



# Managing small woodlands

*Simon Lockwood has spent years seeking to manage small woodlands for profit - not easy when getting the timber to a roadside location could cost double the value of the timber. But now firewood sales are changing the economics.*

The dramatic change in the price of domestic energy is not all bad news! Thousands of hectares of woodland, previously destined to die in obscurity, are now the focus for many a budding woodsman. Trees of all shapes and sizes are worth money. The hike in fuel costs has brought a dramatic increase in woodfuel awareness, utilisation and value, driving up the value of logs for processing into firewood and kindling by over 300 per cent. Managing small woodlands, no matter how small or difficult to access, is now financially viable which has led to renewed enthusiasm for small woodland thinning. The dilemma will be what to do with the best quality trees retained during thinning operations, if their financial value as firewood rises above the saw log value. These trees should be reserved for better things than burning!

## **An ecosystem, not a crop**

Owners can now profit from thinning their woods, but a different set of skills and resources is required. Hand cutters are the key. Modern harvesting machines are not suited to operating in small woodlands, as they require

an excessive number of trees to be cut during thinning to make space for them to operate. Trees are needlessly removed before they achieve their full growth potential, which is far from ideal when trying to maximise overall timber output. Hand cutting and using smaller machines are well suited to a 'little but often' approach to maximise timber output and minimise the impact on the woodland, respecting the fact that we are dealing with an ecosystem, not a crop.

Cutting timber by hand is a very, very, very, (did I say very) hard physical task and experienced chainsaw cutters who can fell trees on a production basis (i.e. paid by output not by the day) are thin on the ground. On a good day, with a strong arm, ten tonnes of felled trees per person is a realistic output. Even with reasonable levels of pay (£13.50/tonne), the hard physical nature of the work puts many off. Chainsaw cutting as a full time job is certainly not for the faint-hearted and few do it five days a week but a mix of cutting, extracting and processing activities can give a break from the hard graft of felling.

When it comes to machinery, we are spoilt for choice: any colour you like with as many wheels as you could ever dream of. There is no shortage of what might be called mini, small scale or compact - but let's call it 'appropriate scale' - equipment. Appropriate scale is exactly what it is about. We would not bring in a D8 (a mammoth tracked bulldozer) to tend our raised beds!

## **Extraction methods**

Getting the timber out of the wood is obviously critical, yet on many sites no consideration is given to how this will be achieved until all the trees are already on the ground and crosscut - severely limiting the options! This could be funny (possibly) if you have five tonnes lying, less so if you have 800 tonnes to deal with - a dilemma encountered on one site I visited. Planning how the timber will be extracted before it is felled can save a lot of time, effort and money, making all the difference to whether the operation is financially successful or not.

Trees are sometimes cut and extracted in one piece (pole length), then cut into shorter lengths at the roadside.



For firewood production, these shorter lengths are two or three metres. A range of lengths is used for other products, such as flooring or small diameter saw logs, and is decided according to the quality of the individual pole. This system can use simple equipment, like a tractor and a frame with chains on, but it is essential to keep the tree out of the muck as dirty wood wreaks devilish havoc on saw blades. Poles of almost any length can be pulled out of the woodland (skidded) with a winch mounted on the back of a tractor. Winching can also be used to extract safely on steeper ground. Both winching and chain systems can be accomplished with any tractor up to 100 horsepower, offering the chance to utilise existing standard farm machinery.

Trees cut to pre-determined lengths *in situ* (shortwood) can be removed from the woodland by hand-loading two-metre lengths onto tractor-mounted frames (front and back - about two tonnes per load) or trailers (five tonnes) or crane-lifting three-metre lengths onto a trailer. Specialist appropriate scale forwarding machines (one to three tonnes in weight) with exceptional climbing ability and minimal site damage characteristics are available in a compact but perfect

Opposite page, clockwise from left: A Vimek Woodland Idyll; The thinner-wheeled Vimek is another of the "specialist small forwarding machines", the Alstor being a better climbing machine.; Roadside hardwood firewood stack (about 16 tonnes). Above, clockwise from left: Forwarding planning; It is best to plan how to get the logs out of the wood before cutting the trees down; An Alstor at work on a slope deep in the jungle of East Lothian, with a hand cutter standing by.

form. These little beauties can work small woodlands effectively and efficiently. They are mostly contractor-operated machines but are an option for estates with myriad small woodlands.

Regardless of the method adopted, when cutting to length for firewood decide what length you are using and stick to that length for each piece. There will be a bit left over but this can stay for the bugs. Random lengths do nobody any favours!

### IWPAPS

This is all good stuff but we need to improve the efficiency of the extraction process. To my mind the ultimate in firewood production is 'in-wood processing and partial seasoning' (IWPAPS). Trees are felled, cross cut into one-metre lengths, then split and stacked to dry (season) in the woodland. This way we avoid wasting money, calories (humans) and kilowatts (machines) on stacking, lifting, forwarding, stacking, transporting and lifting something that we don't need and certainly don't want in our firewood stack - water, which often represents more than half the weight of the freshly-felled timber. Regrettably, I cannot take the credit for inventing this amazing, environment-friendly firewood production system as the French, Germans, Austrians, Polish, Slovaks, Italians, Romanians, Hungarians, Swedes and Finns all do it this way! And those are just the places I have had the opportunity to visit and look at trees in the wild - thus far.

The IWPAPS method offers reduced impact on fragile woodland soil ecosystems thanks to the dramatic weight reduction of extracted material and a much higher value product at the point of sale. It is a win-win for owners and woodland contractors alike - more money per tonne means more money in the pocket and for less effort! The higher value per volume of wood means there is no need for cutters to flog themselves felling on a piece rate. The same quantity of wood that cost £13.50 to cut can be converted into over £150 worth of dry firewood sales. IWPAPS could mean that as little as 1 tonne of timber cut per day, then split and stacked, can offer the prospect of a reasonable income. That has to make more sense, could create more rural employment in the thousands of small woodlands all over the country, and uses more eco-friendly, smaller equipment to extract the semi-dry product. It's a horse loggers hay (sic) day!! What an idyllic way to work, horse and trailer extracting semi-dry firewood. See you in the woods!

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## Firewood in Scotland

Woodfuel, which includes firewood (logs), woodchips, pellets and briquettes, has become very popular in Scotland over the last decade, and at last we are starting to catch up with other, more forested European countries. From a tiny start, there are now dozens of companies installing and maintaining wood-burning equipment, and processing and supplying woodfuel. Woodfuel use in 2011 (the last year with published figures) was more than four times that of 2004/5<sup>[1]</sup>, and woodfuel has become an important market for forest managers, helping to make many forests profitable for the first time (see page 20).



gathered data which suggests that firewood might make up at least ten per cent of the total woodfuel consumed in Scotland: 70,000 out of a total of 683,000 odt per year<sup>[2]</sup>. No-one really knows how big the firewood industry is, nor how many woodstoves there are in Scotland and there are no official figures for firewood consumption, unlike Wales (see below).

As it requires a lot less processing, firewood is significantly more effective at saving carbon emissions than either chips or pellets<sup>[3]</sup>. In addition, firewood is traded locally and is labour-intensive, providing local employment, and in many places, the firewood market makes managing woodlands economic, and so uses resources that would otherwise remain unused. That said, old logstoves are generally less efficient than chip or pellet burners, and have higher emissions of soot and other pollutants than newer stoves. A new generation of gasifying boilers has much lower emissions and can provide all the heating needs of a house.

What is being done to help firewood producers and users? Website directories of firewood suppliers can be found on [www.woodfuelscotland.org.uk](http://www.woodfuelscotland.org.uk) and [www.usewoodfuel.org.uk](http://www.usewoodfuel.org.uk), along

with other useful information. Among many new books on firewood, the first in a series of booklets entitled “*The Logburners’ Handbook*” has been published. And efforts are underway to establish a trade organisation for firewood suppliers. But this is all being done by those who appreciate the importance of firewood. The firewood market is important and deserves more government understanding and recognition.

### References

- <sup>1</sup> *Woodfuel: demand and usage in Scotland Report 2012*. Hudson Consulting Ltd for Forestry Commission Scotland. <http://www.forestry.gov.uk/forestry/INFD-7TDHJN>
- <sup>2</sup> One dry tonne (odt) of wood can generate 5,040.8 kWh. The 2012 Woodfuel report gives “woodfuel usage in the commercial, industrial heat and electrical generation sectors of the Scottish market” as 613,000 odt.
- <sup>3</sup> The *Carbon Balance of Woodfuel* – downloadable at: [www.highlandbirchwoods.co.uk/UserFiles/File/publications/Woodfuel/carbon%20balance%20report.pdf](http://www.highlandbirchwoods.co.uk/UserFiles/File/publications/Woodfuel/carbon%20balance%20report.pdf)

**Nick Marshall** is a consultant for community firewood projects and copies of “*The Logburners’ Handbook*” can be obtained through [www.woodfuelscotland.org.uk](http://www.woodfuelscotland.org.uk).

## Trees, logs and renewable energy in Wales

The newspapers are full of glossy adverts for wood-burning stoves, logs are all over the place in trucks and piled in gardens - but what does this mean for woodlands and is this significant in terms of renewable energy? An indication of answers to these questions was obtained for Wales through a household survey of firewood use in 2012<sup>[1]</sup> organised by Llais y Goedwig (the community woodland association for Wales), with support from Forestry Commission Wales (now Natural Resources Wales) and Bangor University.

During the course of the study, we obtained over 500 questionnaires covering five rural and peri-urban communities. As expected, there was much more firewood use in

rural areas, with up to 75 per cent of households burning wood in the most remote locations. In contrast, peri-urban usage is much lower, with five per cent of households burning wood but with the potential for this to double. Overall, we estimate 11 per cent of households in Wales used wood for domestic heating in 2012.

A back of the envelope estimation of the volumes of wood burnt per household per year suggest that the total amount of firewood consumed is in the order of half a million cubic meters. This is roughly the equivalent of 2,880 GWh per year, making domestic firewood one of the largest sources of renewable heat in Wales.

Where does Welsh domestic firewood come from? We found that less than half of firewood users actually purchase firewood, sourcing it instead from their own property or from neighbours and friends. This suggests that the firewood supply chain is far more complex and reliant on social networks than is generally acknowledged.

Many important questions remain unaddressed and this important work is being continued by a Knowledge Economy Skills Scholarships (KESS) Masters by Research project at Bangor University. Based on our experience, Llais y Goedwig has prepared a short guidance note on undertaking a local firewood market survey<sup>[2]</sup>.

### References

- <sup>1</sup> <http://llaisygoedwig.org.uk/wp-content/uploads/2010/02/Wales-Domestic-Firewood-Survey-2012.pdf>
- <sup>2</sup> <http://llaisygoedwig.org.uk/wp-content/uploads/2010/02/AN8-Undertaking-a-survey-of-local-firewood-demand-market-potential.pdf>

**Dr Jenny Wong and Dr James Walmsley** are the co-authors of the *Wales Domestic Firewood Survey 2012*. Both are lecturers in the School of Environment, Natural Resources and Geography (SENRGy), Bangor University and Jenny is a member of Llais y Goedwig and Director of Wild Resources Ltd.