

REGENERATION

The Rescue *of a Wild Land*



ANDREW PAINTING



BIRLINN

For the connoisseur of British woodlands, the Cairngorms' Caledonian pinewoods take some beating.¹ They are ancient landscapes. The grand old trees, the carpets of juniper, heather and bright green blaeberry, the sounds and smells: the Caledonian pinewoods have their own quintessence. These are places where trees have grown uninterrupted through natural processes for 8,000 years. In so doing, they have adapted to the land and have become genetically distinct from Scots pine in other parts of the world. Of all the iconic landscapes of Mar Lodge, it is the Caledonian pinewoods which are the most celebrated. They are home to an incomprehensible assortment of creatures: crossbills, red squirrels, pine martens, black grouse, capercaillie, siskins and bramblings, spotted flycatchers, redstarts, tree pipits, goshawks, owls, ospreys, golden eagles, red and roe deer; rare plants: twinflower, orchids, wintergreens, globeflower; and invertebrates: wood ants, pearl-bordered fritillaries, longhorn beetles. Then there are the birches, the willows, the junipers, the aspens, the rowans. They have an authenticity, a presence, a continuity. 'To walk through them is to feel the past,' wrote H. M. Steven, the pioneer of Caledonian pinewood conservation, back in the 1950s.²

And yet there are two Caledonian pinewoods: the pinewood of history, myth and culture, and the pinewood that exists in the glens. The two have a very difficult relationship. To talk of Caledonian pinewoods is to evoke the ghost of a lost great forest, swarming with bears, wolves and Picts, which spread from coast to coast in an impenetrable wall from which even the mighty Roman legions

recoiled. It is a habitat which evokes national pride, harking back to an earthier, wilder nation of great power and untamed spirit. Since its first coining by those very Romans who failed to conquer Scotland, the Caledonian pinewood has suffered from the overbearing weight of mythology. It has been othered, made into a wild place, an uncivilised landscape, a place to visit rather than linger, where the visitor may reconnect with their lost origins, but only for a holiday. This does a great disservice to the people who have made their homes and living among the pinewoods for thousands of years, and indeed, to the history of our forests. The truth of our relationship with the woods of Mar Lodge is much more gloriously complicated than the myth of the great wood of Caledon.

Nevertheless, such mythologies are potent, and valuable in their own right. They call out to the wild heart lurking within us all. They tell us how we want to think about ourselves, and what is missing from our lives. Complications of history and myth aside, the remnants of the Caledonian pinewood are truly a last, vital link to a 'deep time', one which stretches beyond the surface world of the postmodern. Wildcats may not wait behind every tree, but then again, they just might. To walk through the woods is to feel the past, but also to be haunted by the ghosts of what has been lost, and the portents of what might yet be.

The challenge for conservationists, then, is to unpick the truth from the myth, to navigate the thorny questions about what consists of the reality of the Caledonian pinewood and what does not. Step forward Paul Ross, dendrochronologist and climatologist from St Andrew's University, who is here to get some samples for his PhD thesis. Paul is part of a team that has been studying the history of Scotland's Caledonian pinewoods for the last decade and more. I join the team, Paul, Rob Wilson and Emily Reid, for a day of sampling in the Dubh Ghleann, a particularly remote and beautiful remnant of the pinewood at the top of Glen Quoich on a cold March day.

As I am driving us up the glen, Paul tells me what the team's up to. Actually, he doesn't, at least for a while, because Paul's an

ecologist both by training and by inclination and we keep seeing wildlife that excites us both. Behind us, Rob and Emily are getting impatient with our conversation, so Rob jumps in. 'We take tree core samples from old pine stands across Scotland. These give us all sorts of information about the woods, beyond how old the individual trees are. Ultimately, we want records of all the surviving pinewoods in Scotland, and we're nearly there. We're working further afield now too. I have just got back from Argentina, and have a similar project going on with monkey puzzle trees. Actually, Emily's currently looking to set up another, similar project in the Yukon.'

Rob's been here a lot since 2006,³ when the project started. It's thanks to him that we know how old the Old Tree is. He also runs the ridiculous Lairig Ghru race, a marathon and more through the mountain pass that cleaves the settlements north and south of the Cairngorms massif. 'I'll keep doing it until I get a time that I'm happy with,' he says, which perhaps explains the remarkable output of his team.⁴ He points out the jungle of newly regenerating young trees that we are travelling through. 'I don't remember all this,' he says, 'where's all this come from?'

We get to work, eventually. The Dubh Ghleann is at the furthest extent of the pinewood, and we are walking right to the treeline. Here, Scots pine is getting close to the edge of what it can cope with climatically. We are working 550 metres above sea level. The team works meticulously, with the skill and jocularitas that come with competence. (One of life's great joys is working with competent people.) As with most ecological sampling equipment, their kit is both extremely clever and extremely spartan, designed to cope with the demands of decades of underfunding. The tree corer is a fantastic piece of Swedish design, unchanged for more than a century. It has the gravitas of kit that is both functionally perfect and aesthetically pleasing, like crampons and Trangia stoves. It is essentially a small but long, hollow screw with a handle and a long insert, which extracts a tiny core from the tree. This allows you to determine the tree's age, and much more besides, without harming the tree in any

way. These cores are then stored in large drinking straws, labelled and capped with masking tape. This storage solution, despite being extremely homemade, is apparently infallible. Emily is pleased to be back working with pines. Monkey puzzles, she says, are horrible to work with. But pines give excellent cores.

Rob shows me a core. It's a beautiful thing, a long cylinder of tiny bands of alternating light and dark wood. But more than that, it's a record of the age and growth rate of the tree. More even than that, by comparing the different amounts of 'late summer growth' and cross-referencing them with known summer temperatures from recent decades, the team can work out the summer temperatures from centuries ago. It's a beautifully neat example of ecological and climatic interactions. The pinewoods are a living record of centuries of summer weather.

Rob is a climatologist by trade, and this was actually how the whole project started. Rob realised that by collating and referencing the growth rates of trees across Scotland he could draw a picture in time of average summer temperatures going back, in theory, for as long as there have been trees in Scotland. He was originally drawn to pine for its longevity in the landscape. A study like this can't work with other Highland tree species like willow, birch and aspen, which do not grow to a ripe age and also rot quickly. 'I love working in the Cairngorms – the trees here behave themselves. There's less noise in the data than the west-coast pinewoods.'

Noise?

'Disturbances in the tree-ring data. One-off events like felling large areas of trees can affect the growth rates of surviving trees, which produces inconsistencies in the data.' The problem, says Rob, is more significant in the West Highlands. 'I've not come across a single pinewood in the west which is behaving itself. It has warmed up in recent years, so they should be growing more. In fact, we're seeing the opposite. Why is that?'

He corrects me on my coring technique – I'm too wobbly, and keep breaking off the most recent decades of growth. 'We've got a

wobbler here! Paul won't be impressed. Those most recent rings are the important ones for his work!

In fact, it is the noise – the inconsistency in growth rates between trees in the east and the west – which is the focus of Paul's work. 'My research is on the ecological relationship between trees, climate and the ground flora around the trees.' Paul is indeed unimpressed by my coring technique. He's even less impressed when, carried away with conversation, I core a dead tree instead of a live one.

'I don't think we should tell anyone about this,' I say.

'Oh yes, I think the whole team needs to know!'

For Rob, the ageing of individual trees is a by-product of generating climate information. But it is a by-product that has greatly improved our knowledge of the recent and not-so-recent history of the pinewoods and has provided a huge amount of information on ecological hypotheses that were once untestable. 'At first all we were interested in was the old trees, but now they are less important to our work.' What gets Rob really excited now is sub-fossil pine, 'the stuff you find preserved at the bottom of lochs.' This stuff can be hundreds or even thousands of years old, so it pushes the information back further in time than the live trees we are working with today. His plan is to create a pine-based chronology of summer temperatures going back through the Holocene, the time after the most recent Ice Age. 'We have material going back eight thousand years, although it will likely not be possible to create a continuous record back to that point. Two thousand years is theoretically possible, however. We already go back to the tenth century.' He's talking me through it – how they're looking for pine beams in old buildings, and searching out new lochans to go scuba diving in for pine stumps – when I notice a red kite, a rarity here, and start shouting at Paul to inform him of the fact. Paul's suitably impressed, but Rob is obviously less pleased to have an avian distraction. 'Bloody ecologists,' he mutters, and I'm only fairly sure that he's joking.

So what can the team tell us about the Caledonian woods? And what of Mar Lodge?

Rob is keen to sort the facts from the myth. 'It's a lot more complicated than some people think.' The idea that there was once a continuous wall of pines stretching from coast to coast across the Highlands is wrong. First of all, the Caledonian woodland wasn't all pines, it was a mixture of tree species, depending on local soil, weather, altitude, aspect and the local population of herbivores. Instead of a great, dark, impenetrable wall of trees, ecologists now imagine a more diverse and indeed biodiverse landscape, of wooded glens and open hill tops, where trees naturally graded into bog, moor and tundra. This was a rich tapestry of broadleaves and pine, where the interactions of woody plants, grazing animals and human and animal hunters created a web of open glades, dense thickets and mature woodlands. This complex history puts the lie to our notions of woodlands as being landscapes with trees and moorlands as landscapes without trees. The natural ecology of Scotland is much more complicated than that.

This is not to say that Scotland was not once much more wooded than it currently is. The greatest extent of the pinewoods, and indeed woodland cover in Scotland, was around 6,000–7,000 years ago.⁵ Since then, the woods have retreated through the twinned impacts of human actions and historic climate change, with human activity becoming by far the greatest cause of deforestation in the last two millennia. In fact, the lowest extent of woodland in Scotland occurred around the late eighteenth century, when woodland cover was as low as 4 per cent of the landmass (it's now hovering around 18.5 per cent, though much of this is non-native, often environmentally unfriendly spruce plantations, and it remains well below the 38 per cent European average).⁶

The oldest record of pines in Deeside is from around 8,000 years ago, roughly the same period as the arrival of humans to the area (both of these records are from Mar Lodge ground).⁷ ⁸ There certainly used to be much more pinewood at Mar Lodge. Go back 2,000 years and there was a pinewood in Glen Geldie, which is now a rather nice blanket bog, where ancient pine stumps emerge out

of the peat. Historic climate change has a part to play in the story of the retreat of the Mar Lodge woodlands. But from the Middle Ages onwards, and particularly post seventeenth century, the Mar Lodge pinewoods have been subjected to a long war of attrition at the hands of humans. The woods were a source of fuel for local crofters and of timber for the navy.⁹ Glen Geusachan, the little pine-wood glen, which now hosts a mere handful of birches and rowans, probably held a remnant of Caledonian pinewood until the early modern era. A map of the estate from 1703 shows no trees in Glen Geusachan so we can be fairly sure that by this point there was, at most, an unharvestable number of trees left in the glen. But the fate of the Glen Geusachan pinewoods remains uncertain.¹⁰ A number of sawmills were in operation on the estate in the eighteenth century, the ruins of which can still be seen in the Derry and the Quoich. The first record of sawmills on the estate comes from as far back as 1695, and we can be assured that the woods had been used as a timber resource for centuries beforehand.

But so long as the forest can regenerate, with young trees replacing old, forestry operations are not enough to destroy a pinewood. Indeed, the longevity of the Cairngorms' pinewoods points as much to the sensitive use of the pinewood resource by centuries of local inhabitants as it does to the difficulty of extracting the wood from remote glens. Paul reminds me of the startling fact that the pinewoods 'move'. New seedlings most readily grow in light areas, outside of the shade of the current extent of the woodland. Over the generations, this means that the trees move about in the glens. Back in the eighteenth century, this fact was observed in legal documents pertaining to the Mar Lodge and neighbouring woodlands – at this point, browsing was not halting regeneration, though there is evidence of foresters being annoyed by local cattle grazing on newly emerging pines.¹¹ The pines have ebbed and flowed across the country in waves, as climate and grazing pressure has changed. Sometimes they will have been able to survive higher up the glens; other times their extent will have retreated. Now, we are seeing pines

racing up the hills, growing far higher than people thought was possible.

According to the wandering Reverend Charles Cordiner, who toured the Highlands in the eighteenth century, by 1776 a large part of the woodlands in Luibeg and Glen Derry had been felled, but there was also young regeneration coming up in Glen Quoich.¹² Rob shows me a core. 'I'm an impatient man. What I like about tree cores is you can see what's going on immediately.' His expert eye points out that this tree is about 250 years old. This is one of the young trees seen by Cordiner all those years ago.

In fact, the team's findings fit perfectly with surviving historical records for the whole of the estate. Since modern times, large-scale felling at Mar Lodge seems to have occurred across three main periods: the mid eighteenth century, when new technology combined with a new, extractive view of the land that allowed the forests to be exploited more efficiently than before; 1810–60, during the zenith of the Royal Navy's dominance of the oceans; and the Second World War, when the army needed all of the timber it could lay its hands on.¹³ Most of the pines in Glen Derry probably grew up after the felling which was done before Cordiner's visit in 1776,^{*} while the trees in Glen Quoich are those that he saw as young seedlings at that time.

By the early nineteenth century, however, the forests were depleted. This did not go unnoticed, nor unchallenged, as Elizabeth Taylor[†] attests, on viewing the recently deforested Linn of Dee and Glen Lui in 1869:

What a noble spectacle this valley must have been in the height of its woody glory! How it would enhance the grandeur of these mountains, when their rugged slopes and

* The Old Tree, sitting up on the scree slope, probably got a stay of execution at this point because it wasn't of any use for its timber.

† No, not that one.

precipitous sides were hung with one continuous sheathing of fragrance and verdure! . . . It is stated as fact, that in five years' time 80,000 of these hoary veterans of the forest were cut down in this part of the valley.¹⁴

This is a good example of a newly emerging sentiment that had been growing out from the roots of the Romantic movement. Up until the eighteenth century, or thereabouts, there was a tendency among Western civilisations to treat nature, particularly wild and ferocious nature, as something to be feared, fought against and ultimately subjugated. This is the culture from which the myth of the Great Wood of Caledon emerged, all those centuries ago, when the term was first coined by the Romans. Taylor's sentiment is interesting because it expresses a fetishisation of nature and savagery, and lament for its loss for rude economic gain. The loss of the woods is to be lamented because woodlands 'enhance the grandeur' of the mountains. This sentiment is the flipside of that which led to the denigration of nature in earlier centuries. Either way, nature was perceived quite explicitly as something 'out there', set apart – the opposite of civilisation.

In such feelings, then, we can see the beginnings of what the historian Chris Smout calls the 'roots of green consciousness'.¹⁵ For the first time, people were coming to value Mar Lodge's woodlands for their 'nature'. It was specifically their wildness – the fact that they were 'uncivilised', that gave them an allure for a new type of rich, well-connected visitor. But as we have seen, Mar Lodge has been a home for humans for millennia.

Here we must pause to consider the long-reaching, complicated influence of Queen Victoria on the Mar Lodge woodlands in more detail. Her Majesty was famously a great lover of the Highlands, and of Deeside in particular. She lamented the loss of the Glen Lui woods herself: 'Re-entered our carriage & proceeded back on the other side of the Dee, through Glen Lui, once full of the finest fir trees but of which only the stumps now remain, Lord Fife's creditor

having cut them all down.’^{†16} So upset was the queen at the thought of the imminent felling of the glorious Caledonian pinewood of nearby Ballochbuie that she bought the woods herself. Deeside would in all probability have lost even more of its woodland than it has done, were it not for royal influence.

And yet the influence of the ‘Balmorality’, the royals and their hangers-on, would go on to do huge damage to an already depleted landscape and culture. Queen Victoria was drawn to Upper Deeside by the deeply attractive idea that the landscape was an empty wilderness – a blank, wild canvas. The landscape that the Balmorality created was a confection – an ersatz wild landscape – and it was created on the back of an oppressed, depopulated landscape. The idea that the Highlands were some untamed wilderness, its only inhabitants ‘noble savages’, was a direct result of centuries of oppression of the Highlands which culminated in Culloden and the Clearances.

The Victorians were both the pinewoods’ conservators and destroyers. Where the landscape did not fulfil its wild aesthetic promise, steps were taken to beautify the landscape. The Victorians were ‘reforesters’ in their own way. They planted up the grounds around their newly erected hunting lodges, and replanted areas of woodlands lost in previous rounds of felling. But it is fair to say that they were less interested in the ecology of the landscape than its aesthetic value. The woods around Mar Lodge and Derry Lodge, planted at this time, are filled with non-native firs and spruces. European larch was particularly favoured for its rich autumn colours. Worse, the deer that they hunted, and their management of the moors for red grouse, stifled native woodland regeneration for well over a century. The rise of the red deer meant the loss of both people and pines from the glens. In the 1950s, the ecologists H. M. Steven and A. Carlisle catalogued all of the remaining Caledonian pinewoods in Scotland, and discovered that they had

† What goes unremarked is concern for the fate of the crofters who had been cleared from the glen at roughly the same time as the pines.

been reduced to just 16,000 hectares, maybe 1 per cent of their historic area, of which around 815 hectares could be found at Mar Lodge.¹⁷ Some of these pinewoods were mere scraps – just a few trees scattered loosely across an otherwise treeless glen. In other places, including Mar Lodge, the woods were more substantial. But in almost all places, the woodlands covered little more than a shadow of their historic range. At Mar Lodge, by 1995, the woodlands were on their knees.

The samples taken, we retreat from the Dubh Ghleann. Back at the lab, Paul will fix the cores in wooden mounts, sand them with extremely fine paper, and finally take an extremely high-resolution photograph of them. These images will then be run through custom software, designed to glean every scrap of information that it can from the cores. This will be fed back into a database to inform Paul's and others' work. The science of researchers at St Andrew's is fleshing out our understanding of Scotland landscapes, giving us new, detailed insights into our woodlands, what they used to be like and what they could be like again. They are allowing us to see through the fog of myth and history, giving us a glimpse of the unique individual history of each tree and each patch of woodland. Their work has greatly improved our understanding of Mar Lodge's woodlands, put them in their national context, and allowed us to understand their value in a way that was previously impossible. It sits alongside the work of geographers, ecologists and cultural historians. To walk through the pinewoods is to feel the past. But it is also to imagine a new, better future for both humans and nature in these glens – the regeneration of an environmentally sensitive woodland culture.

There remains a lot of information that has been lost, and a lot of unanswered questions. What of the broadleaf trees, the birches, rowans and willows, which tread more lightly on the landscape and do not leave a mark like long-lived, slow-rotting pine? Did Beinn a' Chaorainn, the hill of the rowan, once harbour a broadleaf woodland on its slopes? What of Allt a' Chaorainn, the rowan burn, on

the other side of the estate? Or Clais Fhearnaig, the hollow of the alder, in which a single elderly alder can be found, now joined by its regenerating progeny?

The balance between what is known and what we need to find out about the woods is what is informing the work of the conservationists in this first section. We'll be looking at how a team of ecologists and stalkers kick-started the regeneration of the woodlands for the first time in centuries, and how that venture turned into a decades-long labour of love and battle of wills that continues to this day. We'll be paying close attention to moss, joining bryologists as they search for rare species among the deadwood. We'll be getting up very early in the morning to look for woodland grouse, and staying out very late in the evening in search of roe deer. We'll be luring moths with fancy pheromones, finding out what really goes on in an ant nest, and meeting the new human inhabitants of the woods. Onwards!