A New, Six-Thousand Year Old Forestry Model

Imagine an expanding population facing widespread resource depletion and rapidly shrinking energy reserves. Sound familiar? Perhaps, but this scenario is nothing new to human culture - in fact it's a problem that has been faced, and in many ways 'solved' (at least in the historical context) by cultures far more primitive than our own. We need look no further than the European continent - Great Britain specifically - to glean a view into the strategies thus developed by industrially advanced cultures to maintain energy security and independence in the wake of human and industrial expansion.

Probably the backbone of British industrial development is a sustainable forestry method known as 'coppice'. With its root in the French verb 'couper' (to cut), coppice refers to the repeated cutting of broadleaf trees during the dormant winter season for polewood used for craft, building, fencing, fodder and fuel. Archaeological evidence dates the practice of coppicing back to Neolithic settlements in Britain's Somerset Levels around 4500 BCE. There they have unearthed woven hazel wattle trackways (ancient roads) that were built from material so uniform in size, that they have thereby determined must have been the product of sophisticated coppice woodland management systems.

Considering the effects of both agricultural and industrial development, it comes as little surprise to learn that the old growth forests of the UK had been eliminated by 1000 CE. Despite this, people of the era were still able to harvest fuel for cooking, heating and industry, construction materials, livestock fodder and rot resistant fencing. They accomplished this through the conscious maintenance of intensive coppice stands which were cut on semi-regular cycles of 5-20 years, worked up into products and then used or sold.

An entire class of craftsmen developed around annual coppice harvest, essentially bidding on standing timber in an existing woodland (generally owned by the nobility), moving in to the woodland for the winter, felling the poles and then working them up into a range of specialist products including charcoal, spindles and chair legs, woven wattle hurdles (fence panels) and a host of other functional wooden products. In many cases, coppice wood was far more useful to people of that time in that it could be much more easily worked with simple hand tools, was easily extracted from the woods, and in the case of fuelwood, required little if any splitting.

Generally, copses (an area of coppice) were composed of single species or relatively simple bi- or tricultures. Most native British hardwoods were managed in this way with hazel, ash, elm, maple, beech, birch, oak and chestnut being some of the most prevalent. These stands were typically managed as annual contiguous clear cuts ranging from about 1/3 to 3 acres in size. This was done to ensure adequate light penetration into the coppice to better enable shoot regrowth from the stump. The act of coppicing has been found to dramatically increase the life span of individual woody specimens, in many cases effectively doubling or even tripling the figure.

'Coppice with standards' is a term used to describe the practice of interplanting individual 'standard' trees within the coppice so as to provide a more diverse forest structure and the additional long term yield of lumber and also potential fruit or nuts. Oak was generally the most common standard tree species, favored for its hard, durable lumber. On a related note, three-species mixes like ash, hazel and oak (as a standard) were also employed as more diverse yielding polycultural systems.

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Like many agricultural and silvicultural traditions, the practice of coppicing began to decline as industrial development and mechanization grew in scope. So much so, that within just a few generations following the second World War, coppice woodland management nearly disappeared. Fortunately, today a new class of woodsmen and women are emerging and reviving the practice, creating new interpretations of a longstanding tradition. Which brings us to today…

For most people in the United States, coppicing is a foreign practice, with the possible exception of basket willow for weaving material. There has been some experimentation with hybrid poplar and willow at SUNY Syracuse and even at Burlington's McNeil Power Plant as a means of rapidly producing biomass for heat and electric energy. While these are worthy trials, far more could be done to explore the amazing coppice potential of our extensive hardwood resource here in New England.

When considering establishing coppice, there are a number of places from which to begin. First and foremost, we should determine what existing tree resources we already have. Depending on the application, it may be prudent to cut existing forest stands with the intention of managing the regrowth as coppice or literally planting coppice stands in existing fields. There are certainly pros and cons to each - woodland conversion will provide a much more rapid coppice yield though the spacing and species composition may be less than ideal; whereas planting will ensure an ideal species mix and spacing but will take years before actually beginning to produce any notable yield. Because the coppice regrowth relies on the vigor and resilience of a tree's root system, generally trees shouldn't be cut until 5-8 years of age so as to encourage healthy regrowth. Thus, the first yield from a newly planted coppice stand may take 10-30 years depending on species and desired use. That said though, in a time and culture in desperate need of future solutions, establishing new coppice stands for fuel and polewood may be one of the most critical investments we can make in manifesting a truly sustainable future.

The other primary portion of the coppice establishment equation reverts to the goals and needs of the steward. What is it that we're trying to produce? This will have a dramatic impact on the existing forest we choose to cut or the species we select to plant. In my own study and ruminations on this subject, it seems that heat value and rot resistance are two of the most important functions we might look to glean from a coppice stand. Thus, these characteristics will significantly impact our design decisions.

When we look at durability and heat value, along with speed of growth and additional ecological benefits, black locust (*Robinia pseudoacacia*) immediately appears as quite possibly one of our best potential candidates. Also given the fact that it is a nitrogen fixing pioneer species, it has considerable potential to be a keystone species in New England coppice stands. Additionally, red maple is a species that can be readily observed throughout the region naturally coppicing due to felling or die back and while not necessarily rot resistant or incredibly high in its fuel value, the speed and vigor of regrowth seem to lend well to this type of management. Additional species with considerable coppice potential include hickory, ash, hazel, willow, poplar, birch, cherry and hornbeam. But here, the sky is literally the limit. So very little has been done in this country to explore the potential of hardwood coppice woodland management. The time to do so is now.

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For more information on coppice, contact Mark Krawczyk of Keyline Vermont at keylinevermont@gmail.com. Also to join a fledgling discussion forum on coppice potential here in the northeast, visit and join the Northeast Coppice Google Group at http://groups.google.com/group/northeastcoppice