Farm Woodland News

Farm Advisory Service

The newsletter for participants in Farm Woodlands Schemes • *Issue Number 28* **Spring 2017**

In this Edition

WHEN was the first chainsaw made and WHAT was it used for?

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Editorial

Welcome to the Farm Woodland News, this being the first issue under the new Farm Advisory Service with its new colours!

We've been seeing an increase in the demand for long term forest plans, but especially woodland management plans, suggesting that more of you want to do more with your woods. This reflects a growing realisation that smaller woods, which have been under-managed (or neglected!) for many years, are now capable of generating some income.

In response to this we've put together this bumper edition looking at management planning and selected management operations. Planning isn't simply about what will happen when; it includes how you remain on the right side of the law, working within the UK Forestry Standard, and staying safe if there are overhead powerlines in your woods. And it's not all about the trees; woodland owners and managers have to consider how their proposals could impact on other aspects,

Off-cuts

After many years of waiting, the Forestry Commission have been collecting a bumper crop of acorns in Dumfries and Galloway. About 600,000 young trees are expected to be produced once the acorns have been planted out in nurseries. The young trees, with genetics local to the area, will be planted out to restore ancient woodland sites, and expand and link ancient native oak woods, from upland areas such as around Loch Trool right down to the coast.

such as protected species. It is vitally important that you therefore know what your obligations are, what to do and who to contact.

Planning also includes what you can afford to do, and what is worth doing as an investment in your growing crop. Thinning and pruning have one thing in common: improving the value of the final product.

Not entirely departing from woodland creation in this issue, we look into how your woodlands can be integrated with your farming activities, bringing a multitude of benefits to your farm and business. For some new woods, grant support simply isn't sufficient to make the figures stack up. Carbon sales may be your answer to this, and we hear from two farmers where this made their planting proposals become reality.

To look into these issues we have contributions from foresters, ecologists and machinery rings, each offering their expertise in their various fields.

As usual we bring you the regular items including FGS update, timber market report, species focus, the competition and the array of news items and fascinating facts about trees.

Thank you to all our contributors from throughout the industry, and enjoy the read!

Malcolm Young
SAC Consulting

The Forestry Grant Scheme budget for woodland creation has been increased from £36m to £40m for the year 2017/18. This reflects the increase in demand for the new planting grants which are currently under pressure. The planting of new woodland supports rural jobs, such as fencers, ground preparation and planters, as well as those in the timber processing industry. The increased funding also demonstrates the commitment the Scottish Government has to support the Scottish forestry industry.

Forestry grant applications could be streamlined, leading to increased rates of tree planting in Scotland. Fergus Ewing, Cabinet Secretary for Rural Economy and Connectivity, commissioned a review, undertaken by James Mackinnon CBE, to investigate the reasons behind the continuing failure to meet the Scottish Government's planting targets of 10,000ha per year. The report's recommendations have been accepted in principle by Mr Ewing. The report can be found at: http://news.gov.scot/news/delivering-planting-progress

Fashion brand and retailer Superdry has given a boost of £12,500, raised from sales of its carrier bags in Scottish stores, to the charity Trees for Life, in its work to save the ancient Caledonian Forest.

Trees for Life


Forest Plans and Woodland Plans

Malcolm Young *SAC Consulting*


Most things in life which need to be built or managed require some kind of plan. Forestry is no different. In fact, given the long-term nature of forestry, one of the most useful tools at a woodland owner's disposal is some type of plan which sets out management proposals covering up to 20 years.

There are numerous benefits from having a forest or woodland plan:

- identifying and quantifying what's in the forest
- grants for existing woodland require a plan to be in place before-hand
- plans are required to allow timber to be sold into the biomass sector for use in RHI-funded boilers
- financial planning
- operational planning: identifying where economies of scale can be taken advantage of, establishing a timeline
- ensuring compliance with the UK Forestry Standard (UKFS).

LTFP vs WMP

The terms "woods" and "forests" are used interchangeably throughout this article, but there is a difference between a Long Term Forest Plan (LTFP) and a Woodland Management Plan (WMP).

The LTFP is aimed at woods and forests of over 100ha in size, be this in one block or scattered over a single property. Grant funding is available for it. The grant contributes to the cost of all survey work, consultation, mapping and writing of the plan. It usually takes several months to complete, from grant application through to plan approval. The grant application requires a concept map to be submitted, which gives a broad outline of management activities (without detail) and highlights the constraints and opportunities affecting the woods. A great deal of emphasis is placed on consultation (known as Scoping) for the LTFP, which is normally undertaken through letters, but also formal meetings or drop-in sessions if appropriate. A scoping report is produced which summarises the issues raised and how these will be addressed, and must be approved by the Forestry Commission before going on to complete the rest of the plan and the proposals, which are then approved by the Forestry Commission. The plan period is for 20 years, and when approved, provides felling approval for the first 10 years. A separate felling licence application is not therefore needed for the felling proposals.

The WMP is aimed at woods of less than 100ha, again whether it is in one block or scattered throughout a property. There is no grant for it, but this reflects the simplified nature of the WMP compared to the LTFP. It can be completed in days or hours. Consultation can be undertaken less formally, and all information is recorded in the WMP template (no separate scoping report). The completed plan is submitted to the Forestry Commission for approval, but this does not give you felling permission. A separate felling licence application must be submitted; either at the same time as the plan or straight after plan approval is a sensible time to do so. Felling licence applications will be required for subsequent proposals later in the plan period.

Both plans, when approved, are given a unique reference number. This number must be quoted in grant applications for existing woodlands. For supply into the biomass sector, the reference number of the LTFP must be given or, the WMP reference number along with the felling licence reference number.

Both plans, and their proposals, must comply with the UK Forestry Standard (UKFS), which is the industry-accepted code of practice.

What's in the wood?

For many landowners, the woods are a familiar feature that are on the farm or estate, but about which there is very little detail. This is the starting point of every plan: identifying what is there, what it's like, where it is, and how much there is. This detail will normally include total area, species, area by species, age (or planting year), management history (eg. previous thinning) and sometimes standing timber volume. Additional detail may include yield class (the productivity of the crop), tree height and access. Site information is also required (with more detail required in the LTFP) including topography, geology and soils, climate, hydrology, adjacent land use, windthrow risk, historic environment, biodiversity, invasive species (eg. Rhododendron, Japanese knotweed) and plant health (eg. Chalara ash dieback). This information can be displayed in a table and on a map; if you have an agent producing a plan for you they will produce a compartment schedule containing the above information, as well as a compartment map, which normally includes species. A compartment is simply a distinct area of the forest which is similar in nature, and clearly delineated by a feature such as a burn or an old dyke. Each compartment is numbered, and each block of species identified with a letter.

Constraints

The constraints affecting the site must be identified. This may include steep ground, watercourses, badgers, red squirrels or European Protected Species (EPS), SSSIs, SPAs, railways, windblow, native woodland, public access, lack of management access; essentially anything that would hinder or may be harmed/damaged by the management of the wood. The constraints are identified both in the plan and on a map. Designations can be easily checked online by visiting https://gateway.snh.gov.uk/sitelink/searchmap.jsp for natural heritage, https://canmore.org.uk/site/searesult?SITECOUNTRY=1&view=map for archaeological heritage, and http://map.environment.scotland.gov.uk/landinformationsearch/lis_map.html for environmental information.

Objectives

Early on in the plan process it is important to set out the vision and objectives. These will be influenced to some extent by the size, nature and location of the wood, and the constraints and designations affecting it. The vision is how you see your wood well into the future and is expressed in general terms; for example a well thinned forest producing quality timber, or a thriving native woodland. The objectives set out what you want to achieve by managing the woodland; for example production of good quality timber, provide alternative income, improving biodiversity of the area.

Consultation/Scoping

It is important to identify any stakeholders who should be consulted about the plan. Stakeholders are any person or organisation who may have some sort of interest in the woodland and may include neighbours, tenants, users of the woodland, conservation bodies and statutory bodies such as SNH (usually in relation to red squirrels, badgers, EPS, SSSIs, SPAs), SEPA

(in relation to watercourses if these will be directly affected) or local authorities (usually in relation to timber transport or public access). On consultation these stakeholders may raise issues which you were unaware of, which should be added in to the list of constraints. This process is carried out in a formal manner for LTFPs via letters, meeting or drop-in session, with the issues/responses and proposed mitigation being summarised in a scoping report; for the WMP the process is more informal and any issues recorded directly within the plan template. For LTFPs, the concept map should be updated following scoping.

Analysis

The constraints are analysed and opportunities identified to work around the constraint, mitigate effects on it or prevent future issues in relation to it. For example, the constraint may be steep banking next to a watercourse (where timber harvesting could be difficult and cause soil disturbance); the opportunity being that the steep bank is restocked with broadleaves, thereby avoiding disturbance in that potentially sensitive area in the future.
If there are badgers or EPS within parts of the wood likely to be affected by management, it is essential that you obtain a licence for disturbing these species. This should be noted in the analysis section and a licence application followed through at the appropriate time.

Proposals

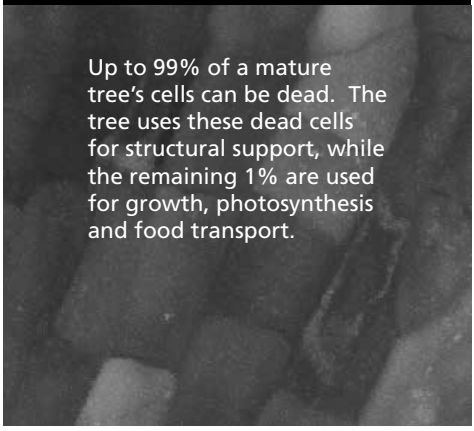
The final part of the plan is to set out your proposals, having considered all the above. This may include more conventional proposals such as thinning, clear-felling and restocking, or low impact activities such as group-felling, or access construction. Whatever the proposal, it should include quantity and timing (which year it will take place). All proposals should be identified on a map.

In the WMP it is sensible to state that the proposals will be carried out in accordance with the UKFS, and that appropriate protected species surveys will be undertaken ahead of any operations.
The LTFP is submitted to the Forestry Commission for approval along with a production forecast and a tolerance table. The critical information held in the production forecast is area of thinning/felling, species and year. Further information on timber volumes and yield class can be provided if readily available. The tolerance table recognises that a degree of flexibility is required in the plan to allow for unpredictable events such as storm damage or sudden changes in market conditions, but sets out the limits of the flexibility and what must be done if these limits are to be exceeded.

The WMP is submitted by itself and, a felling licence (if required) should also be submitted.

Online guidance and templates for LTFPs and WMPs can be found at: http://scotland.forestry.gov.uk/supporting/grants-and-regulations/forestry-grants/forest-plan-resources

DID YOU KNOW?



Up to 99% of a mature tree's cells can be dead. The tree uses these dead cells for structural support, while the remaining 1% are used for growth, photosynthesis and food transport.

Licence to Fell

Douglas Priest *SAC Consulting / Forestry Commission*

Why is a felling licence needed?

A felling licence is a statutory obligation in order for the Forestry Commission to monitor the total area of forest cover in Scotland. The licence also ensures that any areas that are felled are restocked and that forest cover is not lost.

Who can apply for a licence?

Felling licences can be applied for by anyone; however, they must be issued in the name of the owner of the property. In the case of leased land the lease holder must first ensure that their lease entitles them to fell trees. There are some circumstances where a licence can be issued to a person who is neither the owner nor lease holder but has sufficient legal interest in the land; this means they must be able to fell the trees without the need for permission from any other party.

Applying for a felling licence can be carried out by an agent on the owner or tenant's behalf should you so wish.

What are the consequences of illegal felling?

The consequences of illegal felling (i.e. without a felling licence) are significant, a fine of up to £2,500, or twice the value of the trees (whichever is higher) can be issued.

When a landowner (or lease holder) is convicted of carrying out illegal felling, the Forestry Commission can serve a Restocking Notice to restock the area of land felled, or, under agreement, an equivalent area of land elsewhere. Any areas that are restocked must adhere to acceptable standards (species and stocking density) for up to 10 years.

If the conditions of a felling licence or a Restocking Notice are not adhered to then Forestry Commission Scotland may issue an Enforcement Notice demanding that action be taken to meet conditions. Failure to adhere to the Enforcement Notice could lead to a fine of up to £5,000.

What is the threshold for requiring a licence?

According to the Forestry Act 1967 the threshold for requiring a felling licence is as follows:

'felling of trees of licencable size by any person on land in his occupation or occupied by a tenant of his, does not require a felling licence provided that the aggregate cubic content of the trees felled by that person does not exceed 5 cubic metres in any calendar quarter; and the cubic content sold does not exceed 2 cubic metres'.

This cap of 5 cubic metres per quarter (Jan to 31 March, 1 April to 30 June, 1 July to 30 September and 1 October to 31 December) is not cumulative. i.e. you cannot fell more than 20 cubic metres per calendar year

and you cannot exceed 5 cubic metres in any one quarter, unused volume cannot be carried forward to the following, or any future quarter.

Exceptions that do not require a felling licence

It is always best practice to contact your local forestry commission office or land agent if you are in any doubt, but as a general rule the following circumstances are exempt from the need for a felling licence (please bear in mind that these may not apply in conservation areas):

- Tree felling in a garden, orchard, churchyard or a designated open space
- Carrying out work on trees such as lopping, topping, pruning and pollarding
- Felling less than 5 cubic metres in a calendar quarter (providing that no more than 2 cubic metres is sold in a calendar quarter)
- Felling trees that have the following diameter at 1.3m from the gound:
  - 8cm or less
  - 10cm or less for thinnings
  - 15cm or less for cutting coppice
- Tree felling where you have current permission under an approved Dedicated Scheme Plan or Planning Permission
- Felling trees that are dangerous (or prevent a nuisance)
- Felling trees to present the spread of a pest or disease (in accordance with a statutory notice being served)
- Felling trees to comply with an Act of Parliament, or to enable you to work as a statutory undertaker.

What information is required in the licence?

The information required for a felling licence application is as follows:

Part 1 – Applicant's/Agent's details

- Name
- Organisation
- Phone number
- Email address
- Address

Part 2 – Trees to be felled

- Name of property
- Name of wood
- Grid reference
- Nearest town/locality
- Local authority

A signed map must also be submitted showing the area for the application. This map must meet the standards outlined on the Forestry Commission website: http://scotland.forestry.gov.uk/supporting/grants-and-regulations/felling-licences/mapping-standards

Part 2b – Felling Operations

- Start date
- End date
- Information on crop and operation type (clear fell, thinning, selective felling etc.)
- Estimated volume
- Total area

Part 3 – Proposed restocking

- Species
- Area
- Stocking density

Part 4 – Tree Preservation Orders

- Declaration of presence of any TPOs on trees to be felled
- Stating if any trees are to be felled in a conservation area

Application process and timescale

An acknowledgement of the application will be sent from the Forestry Commission within three days of it being received; a site visit will be set up within three weeks, if required. Details of the application will be placed on the Register of New Planting and Felling: they will remain here for four weeks to allow application to be challenged by the public or any other third party. The Forestry Commission aim to issue licences within 10

weeks of receiving an application; no felling can take place until the felling licence has been issued.

Felling trees with TPOs or in conservation areas

Unless any of the exceptions apply, before felling trees in a Conservation Area, you must apply for a Felling Licence from the Forestry Commission. If you are proposing to cut down, top, lop or uproot a tree within a conservation area, you must give the local authority six weeks notice before the work is to be carried out. If the work is not finished within two years of the date of first giving notice to the LPA, another notice is needed.

A Tree Preservation Order (TPO) is made by the Local Planning Authority (LPA) usually a local council to protect specific trees and woodland from deliberate damage and destruction. TPOs prevent the felling, topping, lopping or uprooting of trees without permission from the planning authority. The procedures for applying to fell trees with a TPO or in a Conservation Area are outlined below:
When an application for a licence to fell trees covered by a TPO is submitted a copy is sent it to the local planning authority with comments about the proposals.
The LPA will decide whether to grant the necessary permission. The Forestry Commission will tell you that this has been done and you should talk to the LPA.

General advice that isn't covered above

- A felling licence applies to the land, regardless of who owns the land. This means that the permission and conditions remain in force after the land is sold. Those who sell land with a felling licence must advise both Forestry Commission Scotland and the purchaser accordingly.

- A licence carries an expiry date and will usually be valid for two, three, four or five years.

The expiry date will vary from case to case depending on the circumstances. If your licence ends before you have done all the felling, you must stop felling when the licence expires. You must apply for and be issued with a new licence before you can fell the rest of the trees. When completing a felling licence application you can indicate how long you would like to carry out the felling before the licence expires.

- If the trees to be felled are within a hedgerow and it is proposed to remove the hedgerow, permission will also be required under the Hedgerow Regulations 1997.

- If you want to carry out any work that may affect a Site of Special Scientific Interest (SSSI), you must tell Scottish Natural Heritage (SNH) in writing, so that they can assess the likely effect. A letter of consent may be required from them before any felling is carried out.

- If you want to carry out any work that may affect a Scheduled Ancient Monument, you must tell Historic Scotland. A letter of consent may be required from them before any felling is carried out.

- All wild birds, their nests and eggs are protected by law (the Wildlife and Countryside Act 1981) and it is therefore an offence to intentionally harm or kill a wild bird or to destroy their nests or dwellings. Certain wild birds are also protected from intentional or reckless disturbance while it is nest building, or at a nest containing eggs or young, or disturbance involving the dependent young of such a bird. You should assess the risks your tree or woodland work poses to wildlife to ensure wild birds are not intentionally harmed or killed and that their nests or dwellings are not damaged or destroyed. For most operations you should therefore avoid work during the bird nesting season.

European Protected Species

Helen Bibby *SAC Consulting*

European Protected Species

European Protected Species are animals and plants (not including birds which are protected under the birds directive) that are listed in Annex IV of the European Habitats Directive. As such they receive protection in Scotland under the Conservation (Natural Habitats, &c.) Regulations (1994) (as amended). These species have been chosen as the most vulnerable species due to their declining numbers or declining and threatened habitat across Europe.

List of Terrestrial European Protected Species known to occur in Scotland
**Excluding marine and freshwater species*

- Great Crested newt, (*Triturus cristatus*)
- Natterjack Toad, (*Bufo calamita*)
- Otter, (*Lutra lutra*)
- Wildcat, (*Felis silvestris*)
- Killarney Fern, (*Trichomanes speciosum*)
- Slender Naiad, (*Najas flexilis*)
- Yellow Marsh Saxifrage, (*Saxifraga hirculus*)
- Horseshoe bats, all species and Typical bats, all species (includes Brown long-eared, Common Pipistrelle, Daubentons, Leisler's, Nathusius' pipistrelle, Natterer's, Noctule, Soprano pipistrelle, Whiskered, All typical species of Vespertilionidae)

While badgers are not on the official list of European Protected Species they are protected under the Protection of Badgers act 1992 which gives them similar protection as European Protected Species.

For European Protected Species, it is a criminal offence to deliberately or recklessly*

- capture, injure or kill a wild animal of a European Protected Species;
- harass a wild animal or group of wild animals of a European Protected Species;
- disturb such an animal while it is occupying a structure or place which it uses for shelter or protection;
- disturb such an animal while it is rearing or otherwise caring for its young;
- damage, destroy or obstruct access to a breeding site or resting place of such an animal, or otherwise to deny the animal use of the breeding site or resting place;
- disturb such an animal in a manner that is, or in circumstances which are, likely to significantly affect the local distribution or abundance of the species to which it belongs; or
- disturb such an animal in a manner that is, or in circumstances which are, likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young.

For plants

Deliberately or recklessly to pick, collect, cut, uproot or destroy a wild plant of a European Protected Species (at any stage of the biological cycle).

* *Recklessly - A person would be acting recklessly if they could reasonably have been expected to foresee that an operation could damage or disturb a protected species but took no action to assess the risk and consider what to do about it.)*

It is important to note that damage or destruction of a breeding or resting place is an offence of strict liability (i.e. it is an offence even if not deliberate or reckless) and applies even when the site is unoccupied.

Protected Species and Forestry

European Protected Species which are likely to be affected by forestry in Scotland include bats, (all species), badgers, great crested newt, otter and wildcat, Natterjack toad and some of the plant species, such as yellow marsh saxifrage which may rarely occur in woodlands but are not usually affected by forest operations.

Licences

It is possible to carry out some work in the vicinity of the above species if a licence is granted from the appropriate authorities. Licences may be granted for the purposes of preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment. The licensing authority must be satisfied that there are no satisfactory alternatives and that such actions will have no detrimental effect on the wild population of the species concerned.

Should you feel a licence application is necessary for any of the species mentioned or wish to discuss the licensing process in more detail, please contact the SNH Licensing Team at licensing@snh.gov.uk or telephone 01463 725 364.

Bats

In Scotland bat populations have declined considerably over the last decade. Their biggest threats are building and development work that affects roosts and habitat loss. When it comes to forestry loss of habitat and the use of pesticides lead to a reduction in the number of insects. They need to find roosts near to good foraging habitat which includes native woodland, open grassland and water.

Deciduous, some coniferous and mixed woodland can all be a home to bats providing there are suitable places to roost or feed. Bats are very sensitive to light, heat and humidity and therefore woodland management practices which alter any of these factors around a woodland will impact on bats. For example if a roost tree is isolated by clear felling, it may become too hot and dry for bats.

Trees which have been damaged are more likely to provide roosts than healthy trees. Woodpecker holes are particularly favoured by bats. The chances of a tree containing a bat roost increases significantly with the age of the tree.

Bat mitigation can be as straight forward as providing bat boxes and alternative roost sites or completing the work while the bats have moved to other roost sites. However in many cases it can be complex and will vary greatly in individual cases. Mitigation encompasses a range of

measures to minimise and offset the impacts of a development on the affected bat population.

These are to:

- minimise fragmentation/isolation of bat colonies
- minimise direct impacts on bat roosts
- minimise direct loss of foraging habitat
- incorporate measures to mitigate against the loss of continuity in key commuting corridors e.g. green bridges
- create new habitats or roost sites of real value to bats

Prior to forest operations, the site should be assessed for bat roost suitability and the need for any mitigation or a licence. Further information is provided in Forestry Commission Guidance Note 35a: Forest Operations and Bats in Scotland.

Badgers

Badgers are found frequently in Scotland and can be found in woodland almost anywhere with the exception of some of the islands and the very far north. They are mostly nocturnal although frequently seen at dusk, they feed on a wide variety of food including earth worms, small mammals including hedgehogs, eggs and bulbs.

Threats to badgers include disturbance of their setts, loss of feeding habitat and roads. More badgers die on roads than from any other cause. Mitigation can include provision of underpasses on roads and badger-proof fencing. Forage can be improved in areas by improving grassland quality and therefore the numbers of earthworms.

Forestry operations such as tree felling, timber extraction and mechanical cultivation are potential sources of damage or disturbance to badgers. When forest operations are planned it is always essential to check for the presence of badgers. They are particularly sensitive to disturbance during the breeding season from December to June and forest operations near setts should avoid this time. There should also be a protection zone with a minimum of 20 metres around setts. If there is a threat of disturbance to badgers or their setts a licence should be obtained.

Great Crested Newt

Great crested newts have a patchy distribution across Scotland. They favour large ponds with abundant weeds and fish and are often found in old quarries or other man-made ponds. They also use the terrestrial habitat around a breeding pond and this often includes woodland habitat.

Management should aim to create a mosaic of suitable habitats which are interconnected and provide a continuity of habitats over time. Woodlands, particularly broad leaf, are used for shelter, foraging, dispersal and hibernation. Dense conifer habitats are not suitable, particularly without an understory.

Any mechanised operations – such as timber harvesting, scarifying, removal of dense vegetation involving ground disturbance and excavation – in the vicinity of a pond used by great crested newts

carries a high risk of causing damage, disturbance or harm.

If great crested newts are present within the work area then a licence from SNH will be required. Mitigation for great crested newts is relatively straight forward. The effects that any development would have on populations must be mitigated so that the population can continue to thrive. Best practice involves changing the development to avoid the area used by the newts.

Other mitigation can include adjusting the scheme so that the newts are shifted from part of the area but provided with ample habitat elsewhere on the site or, in extreme cases, moving the newts to a piece of land especially prepared for them.

Otter

Otters occur frequently over the whole of Scotland using a network of water courses, lochs and hill lochans. Woodlands, particularly small patches of wet woodlands, carr and thick scrub or woods that are close to rivers, ponds, lochs, and wetlands, are also used by otters. Otters have a home range that can be up to 40km long and are frequently found inland where they cross from one watercourse to another or travel to hill lochans. They often use woodland for holts or resting places and particularly like areas less disturbed by humans, ungrazed, close to water and with some cover.

Woodland operations such as harvesting, coppicing, scarifying, mowing and ground-works within potential otter habitats have a high risk of causing damage, disturbance or harm. Even when carrying out work to improve the riparian and wetland vegetation and habitat (e.g. pollarding old willows or coppicing alders) there may be a risk to otters.

If it is not possible to avoid having an effect on otters during the course of the work, you will need to consider what measures to take to mitigate any damage or disturbance and this will require a licence if otters are present.

New roads (and some existing ones) can be a particular problem for otters and may lead to significant mortality amongst the local population so think about adding tunnels or culverts to the roads.

Holts and resting places should be avoided where possible and the cover around them should not be disturbed. Otters can breed at any time of year although the spring is the most common time.

Wildcat

Wildcats are scarcely distributed across the north and central Scotland, their ranges often cover very large areas and they particularly favour woodland within a habitat mosaic and woodland edge habitat. Wildcats occupy dens in hollow trees, rock crevices, rabbit burrows, disused badger setts, under fallen debris or in old fox earths.

Signs that wildcats are around include scats, claw marks and paw prints as well as previous records in the area. A specialist survey may be required to confirm wildcat presence in a woodland. If there are areas within the wood which are particularly suitable for wildcats, one option is to retain these features even without being certain that wildcats are there. If wildcats are present a licence will be required. Avoiding operations during the breeding season of the wildcat (February to July) near dens is important.

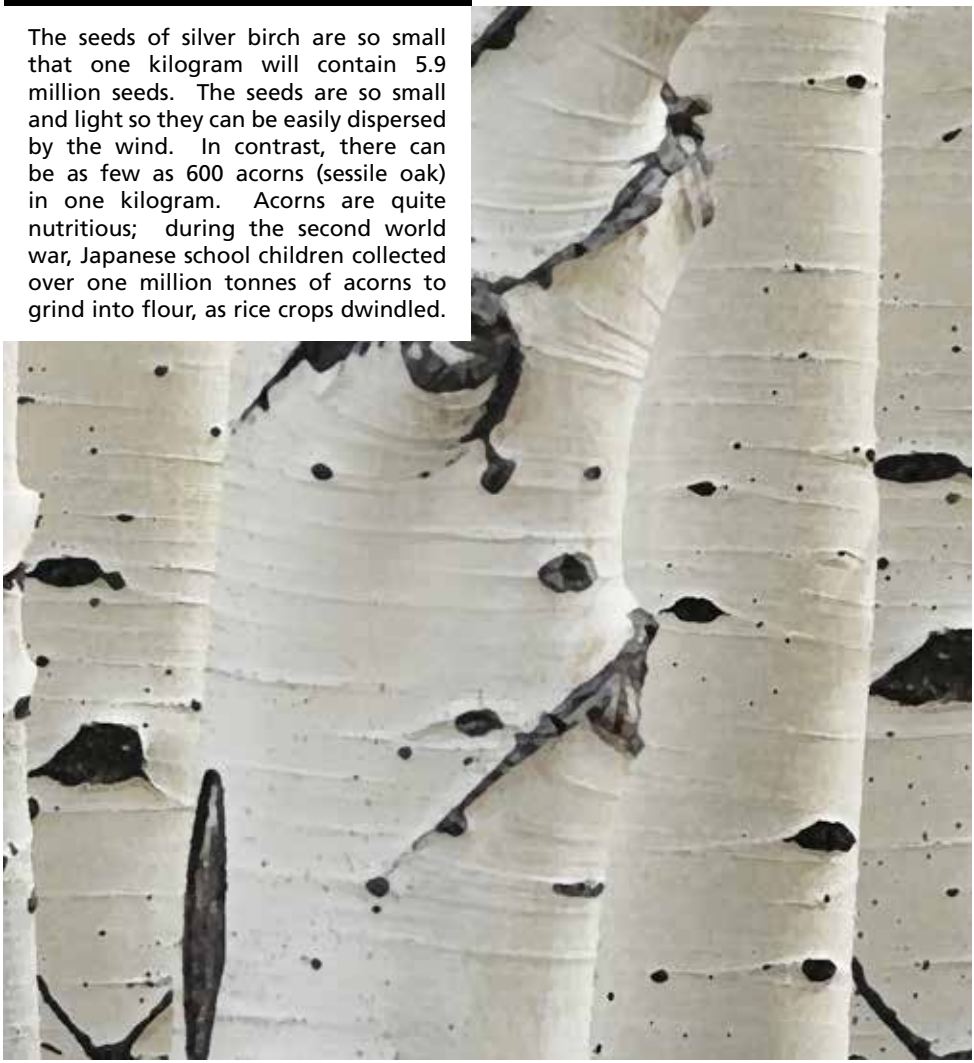
CONTINUED OVER

Impacts during construction may differ to those when a development is operational. It is important that both phases are considered when assessing impacts and proposing mitigation measures. Considerations should include timing of work, buffering around dens and providing a mosaic of habitats.

Native woodland planting will often support wildcats as long as the woodland density is not high and that there is plenty of edge effect. Conifer schemes and the erection of large deer fences without crossing points for wildlife may require mitigation measures. If it is not possible to avoid impacts on wildcats as a result of your plans, you will need to consider how to minimise any damage or disturbance.

DID YOU KNOW?

The seeds of silver birch are so small that one kilogram will contain 5.9 million seeds. The seeds are so small and light so they can be easily dispersed by the wind. In contrast, there can be as few as 600 acorns (sessile oak) in one kilogram. Acorns are quite nutritious; during the second world war, Japanese school children collected over one million tonnes of acorns to grind into flour, as rice crops dwindled.



Thinning Your Woodlands

Simon Jacyna *SAC Consulting*

Thinning is the selective removal of a proportion of trees in a crop to provide income and to improve the quality, and therefore the value, of the remaining trees by giving them more space to grow.

Most woods, whether coniferous or broadleaved, benefit from thinning but this article is mainly about conifer woodlands as these are the most productive woodlands on the majority of farms.

Many farms have productive woods and in particular if you planted a in the late 1990s it will probably now be ready for thinning as most of them are growing very rapidly.

Why is thinning important?

Conifer woods are typically planted at 2.0 m or 1.9 m spacing. This stocking ensures early canopy closure, even allowing for losses during establishment. Side branches are suppressed early, which reduces the formation of large knots in the timber and the quantity of low density juvenile wood in the centre of the stem.

As the trees grow, the smaller ones become suppressed and eventually die. Not all trees grow equally and some will be forked, leaning, crooked or may be particularly coarsely branched. Any of these defects will reduce the eventual value of the tree. A wood left unthinned will contain a high proportion of small and/or poor quality trees.

The objective of thinning then is to maximise the proportion of valuable sawlogs and pallet wood in the final crop by removing poorer quality competing trees early in the rotation. A thinned wood has a low density of good quality large trees. Sawmillers and other timber buyers want logs that are straight and free from defects. The price they will pay is determined by many factors but a good quality crop with a high proportion of sawlogs always commands a premium. Sawlogs, which have a minimum top diameter of 16cm, and minimum length of 3.1m, can currently achieve up to around £40/tonne net return if sold standing. For pallet-wood, the minimum diameter is less at around 14cm and shorter lengths can also be taken. Prices are typically in the range of £14 - £30/tonne. Least valuable is chipwood or pulpwood. This has a usual minimum diameter of 7cm and lengths down to 2.1m can be taken with a net return typically in the range of £4 - £12/tonne. For all categories prices are higher for a clear fell than for a thinning.

To give an example from two similar woods felled recently. One had been thinned twice and yielded 56% sawlogs at clear-felling. Six sawmillers bid very competitively for this. The other was unthinned and yielded only 18% sawlogs – only two companies bid for it.

When to start

Ideally a wood will be thinned three or four times in its lifetime. The first thinning is the most important as there is a definite window of opportunity and if this is missed then the crop may be permanently ruined. A delayed first thinning will increase the yield but may also increase the risk of windblow.

Preparation for the work should ideally start some years beforehand. To inspect the crop it is very helpful to prune a row of trees every 100m or so, say every fiftieth row, so you can walk through and assess the trees easily. Any roads or loading areas should be in place a year before work begins to allow them time to settle. Aerial photography, such as Google Earth, or your FID map, will also show how well the crop is growing and if there are any areas that are poorly stocked or not growing well.

The age of first thinning varies with species and growth rate, with the faster growing crops thinned earlier. The fastest growing Sitka spruce will be ready when it is about 17 years old . Slower growing spruce crops might be 25 or older before they are ready. In contrast for Scots pine the range would be 20 to 40 years.

What to remove

With modern harvesting machinery the first thinning is normally non-selective. Typically two rows are removed to create an adequate access rack for the machines. Seven or eight rows are left standing and ideally a quarter or so of the trees in those rows will also be removed. It is important that this is done selectively, and that only the smaller or poorly formed trees are taken. You must not be tempted to take the larger trees simply to boost the yield of pallet wood – this is merely stealing the future sawlogs. A first thinning in spruce may yield over 50 tonnes per hectare but with only about 5-10% pallet wood. This might give a net return of about £200 - £350/ha.

Other thinning patterns can be used; for example if small sized machinery is available, removing every fourth row can work well as all of the remaining trees get some benefit from the extra light.

Thinning should be repeated at 4 – 8 year intervals, again determined by the growth rate of the crop. Subsequent thinnings should always be selective with the poorest and smallest trees removed first, followed by some of the sub-dominant trees to leave the remaining trees reasonably evenly distributed. You do not normally expect to thin within 5 – 10 years of the planned clear-felling date.

The tonnage harvested from subsequent thinnings will be about the same as that from the first. With each operation the proportion of pallet wood and sawlogs, and therefore the net return, will increase significantly. In a wood that has been thinned regularly, nearly half the total income will be from thinnings. A significant bonus is that income from timber sales is not liable for income tax.

How viable is thinning?

The scale of the operation is always important as the costs of setting up a timber sale and getting the machinery onto site can be considerable for the timber merchant. As a rough rule of thumb, the price offered will start to drop off noticeably for sales with less than 1,000 tonnes. Considering the low value of a first thinning and possibly the need to create access points and loading areas it is not surprising that many people say that thinnings are uneconomic. Sometimes this may be true but as the example above shows, the first thinning is an investment in the future and is well worth doing even if it only barely breaks even.

Once the loading infrastructure is in place it will be there for the rest of the rotation. However, thinning can often be combined with some clear-felling or it may be possible for neighbours to arrange for work to be done jointly. Anything that can increase the scale of the operation will make it more viable.

How do I organise a sale?

There are many sawmillers, timber merchants and contractors who will buy timber standing. It therefore pays to shop around and we would almost always advise a standing sale by competitive tender.

Your forestry agent will first of all survey the woods and apply for a felling licence. This is required to harvest any timber in excess of five cubic metres in a calendar quarter. The agent will also prepare a schedule describing the timber, the access and other working conditions. This is circulated to the likely buyers and they are given typically a month in which to inspect the timber and submit a written offer. The offer normally specifies a price for each category of timber they expect to cut, though occasionally you will be offered a 'through and through' price – a flat rate for all the timber. Some woodland owners use woodfuel to heat buildings or dry grain so it is possible within the tender to specify a quantity of timber to be stacked at the farm for which the merchant will quote a separate price to cut and extract.

The price offered is the net return and the buyer pays for all of the costs of cutting, extracting and hauling the timber.

Your agent will evaluate the offers and prepare a written contract for the successful purchaser.

Once the work is underway you, or your agent, will receive weight tickets each week for the timber that has been removed from the site. Most timber merchants operate a 'self-billing' system though occasionally they will provide a load summary schedule and you, or your agent, have to raise the invoice. Invoices are usually raised monthly and paid at the end of the following month.

When is it best to do the work?

It can take up to a year or more to complete a sale from start to finish. Ideally the work is done in the summer when the ground is dry but this is also the breeding season. If there are badgers, red squirrels, birds of prey or other protected species, present it may be essential to do the work in the autumn or winter. Even then it may be necessary to get a licence to work in the vicinity of badger setts.

Merchants are seldom able to start the next day and it is customary to give a window of several months within which the work must be completed.

What access is required?

A lot of space is needed to stack the timber and for lorries to park and manoeuver. A large farm-yard is ideal. Elsewhere it may be necessary to create either a roadside lay-by or a hammerhead off the public road. For safety reasons local authorities do not allow you to load onto a lorry that is parked on a public road or to reverse off a public road into a loading bay. Therefore a hammerhead, at least 35m long, is needed to allow a lorry to drive in and to turn. A longer length allows more timber to be stacked. Poor access or a limited turning area makes the timber less attractive to potential buyers.

Under the Forestry Grant Scheme there are Forest Infrastructure grants available to bring small (less than 50 ha) undermanaged or inaccessible woodlands into active management. Payments are £25.80 per linear metre for new roads, £6.60 per square metre for turning areas or loading bays and £32.40 per square metre for bell-mouth junctions. Planning permission is necessary for new accesses from a public road and bell-mouths usually must have tarmac for the first six meters.

Small Woodland Management Project

Bruce Hamilton *Tayforth Machinery Ring*

Tayforth Machinery Ring is a members-owned cooperative that was set up in 1989. Farmers join it to access and supply services, such as combining, baling and labour. But we also collectively source commodities such as fuel at better prices, sell members' straw, and arrange a range of jobs that they don't do on a daily basis such as shed building and road repair. Many have been members for a long time, and the machinery ring is their first port of call, inspiring high levels of trust.

Fife has lots of small scale farm woodlands that are mostly 30-50 years old. They are often falling over and not only look terrible but can be dangerous as well. We set out to find a way of managing these small scale farm woodlands that the large forestry companies had often looked at and considered unviable.

So what do we do?

- We help farmers harvest small woodlands with large harvesting machines, proving it is possible to harvest profitably down to one hectare. We do this by paying on an hourly basis for the transportation, harvesting and forwarding.
- We arrange Woodland Management Plans and Felling Licences so that we can prove the timber that will go to market is both Legal and Sustainable – a key requirement for the biomass industry.
- We market timber to make high grade fencing materials with the balance going to biomass
- We also plant trees and do fencing to complete the package

What factors contribute to the success of the Ring?

- The transparency and low cost of Machinery Ring services using big kit to do small jobs
- An exclusive subsidy from the Forestry Commission to keep the cost of the management plans low. Farmers are more easily attracted by a relatively low cost of initial paperwork.
- Lots of members have biomass boilers, so there are a number of ready very local customers for timber – the lower the haulage cost the more we can return to the farmer.

What are the key messages?

- Just because some large forest management companies advise that a wood cannot be economically harvested, that does not make it so. We have a proven track record of making small woodland management cash positive.
- Separating the harvesting from the marketing makes the job fully transparent.
- A joint approach to harvesting and marketing whereby several farmers simultaneously harvest woodland gets better returns.

Why do farmers choose the machinery ring?

- By using Machinery Ring members for all operations and marketing, we are in control of the finances, and they are fully transparent. This provides

reassurance to woodland owners and increases trust that they are getting a fair return.

How replicable is this experience; what is its potential as an element of a better approach to forestry?

- This model can be replicated throughout the country through existing Machinery Rings.
- Without doing anything, most small woodland plantations will simply fall down and become worthless over time.
- Obviously this is a good way to convince farmers that small farm woodlands can actually be an asset when they often see them as a liability.

Example from October 2016

2ha of 35 year old Sitka spruce with broadleaves scattered throughout. Broadleaves retained and all Sitka spruce clear-felled.

Costs	Quantity	Rate/hr (£)	Cost (£)
Transport harvester and forwarder (hours)	7	70	490
Harvesting (hours)	19	100	1900
Forwarding (hours)	29	75	2175
Haul sawlogs to sawmill (tonnes)	68	15	1020
Haul biomass to plant (tonnes)	251	7.75	1945
			7530
Income			
Sawlogs (tonnes)	68	52	3536
Biomass (tonnes)	251	32	8032
			11568
Profit before planting			4038
			= £2,000/ha
Replanting costs (ha)	2	2000	4000

Job completed at no cost to farmer.

Restocking

Malcolm Young *SAC Consulting*

Restocking provides you with the one opportunity within the life time of a forest to make a complete change to the site; whether that be to the species, the design or indeed as happens from time to time, the place. The only other time this opportunity may arise is following windblow, but you don't have control of that, and it tends to make an almighty mess. In this article we look at how different factors influence how you will restock your site.

Return to productive or non-productive forestry?

The decision to restock a site with either productive species or amenity species will depend on a number of factors, all of which will interact with each other. Here we look at them individually:

- Timber quality. If your timber was of excellent quality it may well be sensible to return the site to production using the same species. If your timber was of mediocre or poor quality, look into why this was. Was the previous species poorly suited to the site, or were the trees from poor seed stock or unsuitable provenance? (eg. Sitka spruce from Washington seed sources which are intolerant of late frosts, resulting in multiple stems). If conditions allow, consider a change of productive species.
- Objectives. What are you wanting to achieve? Is it a pheasant drive, a timber crop, shelter, a recreational or biodiversity area? Each one will require a different approach to species, layout and planting density. If you're trying to establish a pheasant drive you may well want mixed woodland, taking the emphasis away from site-wide production. If you're looking at shelter, choose species which will provide that shelter best and most quickly.
- Access. This includes both to-site access and on-site access. If access is good then the site may well favour a return to production. However, if the site is on particularly steep or awkward ground, a long distance from a stacking area, involved forwarding timber across your fields (breaking your drains), or is badly segmented by watercourses, roads or powerlines, the hassle factor, or indeed the financial return, may suggest a move away from production so that the clear-fell/restocking process doesn't need to happen again.
- Area. Quite simply, the smaller the area the smaller the financial return, and vice-versa. Of course timber quality and access will also bear some influence on financial return. Similar to access, the hassle factor involved for a small piece of woodland may be so high as to deter one from returning the site to production.
- PAWS. Or Plantation on Ancient Woodland Site. These sites have had continual woodland cover on them

but at some time in recent history been converted to a plantation. They usually exhibit ground flora associated with ancient woodlands. Woodland owners are generally encouraged to return such areas to native woodland, or at least a proportion of them.

Rarely do these factors play themselves out individually, usually presenting themselves in some combination. Consider the production vs non-production merits with your agent.

Layout

The layout of your wood will be dependent on what you are trying to achieve. For instance an amenity/native woodland can have a more broken layout, where internal open ground or roads, powerlines and watercourses do not have any consequence on the wood. Conversely, a shelter belt or productive wood would not be able to fully perform their role due to these sorts of features as their ability to shelter would be compromised, or the proportion of edge trees with poor timber quality is increased.

In any event, there are some minimum requirements that must be followed in terms of layout, as required by the UK Forestry Standard:

- Forests must stay clear of watercourses by 10m where the watercourse is less than 2m wide, and 20m where the watercourse is greater than 2m wide;
- Minimum of 10% of the area must be retained as open ground (wayleaves are acceptable);
- Minimum of 5% of the area must comprise native broadleaves;
- Maximum of 75% of the area comprises a single species;

For woods of less than 10ha these requirements can be relaxed and assessed in the context of the local landscape.

Do try to correct previous design deficiencies, such as corner-to-corner conifer planting, by incorporating the open ground and broadleaves in areas which give a more organic shape to the wood, and which will benefit features such as soft, wet ground and watercourses. Bear in mind that badger setts cannot be disturbed and have legal protection, so make sure they are not planted on.

Ground preparation

In almost all cases a clear-fell site will need some sort of ground preparation. Planting young trees into a raised soil position allows the roots to get off to a good start; planted directly into the ground the trees are likely to sit and do nothing for a while.

Restocking sites will normally be mounded, creating a raised, dry planting position for the young roots to get off to a good start in. Make sure that mounds are not placed on top of thick brash, as the roots will not have anything to grow into beyond the mound. Instead the excavator should make a hole through the brash mat so the mound sits on the ground. Scarifying can also be used on drier sites.

It is absolutely essential that the stocking density of the mounds is correct – that is, the number of mounds per hectare, as one tree is planted per mound. Typically conifers will be required to be planted at a minimum density 2500 trees per hectare (2m between mounds) and broadleaves at a minimum of 1100 trees per hectare (3m between mounds). Getting the density too low can cause major headaches as space is sought afterwards to fit the plants between mounds.

Sometimes brash raking is carried out; however it is an extremely expensive process with little benefit for the new trees.

Given the amount of brash and woody material on site, it is an extremely harsh environment for machinery to work in. Contractor rates reflect this.

If fencing is required, take advantage of the excavator on site and clear the fence line to remove all debris from it.

An alternative method being increasingly used is the Bracke planter. This peculiar looking machine fits on the end of an excavator arm and both forms the mound and plants the tree, supplied from a carousel on top of the planting head.

Natural regeneration

It may be tempting to rely on natural regeneration; however this can only be done if success can be guaranteed. If the natural regeneration fails you will be required to replant the site, so one must be realistic about its success during planning and budgeting.

Also bear in mind what species will establish. In many cases this will be birch; does this fit with your objectives?

Pests

Many of you will be aware of the damage cause by deer as they nip the tops of trees or fray the bark on young trees. The erection of deer fencing, or use of tubes on broadleaves, will provide adequate protection, but can be expensive. If using fencing, check if you can minimise the length required by incorporating adjacent areas of standing forest which are planned to be felled in the near future. Voles are also problematic, nibbling the bark around the base of young broadleaves. So if planted inside a deer fence, broadleaves must also be fitted with short vole guards.

The pest that many are probably less aware of is the large pine weevil. An insect measuring up to 12mm long and coloured brown with patches of yellow, the weevils eat the bark of the young trees, causing girdling of the stem and death. Tree mortality of up to 80% can occur.

There are two methods of protection against weevil attack:

- Purchase plants treated with insecticide at the nursery, and follow with top-up sprays by knap-sack sprayer. There is however a push to move away from insecticide use;
- Leave the site fallow (usually for about four years) until the weevil population has collapsed.

Grants

Grants are available for restocking, however you must have an approved Woodland Management Plan or Long Term Forest Plan in place in order to apply for them.
There are two rates of grant available:

- £300/ha, for sites where 65% to 75% of the area comprises a single species, and broadleaf density of 1100/ha
- £550/ha, for sites where 50% to 65% of the area comprises a single species, and broadleaf density of 1600/ha

There are no grants for fencing, tubes or ground preparation.

Carbon Funding New Woodland

James Hepburne Scott *Forest Carbon*

Woodland Carbon – How it Works

Although the UK woodland carbon market has been in existence for some time now it can appear dauntingly complicated to the uninitiated. I hope we can shine some light on its workings here.

In brief: a woodland carbon project is one where the grant funding available was insufficient to allow a landowner or farmer interested in creating a new woodland to proceed, and where critical additional cash was sourced from a business wishing to mitigate its carbon footprint through the carbon dioxide (CO2) sequestered by trees as they grow.

That's the simple explanation – but there is (necessary) added complication because, to be credible in the eyes of stakeholders, such carbon projects require quality assurance. In the UK this comes in the guise of the Woodland Carbon Code – launched by the Forestry Commission in 2011. The Code offers independent verification of projects by UKAS accredited bodies to ISO standards. It is the only standard of its kind in the UK. The Code ensures that: the right trees have been planted, in the right place; the CO^2 sequestration estimates are project specific, scientifically sound and risk adjusted; the woodlands are managed to a high standard; the trees are protected in the long term; and the trees would not be there but for the intervention of the carbon funding partner. Certification under the Code allows the issuance of carbon credits – one credit equals 1 tonne of CO2 captured by a woodland – which can be sold to responsible businesses.

It is quite likely that neither woodland hosts nor carbon credit buying businesses have the necessary expertise to carry out the woodland creation, certification and sales transactions, and so businesses known as project developers exist to complete the process for all parties. An example is Forest Carbon, who are the U.K.'s leading project developer – having been founded in 2006, led the development of the Woodland Carbon Code and been involved in creating over 100 new carbon woodlands to date. Another 12 will be planted in Spring 2017.

The services provided by a project developer to a woodland host will include: project feasibility assessment (initial carbon calculations and valuation, judgement on likely certification outcome), management of entirety of quality assurance regime (this can include responsibility for ongoing verification for up to 65 years), sourcing of carbon buyer and completion of sales transaction, management of ongoing relationship with carbon buyer (including project updates, photographs and site visits) and the provision of liquidity (buying the project's carbon even where there is no end buyer identified). For carbon-buying businesses a good project developer will provide an ongoing pipeline of projects of varying sizes and location, assistance with marketing and PR so that it is compliant with government rules on green claims, and the maintenance of quality assurance certification. Project hosts and businesses could carry out any or all of these activities themselves and are not compelled to work with a project developer.

There are often questions about which sorts of projects can receive carbon funding, and the answer is: pretty much any size, shape or type of new woodland could qualify. Projects certified to date have ranged from less than 1 ha to 200 ha plus and covered management plans including non-intervention native woodlands and continuous cover, thinned and clear fell productive forests.

A range of businesses have purchased UK woodland carbon credits through Forest Carbon to compensate their carbon footprints – it is worth remembering that it is not compulsory for businesses to do this and they are acting out of altruism. Examples include Allstar fuel cards, ICAP, the Green Investment Bank, Waitrose, sofa.com and Nationwide.

Projects are usually in receipt of a planting grant but need to demonstrate that this was not sufficient to allow them to proceed. The level of supplementary carbon funding that can be raised varies depending on the type of woodland, projected growth rates and management plan. Typically it will be between 15% and 25% of the cost of establishment, with 70% of this sum payable on completion of planting, and 30% after satisfactory inspection in year 5.

Case Studies

Jim Reid, Messrs JD Reid and Partners, Milton of Mathers, St Cyrus, Montrose, Angus

Milton of Mathers is a mainly arable farm of 240 hectares, where cropping includes 60ha of seed potatoes grown on contract for McCain Potatoes.

This was the first project ever certified under the Woodland Carbon Code, and has recently undergone inspection for its year five re-certification (one of the first handful ever to complete this process). The woodland creation was managed by SAC, with carbon project development and certification management carried out by Forest Carbon. The carbon credits were bought by Forest Carbon's client The Green Insurance Company, who purchased them on behalf of drivers holding their car insurance policies.

The 18 hectare woodland is native non-intervention, and was planted by the project host for carbon benefit, biodiversity and the stabilisation of watercourse banks. It occupies two valleys where the land could not be cultivated, previously used for wintering cattle and it now enhances the farm shoot.

A 70 year contract was signed by the project host, agreeing to manage the woodland as set out in its initial management plan.

Jim Reid says:
"We finished planting in Spring 2009 and already we know we have a wood as it is establishing so well. This was a major decision for land-use change and we are now in no doubt that we made the right decision.

We used to winter cattle in these steep-sided dens and the rapid re-colonisation of ground flora since stock removal has amazed us. The resulting bird life is easy to see; but we suspect that the less visible insect and invertebrate life is also improving rapidly and this will have great benefit for life in the burns as well.

We believe that it's relatively sheltered location, in spite of it's proximity to the shore makes the new habitat particularly valuable and attractive to wild-life.

In this area of intensive arable farming, trees are scarce so this woodland is of significant scale, yet it's valley situation makes it unobtrusive in the landscape."

Alex Kirkpatrick, Barr Farm, Sanquhar, Dumfries and Galloway

Barr Farm is a livestock-rearing farm of 1118 hectares.

The new woodland was planted in 2011 under the management of SAC, and with Forest Carbon as the carbon project developers. The project has a native woodland compartment, approximately 13ha and a productive conifer compartment of 14ha. It has created a valuable long-term timber asset for the farm, provides valuable shelter and protects watercourse banks. It has also enhanced the farm shoot.

A 50 year contract was signed by the project host. It does not affect the farm's ability to sell the timber in the normal way.

Barr Farm was initially certified under the Woodland Carbon Code in 2012 and has also recently undergone inspection for its year five re-certification. The carbon credits were purchased by Forest Carbon's client BWOC in recognition of the carbon footprint of their fuel distribution network.

Alex Kirkpatrick says:

"The carbon finance from Forest Carbon was critical in allowing our planting to go ahead and the procedure was very straightforward. With this in mind, we will be looking to identify new sites on the farm to reinforce the existing pattern of shelter belts and to link existing woodlands and habitats which will assist in reinforcing biodiversity and managing stock movements around the farm."

For further information contact info@forestcarbon.co.uk

DID YOU KNOW?

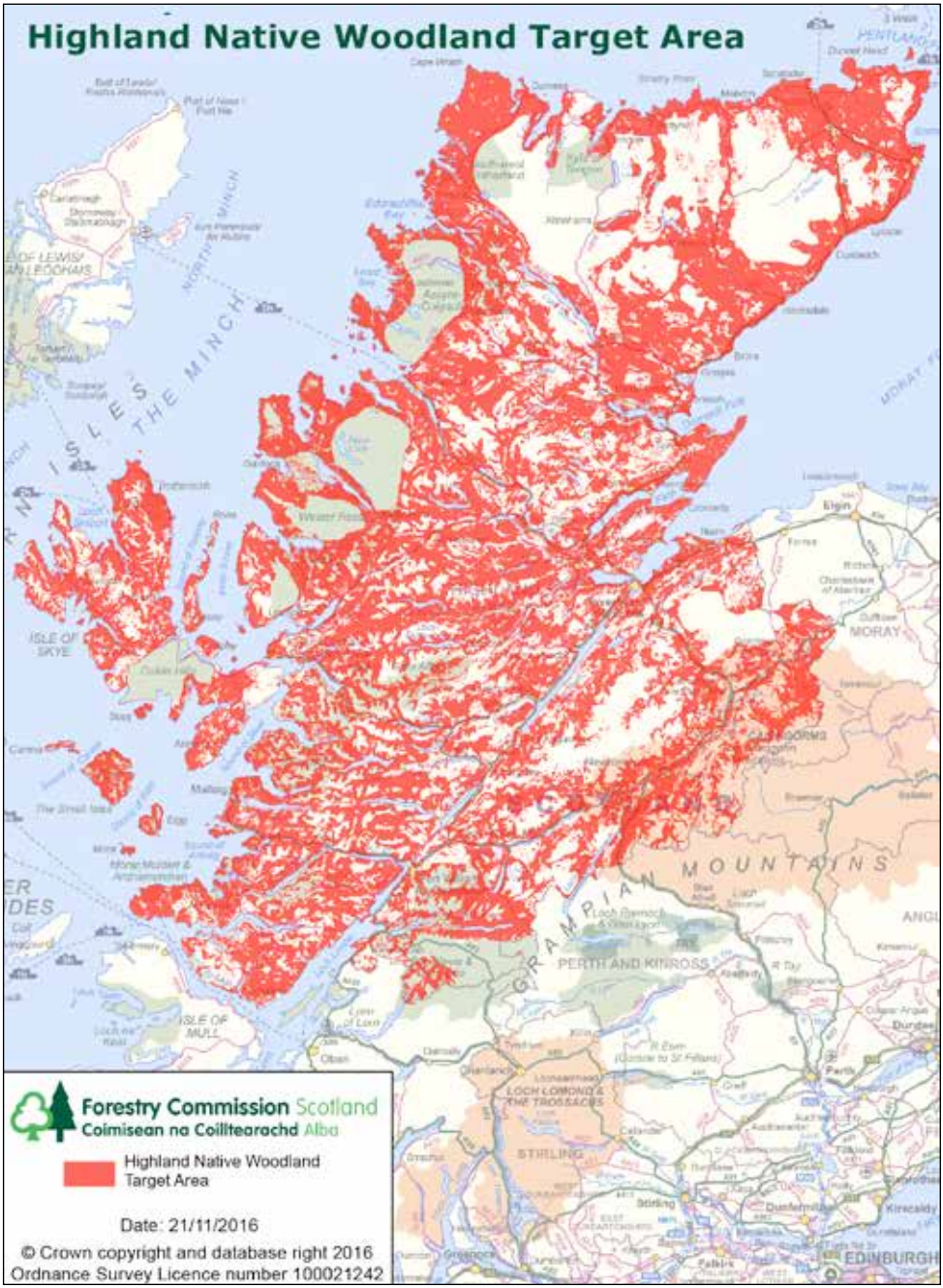
Beware the sandbox tree, native to tropical regions of North and South America. The dense, sharp spines on its stem are not what give this tree the label of most dangerous tree in the world, rather it's the fruit. The pumpkin-shaped fruits, measuring up to 5cm long and 8cm in diameter, explode so violently that they sound like a gun-shot, releasing seeds at a speed of 150 miles per hour over a distance of 10m, causing serious injury to people or livestock. The fruit itself is highly poisonous.

Forestry Grant Update

Creating new woodland is a key priority for Forestry Commission Scotland with the Scottish Government having a planting target of 10,000 hectares per year – that's 20 million trees. The Forestry Grant Scheme (FGS) is the main mechanism for supporting tree planting in Scotland and in an effort to maintain the momentum of planting applications we are introducing a key change to the woodland creation grants:

- the target area for native woodland within the Highland Council area is increasing (see attached map). This means that more landowners and farmers will be eligible for higher grant rates for native woodland planting (see rates below). We are also introducing a new capital item for high cost deer fences of £9.90/metre in certain areas, which will increase the funding available for woodland projects in the Highlands and some other parts of Scotland. To ensure successful establishment, a grant of £225/ha is now be available for controlling bracken for native woodland planting. Since 2015, one of the benefits of tree planting is that farmed land that is eligible for the Basic Payment Scheme and is afforested under the Forestry Grant Scheme will continue to be eligible for the Basic Payment Scheme.

Woodland Creation option	Payment rates in target areas		
	Initial planting payment rate(£/ha)	Annual maintenance payment rate (£/ha/year) for five years	Total payment rate (£/ha)
Native Scots Pine	2070	306	3600
Native Upland Birch	2070	144	2790
Native Broadleaves	2070	306	3600
Native Low-density Broadleaves	630	108	1170



Further details on forestry grants can be obtained from your local Forestry Commission Scotland Conservancy office or from the Rural Payments Services web site.

Pruning Broadleaves

Eamonn Wall *Eamonn Wall & Co*

Why Prune?

From a forestry point of view, the aim of growing trees is usually to produce timber as the primary objective. When growing broadleaved trees the aim is usually to maximise the quality of the timber being grown by producing a straight bole without any branches and with minimum 6m length. Branches create knots, therefore reduce the quality of the timber.

From an arboricultural perspective, pruning is very important to encourage good tree form and in particular to promote one leading shoot. Many trees are inclined to fork and create two (or more) leading shoots which eventually often burst apart. Formative pruning helps form a tree with one leading shoot, which is also necessary for the production of quality timber and a balanced tree.

Pruning tools - anvil loppers folding saw, rigid saw, pole saw

A woodland containing pruned trees looks so much better and inspiring compared to an unpruned wood. It keeps woods open and makes them more enticing for visitors. However, when creating tree belts to hide industrial buildings, we refrain from pruning as the greater concentration of branches enhances the screening benefits of the wood in this specific situation.

A good reason to prune is the simple enjoyment it brings, being very rewarding work. To prune a wood and then walk back through it seeing the great improvement is a joy to many.

Aim of Pruning

The first aim of pruning is to encourage one strong straight leading shoot followed by the removal of side branches to create a clean stem or bole.

Once you have got all your trees growing with single stems, the next aim is to then start removing the side branches. It is important to remove the side branches when they are still alive as this allows the tree to cover over the pruning wound with bark as soon as possible whilst minimising the impact of the branch knot in the timber of the tree. If the branches being pruned are dead then the knot within the timber will also be dead and may downgrade the value of the timber. It will also compromise the tree's ability to bark over (or occlude) the pruning wound.

When to Prune?

We usually find that we start pruning in year three or four and then again in years five or six, and seven and eight. It really depends on how well the trees are growing and the species that has been planted. Over time the amount of pruning required by the crop reduces.

High pruning oak - side branches perfect for pruning

In the early years we refer to the pruning as formative pruning and once the pruning is higher up the bole, only removing side branches, we refer to this as high pruning.

How to Prune?

It is certainly easier and quicker to prune off smaller branches than larger ones. Smaller pruning wounds also heal much quicker, reducing the possibility of decay or entry of unwanted tree pests or diseases. So it is best to start early.

Formative pruning is best carried out using loppers, which is a fast and easy way to single leading shoots and remove small side branches. However if the pruning has been delayed some branches may be too large for the loppers and a small pruning saw can be used on the odd occasion as required. A small foldable pruning saw is ideal for this work.

There are many variations of loppers available, some with telescopic arms. Weight is important if you are going to be pruning for several hours. There are two types of blades: 'side by side' where one blade passes by the other, and the type we prefer, the 'anvil' where one blade meets the other. The advantage of the anvil arrangement is that you do not get carried away trying to cut through branches too large which easily happens with side by side blades causing the blades to get stuck or bent by a branch.

As the trees become larger, the branches to be removed obviously get larger too and a point comes when the lopper is being used less and the pruning saw more. When this happens it is best to switch to a larger pruning saw which has a larger pruning blade (eg 350mm) than the folding saw (eg 150mm). A longer blade is much quicker to use and can be kept in a sheath or protective pouch attached to your waist belt.

As the pruning proceeds the branches to be pruned are higher up the tree and a high or long handled pruner will then be required, perhaps one with an extendable handle. Pruning with loppers and hand saws will reach about 2.5m up the tree, whilst a high pruner will add another 2.5m.

For all pruning it is important to cut the branch off as close as you can get to the bole of the tree without cutting through the ridge or raised bark that often exists at the joint of the branch and the main bole of the tree. This is known as the branch

Correct pruning location

bark ridge and is more obvious in some species than others. It is also important not to leave branch stubs (or small lengths of branch) which will decay back into the main bole, downgrading the quality of the timber. By pruning close to the main bole it allows the tree to bark over (occlude) the pruning wound as soon as possible.

Pruning too many branches in one go is also not a good idea as it reduces the leaf cover of the tree, slowing its growth. For the leaves are the producers of food for the tree converted from the sun's energy rays. Therefore it is important not to get too carried away and prune off too many branches. Always ensure that the crown or area of branches covers one third of the height of the tree.

What Species to Prune?

In a mixed stand of trees we usually prune the oak, beech, cherry, sycamore and (until recently) the ash. Birch is almost self pruning, as its side branches die off very quickly. Alder can be pruned but take a lot of work to do so. Lime has a more heavily branching habit and require much pruning to keep them growing as a single bole.

Oak in need of formative pruning

Ash dieback is a sad affair and it now seems pointless to put effort into pruning them if they are going to die. It is such a shame as ash were always one of the faster and straighter growing trees in a mixed stand, and also one of the easiest to prune too. They usually required just one or two prunes to single out twin leaders, where the central bud had been damaged or broken causing the two side buds to form into two leading shoots. We rarely prune rowan or willow.

Pruning of conifers is not so common, apart from the singling of double leaders.

Pruning Intensity

Over the life of a woodland crop of trees many of them will be removed by thinning. So in many ways it does not seem sensible to prune all the trees. However, when the trees are very young it is hard to know which ones will make it to the final crop. So in order to provide the best crop from which to promote the best ones to grow on, it is important to carry out formative pruning of all the timber trees. Though not all trees will require formative pruning, all trees will require side branch pruning, and once this carries on up the tree as high pruning, you are starting to invest a lot of time. For this reason we then restrict high pruning to the better trees.

We also find that before high pruning creates a 6m branch free bole, thinning has taken place thus removing the poorer stems whilst promoting the better ones. Sometimes good stems will be thinned out to give space to promote other good stems. This of course reduces the number of trees requiring pruning. A well growing mixed broadleaved woodland could well be thinned three times and pruned four or five times by age 20.

High pruning is usually carried out in lifts, perhaps removing 1m to 2m worth of side branches from the bole in one go or lift.

It is vital to keep tools sharp, to wear gloves and a hard hat when high pruning. Also disinfect tools to reduce the risk of spreading any tree diseases.

Time of the Year to Prune?

It is generally considered that, apart from just before coming into leaf and just before leaf fall, trees can be pruned all year round. Cherry should only be pruned in July to reduce risk of infection from silver leaf disease.

Winter is usually considered the best time to prune as the trees are leafless and it is easier to spot which branches need removal. Additionally, the ground vegetation is down so it is easier to move about the wood, and winter is often a generally nicer time in the woods with few insects to annoy you.

My top tip for formative pruning is to always look up into the crown as the best thing you can do for a tree is to single twin leading shoots. It is easy for the pruner to remove side branches and forget to look up!

For more information contact
eamonn.wall@eamonnwall.co.uk

Happy pruning

Pruning Saws, foldable one handy to have in your pocket when using loppers in the early years

DID YOU KNOW?

The fastest growing tree in the world is the Royal Empress or Foxglove Tree. Native to central and western China, the tree can grow up to 6m a year, or 30cm in three weeks.

Species Focus – Sitka spruce

Sitka spruce (*Picea sitchensis*), more commonly known just as 'Sitka', originates from the west coast of North America, where its range is narrow (only around 400km wide), but very long, reaching from California to Alaska (2900km). In its native regions it can grow as tall as 80m. Sitka was introduced to Britain in 1831 by David Douglas.

The species thrives so well in Britain because of the similar climate to the west coast of North America – damp and mild. It prefers areas where rainfall is greater than 900mm per year. This, in combination with its ability to grow in exposed areas without becoming deformed, is one of the reasons it has become so popular in this country.

Sitka grows well in a wide range of soils, performing well in gleys but doing best in deep fertile soils. Even where deep rooting is not possible it can grow well, but a price is paid in terms of crop stability as it matures. It doesn't like very shallow and dry soils.

The tree is easily recognisable from its blue hue. The needles are a dull green on top and a distinctive pale blue on the underside. Stood next to a Norway spruce which is a vivid green, the difference in colour is striking. The needles are very stiff and prickly so shouldn't be used for Christmas trees! The cones have wrinkled and serrated edges on the bracts and, at 6-8cm long, are much shorter than those of Norway spruce. Its bark is purple-grey and once mature forms into large plates.
In its native region, indigenous people used the roots for weaving baskets and hats, and the resin used as a caulk for canoes. During the gold rush era, Sitka was of minor importance, with Douglas fir being preferred for buildings and bridges. It wasn't until the first world war that the benefits of Sitka's timber properties were realised, with its high stiffness and strength relative to its density making it ideal for the construction of aeroplane frames and propellers. In fact the Wright brothers' first controlled, powered heavier-than-air flight made use of Sitka timber.

The major expansion of Sitka spruce forests happened between 1950 and the late 1980s, as part of a national security drive. It was preferred over Norway spruce largely due to its faster rate of growth. Seed was taken mainly from the Queen Charlotte Islands which are on the same latitude as the UK, with trees showing a good combination of growth and frost hardiness. These days, young plants are either grown from seed from mature seed orchards where trees are known to have superior growth and quality traits, or from vegetative propagation which typically yields a more uniform final crop and gives improved quality traits.

Sitka timber is suited to a wide range of uses and includes construction-grade timber, pallets, packaging, fencing, panels and paper. British-grown Sitka generally does not lend itself to furniture manufacture or fine joinery.

With its easy ability to establish, tolerance of a wide range of site conditions, rapid growth and wide range of uses, its easy to see why Sitka has become the dominant timber species in the UK.

Integrating farming and forestry

Stephen Adlard *SAC Consulting*

Integrating farming and forestry has long been seen as a valuable way of maintaining vibrant rural communities while helping the government to achieve its forestry planting targets.

Most farmers will readily recognise the value of having woodlands on farms. There may be a wide variety of benefits including; providing shelter; dealing with an eroded bank or boggy hollow in a field; provide game cover or wildlife habitats; screen off some ugly buildings or produce some valuable timber.

Figure 1) Mixed woodland planting to help protect an eroded bank.

For these benefits to be realised it is essential that the woodland planting is well thought through and then designed carefully to achieve the desired objectives. Difficulties can arise when the objectives of the planting are not appropriate. For example, if a small boggy hollow in a field corner is planted with the expectation of profitable harvest at the end of the rotation then this is only likely to result in disappointment. The small area is going to be uneconomic to harvest, there will be a high proportion of low quality, heavily branched edge trees and wind blow is likely at an early age before the trees have reached a decent size. In this situation, planting with other benefits in mind such as shelter, biodiversity, improving water quality may be more appropriate with maybe a small amount of firewood being the most viable timber product.

Planting on a commercial basis does require a significant area of planting. The size required will depend on a lot of factors such as the ease of access, proximity to markets and species chosen. For Sitka spruce, Scotland's main commercial species, the Forestry Grant Scheme scoring system for productive conifer gives a useful indication of the planting area required to be commercially viable. Here, the minimum planting area is 2ha although any planting under 20ha struggles to reach the minimum threshold score to be eligible for grant support. If the planting has a commercial objective as a way of diversifying farm income then plantations of over 20ha should be considered and ideally planting of over 50ha.

One such example is given below for an Ayrshire farm. Here the farmer due to personal circumstances, wanted to downsize. He had an outlying piece of land that while it had a few wet hollows, it was generally on well drained brown earth soils. Although the area was dissected by a wayleave reducing the area suitable for planting, there was a ready made stoned access route in the plantation area constructed by Scottish Power when

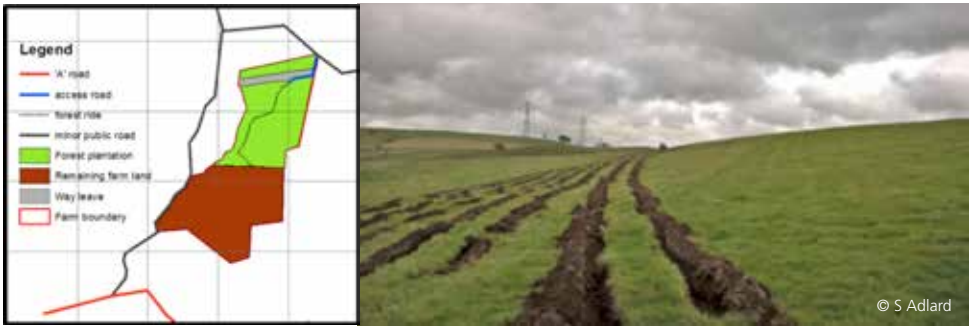


Figure 2) An ideal relatively small scale but commercially viable plantation established in Ayrshire.

erecting the electricity pylons. This will make a perfect route into the plantation when it comes to harvesting the timber. As can be seen from Figure 2, the slopes were also generally moderate, facilitating machinery access. In addition the site was within 2km of an approved timber transport route and within easy reach of a variety of timber markets. The planting area amounted to about 30ha and so was at a scale that would make future harvesting economic. All these factors meant that it was an ideal site for establishing a relatively small but still commercially viable plantation. The additional bonus here was the site is in the core Central Scotland Green Network area and qualified for an additional planting grant of £2500 per hectare above the target area planting grant and other capital grant items. This meant it was possible to make a net profit in the high tens of thousands of pounds on the establishment of the woodland.

Many farmers will not be in a position to divert such a proportion of their land into forestry although for some upland farms, with suitable access, planting on such a scale is likely to be possible and if the location of the planting is well thought through, can boost sheep production by providing shelter, and assist in stock management. If there is an on-farm use for the timber, such as feeding a biomass boiler, then smaller scale plantations may be more appropriate.

On a smaller scale there are numerous ways to integrate forestry and farming. On this scale tree planting is often considered as a way of "making use of land not suitable for agriculture".

Figure 3) Gorse over topping young Scot's pine.

However, the "use" of the woodland needs to be carefully thought through if the planting is to be successful. For example, the planting of a steep sided cleugh may help keep the livestock out of this area but extracting timber from it in the future may be, if not impossible then uneconomic. Native woodland planting providing amenity, carbon sequestration, biodiversity and water quality benefits may be more appropriate than trying to grow timber.

Another common example of this kind of planting is planting a gorse covered bank. Clearing of the gorse needs to be factored into the budget and ways of preventing the gorse recolonising the site, by way of herbicides or cutting, need to be carefully thought through if the planted trees are not going to be overtopped by the vigorous gorse if it is not kept in check.

Whatever the scale of planting provision of shelter is often a key objective when integrating forestry with farming. There are many ways that this can be done. Simple shelter belts are probably the most common. Here, again careful design is essential. A semi-permeable canopy made up from a mix of different tree species including light crowned broadleaved, such as birch and oak, will slow the wind down, creating a favourable environment for the livestock on the leeward side. A dense barrier of spruce will deflect the wind providing shelter immediately adjacent to the trees but this will not extend far into the field as turbulent eddies will be created. The light crowned mixed shelter belt will also allow an understory to develop or a hedge to be planted along the edge windward side thus providing low level shelter close to the shelterbelt suitable for say outdoor lambing. If there are to be arable crops planted by the shelter belt then small growing light crowned species should be planted near the edge so as not to create shade for the adjacent crop.

Figure 4a) Hedge and smaller trees planted to the leeward side with taller trees behind. Note how there will be very little shade cast over the field.

Shelter woods are also a common form of shelter for livestock. This is where livestock are allowed into the woodland to benefit from the shelter and graze the understory. If poorly managed, such grazing can be detrimental for the woodland. Overgrazing of the understory will lead to the disappearance of any low level shelter that may have been present. If cattle, especially, are allowed free access to the area, poaching the land will be inevitable. The tree roots will be damaged, eventually leading to the wind-blow or death of the trees and the eventual disappearance of the wood. Often such mismanagement is the result of the fences, either deliberately or through neglect, being left to deteriorate and livestock eventually gaining free access to the woodland. If the fences are maintained, the grazing pressure can be controlled and these problems overcome.

Woodlands can be specifically established to provide this kind of shelter. On the Bolfracks Estate in Perthshire this was carried out successfully by the owner, Athel Price, (see figure 5.) He established this 40ha plantation about 20 years using ash, sycamore, birch and cherry. This was planted at 2x2m spacing with thinning starting early at 10 years of age. This woodland has been thinned three times to achieve the current spacing and one further thinning is planned. This heavy pattern of thinning has allowed a grass sward to develop but the land is still clearly a wood rather than park land. The fence is kept in good condition and grazing controlled so as not to damage the site. Cattle graze the woodland in summer where they benefit from the shade while sheep are allowed in at times in the winter to benefit from the shelter.

Figure 5) 40ha shelter wood at Bolfracks Estate, Perthshire

These are just some examples of successful integration of forestry with farming. There is no one correct way of integrating trees with farming. What is certain, however, is then any integration has to be carefully thought through with the landowner being very clear about what they are trying to achieve and then locating and designing the woodland with these objectives clearly in mind.

Overhead Power Lines

Fiona Maxwell *Scottish and Southern Energy Network*

Overhead power lines (OHPL) can be seen in two primary configurations where the wires (conductors) are supported by either metal towers (Towerlines) or wooden poles. Towerlines typically carry 132kV to 400kV whilst wooden poles typically carry up to 66kV, but can carry up to 132kV.

Figure 1) Examples of Overhead Powerline Configurations

The conductors on both types of OHPL are generally uninsulated which means the electricity carried along them has the potential to arc or jump across small air gaps. For this reason, minimal distances (vicinity zones) have been specified by the Electricity Networks Association Technical Specification 43-8, around each conductor which ensures that, when maintained, people, machinery and the network are protected from the risks of flashovers, electrocution and burns.

For safety, there is also a specified minimum height above ground that the conductors must be maintained at, which varies depending on the voltage carried and what the line over-sails. When carrying out any operational or development works, always consult with your Network Operator for specific advice and guidance relating to safety clearances.

Safe Working Practices near OHPLs

Health and Safety Executive Guidance Note GS6 (Fourth Edition) Avoiding danger from overhead power lines is the primary reference document for all operations adjacent to power lines. Additionally, there is specific guidance for tree felling and other forestry related operations offered in the Forest Industry Safety Accord (FISA) Safety Guide 804 Electricity at Work: Forestry. Both guides provide the safe working practices required to prevent the injury or death of people working in close proximity to OHPLs and also advise contacting the Network Operator to discuss your proposals to ensure your safety measures are suitable for task.

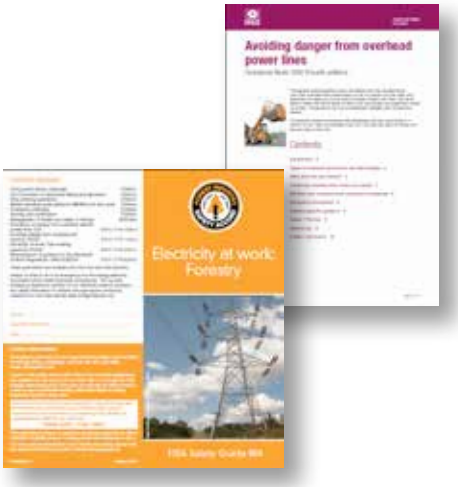


Figure 2) Front Cover of GS6 and FISA 804

For tree harvesting operations, all trees adjacent to the OHPL that are at risk of striking the vicinity zone or the conductors are referred to as 'Red Zone' trees. These trees require the OHPL to be de-energised before harvesting can commence. Only the Network Operator can fell or harvest trees with the line energised and only using Network Operator authorised personnel. The 'Amber Zone' includes all the trees one tree length beyond the 'Red Zone' or trees located in the 'Red Zone' which are too small to breach the vicinity zone or conductors. It is normal practice to retain the 'Amber Zone' until the outage is arranged, to act as a protective buffer to the 'Red Zone' trees and ultimately the network. All other trees are called 'Green Zone' as they pose no threat to the network; however these should not be removed prior to consultation with the Network Operator.

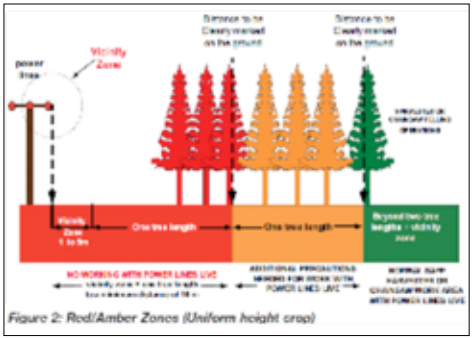


Figure 2: Red/Amber Zones (Uniform height crop)

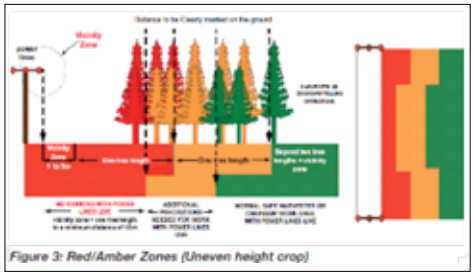


Figure 3: Red/Amber Zones (Uneven height crop)

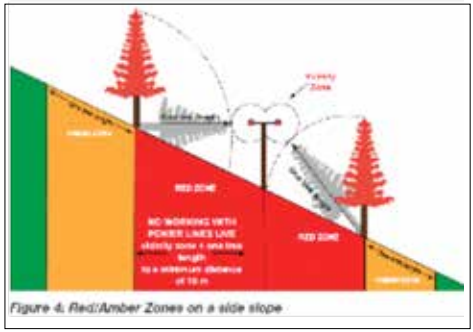


Figure 4: Red/Amber Zones on a side slope

Figure 3) Example Red/Amber Zones from FISA 804

Where forestry machinery has to pass under the power line, there is a requirement to have the overhead line measured by the Network Operator to ensure that there is suitable safe clearance to travel underneath. Once the safe clearance height is established, signage, goalposts and safety barriers should be erected as per the Network Operator's advice to ensure the machine operator only passes where the height measurement was taken.

Where other forestry or agricultural works are required within 10m to the OHPL, such as establishment mounding, fencing, spraying or even controlled fires, it is advisable to ask the Network Operator for safety advice to reduce the risks associated with these operations as per HSE GS6 and FISA 804.

New Planting and Restocking

The Network Operator as a regulated company, have Electricity Safety, Quality and Continuity Regulations (ESQCR) to ensure their network is safe and minimally interrupted. Trees are a considerable risk to the network, accounting for a significant percentage of faults over the past decade. The majority of these faults are caused by windblown commercial conifers located adjacent to the network. New planting and restocking provides an opportunity to remove tree hazards and the operational constraints of the 'Red Zone' adjacent to the network. Creating an 'operational corridor' where open ground is utilised to 10m either side of the network immediately reduces the 'Red Zone' constraints and when native broadleaves are planted beyond the open ground, the future 'Red Zone' constraints are further reduced whilst network resilience is increased. This 'operational corridor' could be included in native woodland creations, commercial conifer plantations and restocking proposals as it encompasses many of the required elements of the current UK Forestry Standard.

CONTINUED OVER

Safety Procedure in the Event of an Emergency

Accidents and incidents involving overhead/ underground power lines are still occurring. This is why it is important to have all operations planned well in advance, in consultation with the Network Operator. The FISA guide Look up Stay alive is a good addition to any work pack, offering practical emergency advice. HSE GS6 and FISA 804 both also offer emergency procedures.

In the event of someone or something coming into contact with an OHPL:

- Never touch the OHPL wires.
- Assume the wires are live, even if they appear to be dead.
- Remember dead wires can be automatically re-energised at anytime, especially if the Network Operator is not aware of the damage.
- If you can call the emergency services, give them your location and tell them electricity wires are involved.
- Dial 105 to contact the Network Operator to report the contact/damage.
- If you are in contact with, or close to, a damaged wire, move away as quickly as possible and stay away until the Network Operator confirms it is safe to return.
- If you are in a vehicle that has touched a wire, either stay in the vehicle or, if you need to get out, jump out as far as you can. Do not touch the vehicle whilst standing on the ground and do not return the vehicle until the Network Operator has confirmed that it is safe to do so.
- Be aware that if a wire is touching the ground, the area surrounding it may be live. Keep a safe distance away from the wire or anything else it may be touching and keep others away.

105 is the new emergency phone number for all Network Operators. It is simple to remember and will ensure you are connected to the appropriate Network Operator for the area you are working in.

Timber Market Report - March 2017

Graeme Ralph *Euroforest*

As I am sure many of you are aware, the timber market is not unlike the agricultural market – domestic prices are controlled by factors out of our control! We are a net importer of wood-based products so domestic prices reflect the combined effect of demand here, in the rest of Europe, and exchange rates. The combined effect of all of the above meant that 2016 began poorly. After a slow-down in activity towards the end of 2015, it muddled along through the mid part of 2016, then thankfully demand picked up dramatically in the final part of the year.

The result is that we are now back to sawlog prices which are as good as they have been over recent years, which have been historically high prices. As this is where the bulk of the value is in your timber crop, it's good news for you as a woodland owner. House building is already strong this year, and with the combined effect of UK government support and the traditional uplift in demand as we move into Spring and Summer, we would expect that demand for sawlogs will remain good for the remainder of this year. In addition to the widespread good news on log prices there are price hot spots in the Borders where new sawmilling capacity has increased demand locally, as well as the West Coast where demand from Irish sawmills is boosting prices ahead of other areas.

At the other end of the tree the situation is less clear cut. One of the biggest board manufacturers in the UK suffered a catastrophic turbine breakdown towards the end of 2016. Although the main impact of this is being felt south of the border, it is having a knock-on effect in Scotland. Having said that, biomass plants continue to spring up throughout the country, and although they are relatively small scale, this is certainly boosting demand. In addition, Norbord are well advanced with the building of a new line at their Inverness plant which will see their wood requirement double once it comes on stream at the end of this year which will both increase their catchment and help boost returns for small roundwood.

Overall then, although current demand for the poorer portion of the tree is not as strong as we would like, this is more than offset by the strong sawlog demand meaning that average returns per tonne across all products are still at the upper end of where they have been over recent years.

For more information visit
www.euroforest.co.uk

Competition

Congratulations to Avril Aitken of West Linton, for winning the spring 2016 competition. The question was 'The Latin name for Western hemlock is Tsuga heterophylla. But at one point it had an alternative Latin name; what was it and who requested it?'

The answer was Tsuga albertiana. Queen Victoria had such high regard for the timber that she requested its name be changed in honour of her husband Albert.

This edition's question is: When was the first chainsaw made and what was it used for?

The prize is a variety pack of 12 young trees.

Please email your entry to:
tracey.mcintosh@sac.co.uk

WHEN was the first chainsaw made and **WHAT** was it used for?