

Shropshire Hills AONB Conservation Fund 2021-22

Final Report from Knighton Community Woodlands Group: Sustainable Charcoal Making (CF2122/6)

Knighton Community Woodlands Group applied for funding to purchase a charcoal retort, ancillary equipment and training, and to hold 2 demonstration days for other woodland groups within the AONB. The project outcomes are:

- To make the management of small woodlands more economically viable.
- To introduce a new activity to our management of local woodlands and therefore increase our appeal to existing and potential volunteers.
- To improve knowledge of, and skills in, charcoal making, within our group and within other local conservation groups.
- To have a means of generating our own income from small diameter timber, therefore reducing our reliance on grants.
- To minimise the impact on air quality of charcoal making.
- To displace the use of unsustainable, imported charcoal.

On the 22nd July 2021 we took delivery of the charcoal retort and received training in how to use it from the designer/retailer James Hookway (<https://hookwayretort.co.uk/>). We were very grateful to James for honouring his original quote of £1,200 from almost 2 years ago, while we sought funding, as he now sells the retorts for £1,700. Seven volunteers were trained, more than the five we had planned for, showing the high interest there is in charcoal making. One volunteer was joining us for her first day with the Woodlanders, demonstrating how new activities attract new volunteers.

The retort was simpler to set up and use than we anticipated, which was a pleasant surprise. However, the wood that we had hoped to use proved to be too wet for conversion within the training day so we used alternative timber that was drier. The wetter wood can be converted but it takes longer than drier wood.

The retort completed its burn by around 5pm and was left to cool at the end of the training day. We returned to it four days later at our next task day and found that the conversion had gone well and we had no “brown ends” (partially converted timber). Our experimental inclusion of pine cones and fern leaves at the top of the retort has also worked well (see photos). We sold our very first bag of charcoal to a volunteer at the training!

The training day, first burn and first emptying of the retort has allowed us to understand what else we are going to need to do to enable us to efficiently produce charcoal. This includes improving our storage of small diameter timber - both for conversion and to fuel the kiln – in order to improve its seasoning. We will also need to work together to ensure that we can replicate the first burn unsupervised. Copious notes and photographs were taken and volunteers have collaborated on writing a record of the training. We also think that we have identified a lead volunteer within those trained who will take forward our charcoal project. Whilst the purchase of the retort and the training are a huge step forward, we realise that this is only the beginning of the process.



Loading the retort



Putting the lid on



Lighting the Retort



This is as smoky as it got!



Inside the retort after the burn



Carbonised fern leaves



Emptying the charcoal

Demonstration Days

We held 2 demonstration days for other woodland groups in the AONB area. This is the Demonstration Outline describing the days:

Day 1: Emptying and loading the retort

Sunday 31st October 2021, 10.00am to approximately 2.30pm.

Most charcoal training courses that we have attended don't include removing the charcoal from the kiln/retort as it has been too hot! Therefore, we are starting at the end of the process so that you can see how we are emptying our retort and the charcoal produced.

The outline for the day is:

- Introductions – who we are and about our groups
- Emptying the retort
- Storage options
- Sales opportunities
- Selecting and storing timber for conversion
- Wood fuel for the retort
- Loading the retort for firing

Day 2: Firing the Retort

Thursday 4th November 2021, 9.30am to somewhere around 4pm.

We will light the retort first thing in the morning and show you how to bring the retort up to temperature and run the burn. The retort is fairly self-sufficient so much of the day will be a networking event, with tea drinking and conversation as we fuel the retort, observe the steam and (minor) smoke, and reacting when necessary. The woodlanders will also have a task day running elsewhere on the site which those attending the demonstration are welcome to contribute to!

The day was a great success with a good deal of interest from those who attended. We learnt a lot from each other and it was reassuring to find that both groups faced similar issues and had similar successes. This is the group on the second demonstration day, standing with the retort:



We found on opening the retort after the second day that the timber had only partially converted:



Our key lesson so far is that while we can use low and very-low grade timber for charcoal production, it needs to be very dry low-grade timber, especially that used to fuel the retort, or we don't reach the required temperature.

This has meant that we've had to pause production for now. We've built further roofed, well-ventilated 'woodsheds' and are drying timber in them for later use. We will see what the moisture content is in the spring, using a moisture meter. If we find it needs further encouragement to dry, we will then split the timber along its length, or shave part of the bark off. Once the timber is dry, we can then start again and will then carry out burns year-round.

We are very pleased with the retort and have readily sold all the charcoal we have made so far within our own membership! We consider the purchase of the retort and training to be a great success and wish to express our thanks to the Conservation Fund for its support of our work.