaves, rotation lengths are a minimum of 70 years. The reason why Germany has such high quality broadleaved stands today is because they were intensively managed post war.
2. Decisions on species choice taken today will impact on forest viability in the next century. Plant what's right for the site, not what attracts the best grant rate at the moment.
3. Growing quality hardwoods needs to start at year 1 with planting spacing of 2 x 1m not 2 x 2 or 3 x 3m. This doubles the planting cost but yields thinnings and ultimately better quality final crop trees.
4. Climate change is affecting us ***now***. We need to adapt our choice of species and silviculture to be more tolerant of extremes – wind, drought, floods, etc. We have to get used to warmer winter temperatures, which don't kill pests and pathogens.
5. A chemical reduction strategy (UK based approach) is better than a ban on use of chemicals in the forest (German approach). Carefully targeted chemicals help trees to grow.
6. Forest pests and diseases are on the increase with movement of products and materials around the world. We need to learn from the loss of larch to Phytophthora and the loss of ash to Chalara disease that this is not sustainable. Our attitude to biosecurity needs to improve.
7. Use of non-native species is appropriate where they out-perform natives for timber production.

8. There is a place for continuous cover forestry in Wales. Practice makes perfect and we are haven't been doing it as long as the Germans. But there is a lot we can learn from their systems.
9. Keep it Simple! We need a clear vision of the future for Wales's woodlands, and different interest groups need to work in harmony for the benefit of the whole forest ecosystem in order that it can delivery wider ecosystem services. Managing for one product, or one EPS species, is not sustainable in the long term.