



# Cork, nuts and resin: Portugal's long view of non-wood forest products

*StarTree is Reforesting Scotland's project on non-wood forest products (NWFPs). Project Manager, Emma Chapman, explores the landscape of Portugal.*

For the second time in 2013, a coach window revealed a slow panorama of a new country. After speaking at length to Portuguese colleagues, I felt as if I should know Portugal too, but the landscape was a mystery: I simply could not read it. Acres and acres of monotonous, lollipop-shaped trees, with grass below. Often the trees seemed even-aged - were they plantations?

Travelling down from the north, winding around hillsides, the patterns became more intricate. There were many houses, with associated terraces and patches of vineyard; orchard after orchard of grey-leaved trees that must be olives; solitary freestanding solar panels in some of the fields. The land seemed divided into a multitude of tiny holdings. There were still expanses of forest cover, as well: conifers interspersed with stands of eucalyptus, which betrayed their alien origin by their towering height - how does this water-hungry crop sit in this hot-seeming place? Eventually the road changed, accrued more signage and more traffic management: the city and the first of its great bridges came into view. I was arriving in Lisbon, for StarTree's third General Assembly.

Above, clockwise from top left: Looking upwards into an umbrella pine crown; Timber pile under recently-harvested cork oaks (*Quercus suber*); People walking under towering umbrella pines (*Pinus pinea*) in mixed umbrella pine/cork oak wood-pasture; Cork stoppers - non-wood forest products on an industrial scale; Bottle stopper design closeup. Overleaf: Recently-harvested cork oak: the exposed inner layer of bark becomes stained with protective tannins.

## Stone pine and cork oak

As before, we had one day for a "Knowledge Exchange Event": a morning of field trips, an afternoon of presentations. Our first stop was in a pine plantation. The trees, 20 feet high, were that rounded shape I had seen from the bus, those surreal lollipops. Very pretty trees, close up. Fascinating, too - because this wasn't simply a plantation, it was an orchard of stone pines (*Pinus pinea*), a species whose seeds are rich enough and big enough to be worth harvesting for human food. Each trunk showed a line, partway up, where a selected scion had been grafted onto a dwarfing rootstock, just as we do with apple trees. With stone pine, the benefit from the rootstock is partly that grafting a mature scion makes the tree miss out on a juvenile growth stage, so it reaches fruiting age a decade earlier.

Across the road was a much older stand of trees. A blazing blue sky provided the perfect backdrop for the beauty of the place. Just wood pasture - with sandy, fragile soil - but such trees... We stood and listened under a scattered stand of carefully-managed cork oaks, their trunks and lower limbs pruned to leave clean tubes of bark for harvesting. Long stretches of the trunks and into the main limbs had been stripped of their outer layer of bark, leaving exposed inner layers stained dark with protective tannins. Harvesting is a skilled operation, still

mostly done by hand, though special chainsaws, sensitive to humidity, can now be used on the main trunk area. There is no carefree, spontaneous foraging of this harvest! Cork oak stands are an investment made for future generations, and protected in law since the 13th century. Management, pruning, thinning and harvesting are prescribed by legislation. A tree is expected to produce cork good enough for whole, natural cork stoppers by its third harvest, at 38 years old. One harvest taken too soon, too deep or at the wrong time could mean low-quality production from that tree forever.

Rising high above the oaks, and far more spectacular, were more stone pines. Now I understood why they are also called "umbrella pines" - though I've never seen an umbrella so beautiful; broad, shallow, asymmetric crowns borne aloft on towering clean trunks. Easy to see why people want to bring the harvest closer to the ground!

## Scaling up

Next we visited a cork factory so noisy I couldn't hear what our guide was saying. Cork dust scoured my throat, making me want to leave as soon as I'd got there, and triggering an infection that lingered for days after I got home. Troublingly, the workers seemed to have no hearing protection, never mind dust masks. The factory complex was huge: yards

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piled high with raw bark, warehouses full of cuning machines, processing the cork into a fluid flow of pellets, then shuffling little cylinders around arbitrary-seeming channels, each contributing some tiny element of the precise shaping and qualities of a myriad designs of bottle stopper. When NWFP use is scaled up, it becomes part of the industrial system just as surely as with any other raw material... I longed to be back in the wood-pasture, a landscape, so the logic goes, that only exists because the income to support it is generated by factories like this. Instead, we left for a quieter building: the Cork Observatory, a small temple to cork research, promotion and design. It provided lunch, a well-appointed lecture theatre, and intense shots of coffee. We settled in, and learned yet more.

The cork industry is very organised. As well as the centuries of law and tradition, industrial processing and the visitor centre, there is a regional association of cork producers, a Portuguese cork association, and a European network of cork-producing territories. They promote innovative cork products, including buildings, handbags, furniture, even dresses - but natural cork stoppers still accounted for 42 per cent of the value of the market in 2012. The loss of this market is the best-known threat to the industry, but there are others: forest fires; grants which encourage grazing with cattle instead of sheep, compromising natural regeneration; reduced rainfall for the last few years, which may be why the cork is getting thinner and diseases are increasing.

The stone pine sector is changing too. It is an ancient crop, but developing and distributing cultivars is new. At one time it was an *ad-hoc*, locally-consumed harvest, sometimes given to the people working the land, or seen as a wild resource, belonging to all, but since the 1990s large-scale investment and professional associations have turned it into a profitable industry. There has

been a big conversion of land from agriculture to stone pine plantations - exactly as I saw from the bus. As with cork, it is a long-term investment: one presentation calculated that plantations become cash-flow positive only after 60 to 70 years, and that grafting could reduce this wait to a mere 30 years. Traditional harvesting is hazardous work, requiring a high climb into the trees on cold winter's days, so mechanised shakers are beginning to be used instead, and silviculture adapted to suit. Producers are also urged to add value by extracting the kernels locally rather than selling raw cones - we were shown an analysis of the costs of a processing facility and the likely return on investment.

Another change is in the market. A recurring StarTree theme: there is competition from China, but Portugal aims to compete on provenance and quality, saying that *Pinus pinaster* nuts have superior flavour and nutritional composition than Asian species.

### Pine resin

Lastly, we heard about pine resin, an incidental harvest from existing forestry operations. The area of maritime pine (*Pinus pinaster*), the main timber production tree in Portugal, has decreased sharply over the past few decades, and resin could help to reverse that. Harvesting provides local employment, giving a reason for people to value the forests. Crucially, harvesters also visit regularly, providing natural surveillance against the forest fires which threaten timber production, pine nuts and cork alike.

Industrialised in the mid 1800s, pine resin production in Portugal plummeted in the 1990s as a result of - you guessed it - Chinese competition. Could a current rise in prices, combined with

high unemployment, provide an opportunity to restore production? The speaker called passionately for research, organisation, professionalisation, supportive legislation - everything that is already underway for cork and pine nuts. A colleague commented that the research they needed probably existed already, because a lot of work had been done - but that it was only available in Russian; a translation project that someone could do... As so often with StarTree, I was tantalised by the knowledge around me, and wondered how much is relevant for Scotland, what could be harnessed.

I journeyed homeward through a now more comprehensible landscape. Yes, the densely-packed rural dwellings reflect holding sizes that are among the smallest in Europe.

Those regimented lollipops have indeed been planted in great numbers, promising a valuable crop. I now noticed an occasional cork oak. (And the eucalyptus? It is the second most common tree in Portugal, but perhaps not a significant provider of NWFPs. For more information you will have to resort, as I did, to Google.)



Once again the trip left impressions, not of wild harvests, but of organisation, investment, research, industry, deliberate management. The level of regulation surprised me, especially on what can be harvested and when.

In April 2014, weather permitting, the StarTree consortium will reconvene in Austria. Our hosts there have promised early spring herbs and artisan businesses, and I am expecting, for once, to see close parallels with Scotland. We will be in the hills, far from the city; I've promised to pack my boots.

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