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Published essays

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CHOPPY SEAS AHEAD FOR OUR FISHERMAN

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The sea, or the grander-sounding marine environment, has been much in the news recently: the announcement that the UK will be leaving the 1964 London Fisheries Convention, post Brexit fishing policy, trawling damage to the seabed off Plockton, the use of chemicals in fish farms… The sea is of course familiar to us all – waves, distant horizons and boats bobbing on the surface – but at the same time totally alien. For fundamentally we are terrestrial species and have little interest or understanding of what happens beneath the waves: out of sight, out of mind.

In practice it is very difficult for a fisherman to stop catching fish when there are fish to be caught, and to be told by outsiders to stop fishing must be irksome, particularly as fishermen are fiercely independent and the best fisherman has always been seen as the one who catches the most. But history tells us that unregulated fisherman tend only to stop fishing when there are no fish left – think of the once-thriving cod fishery off the Grand Banks.

Farmers of course have long learnt that they have to keep back some of their seed to plant next year's crop, but this is relatively straightforward compared to fishermen having to calculate how many fish to leave in the sea as breeding stock. Hence the growth of fisheries science as a discipline, although the scientists are widely condemned by fishermen as lab-bound men in white coats who know nothing about fish!

Unfortunately modern technology has made fishing too easy: a large modern trawler can hoover up the same amount of fish in an afternoon that a whole fleet would have taken a summer to catch. Thus mathematics comes into it: either we can a few large boats or many small ones. Modern fisheries management is really about making fishing less effective, whether by restricting catch (quotas & size limits), allowing more fish to escape (mesh size) or reduction in effort (days tied up).

Fish are highly mobile species, moving from one country's jurisdiction to another, so it makes sense to share the resource: isolationist Scottish policy is not only selfish but will only create rancour. Interestingly many UK trawler owners have sold their quotas to foreign nationals (and then complain about Spanish boats fishing in UK waters) and many Scottish trawlers are manned by a largely foreign crew: so why the dislike of foreigners?

And it is not as if any love is lost between the different types of fishing within Scottish waters. In the west, east coast trawlers have tended to be seen as predatory beings sweeping up everything in their nets and damaging the livelihoods of the inshore fisherman. And today even within inshore fishermen there is conflict between those using mobile gear, i.e. dragging nets over the seabed as in scallop dredging, and those using static gear such as lobster creels. With the recent talk of six and twelve mile limits, I think there is a strong case for bringing back the no-trawling three mile limit, although trawlermen will resist this fiercely.

Economic analysis indicates that the local economy benefits more from having many small boats than a few large ones, but it is the large east coast trawlers which tend to have the ear of government. Exiting the Common Fisheries Policy is not going to result in a sudden outbreak of peace amongst the various fishing interests.

PRICE OF WOODS CULTURALLY COSTLY

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James Fenton

I was out in the hills with a group last week when I mentioned that the government has a policy of covering a quarter of Scotland with trees. They were surprised. 'Why?' was the immediate question. I suppose the immediate answer is that both the forestry industry, for understandable reasons, and the environmental NGOs have been pushing for more trees in Scotland, a policy articulated in the 2006 Scottish Forestry Strategy.

In practice a policy of 25% of Scotland under trees will play out very differently in different parts of the country: the rich, agricultural lowlands will remain largely as farmland, the deep peatlands of Caithness will remain as open flows, the high hill tops as summit heath and rock. So the trees will have to go onto the moorland and the lower slopes of the hills, with considerably more than 25% coverage needed to meet the national average: most of the Highlands will have to become like the heavily forested Argyll and Galloway Forest Parks of today.

But is this what we really want? And why are we so anxious to lose our ancient landscapes? To make Scotland more like the rest of Europe? Interestingly one argument put forward for more woodland cover is that Scotland contains less than the European average. But surely this is specious? You could equally argue, for example, that Italy has lower than the average cover of heather moorland. Should Italy be promoting heather moorland?

It is the wide-open, bleak, windswept moors, bogs and hills which over the centuries have shaped the culture and history of the Highlands, that have shaped the people. It is a dramatic but unforgiving landscape, infertile, wet, cloudy and very different to the softer, fertile farmland of the Lowlands. But it would seem that we are unhappy with it and want to transform it, ensuring that it fulfils a decent economic role that, like the Lowlands, it is tamed to play its part in the Protestant work ethic, contributing to the economic wealth of the nation. But what of the cultural wealth? Are we not in danger of losing that? Of losing a key element of Scottishness? Why have we allowed European and southern perspectives to persuade us that in some way our open landscapes are 'wrong' that, to quote Fraser Darling, that they are ecologically impoverished? What if it were Fraser Darling who was wrong and, as in my view, the Highlands represent one of the most natural landscapes remaining in Europe? Indeed, most of our moorland vegetation is deemed internationally important under the European Habitats Directive.

Everyone is favour of more trees in the abstract, perhaps because we are almost brainwashed into believing that they are a global panacea, promoting biodiversity, preventing climate change, stopping floods, benefiting recreation and adding to the aesthetics of the landscape – all laudable, although questionable, aims. Research shows, for example, that in northern latitudes increased woodland cover could actually warm the planet through greater absorption of heat.

To-date we have given largely free-reign to the policy makers and not, as a nation, considered whether we really want a quarter of Scotland under trees, whether we are happy to lose the unique Highland landscape which, in addition to being pivotal to our history, is also is a major draw for our tourists. Let's at least have a debate, so that if we do decide to cover Scotland with trees, it is with our eyes open. So that, as humans are wont to do, we do not end up realising how much we valued something until there is not much of it left – by which time it is too late.

SHOULD SCOTLAND BE LIKE NORWAY?

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It has been common in recent years for foresters and nature conservationists to come back from visits to Norway overwhelmed by the number of trees they have seen. They then spend the rest of their lives trying to make Scotland look more like Norway by persuading people to plant trees everywhere. The organisation Reforesting Scotland was set up in the 1980s after such a visit.

These people see Norway as what Scotland should be like if we had not destroyed our whole landscape by cutting down all the trees and overgrazing the land. But what is the evidence that the two countries should be the same?

Conservationists seem to have a belief that the presence of trees makes an area more natural: Scotland has few trees so humans must have got rid of them, Norway has more and hence the landscape must be more natural.

However if looked at from the perspective of grazing rather than that of trees, you could equally argue that it is the Scottish landscape which is the more natural, because, unlike Norway, it has managed to retain significant populations of its large, indigenous herbivore (red deer) throughout the postglacial period.

Which viewpoint is correct? One of the problems with such simplistic comparisons is ensuring you are comparing like with like: are the environmental conditions of Norway and Scotland so similar that you would expect the vegetation cover to be the same? Or are the differences such that you would expect significant differences between the two countries?

Characteristics of Norway

Mainland Norway is a much larger country than Scotland, stretching 900 miles from 58 degrees north to way beyond the Arctic Circle. Mainland Scotland in contrast starts further south, from 53 degrees north, and stretches for only 300 miles. Norwegian mountains also show a much greater altitudinal range, with the highest mountain at 2,400m, twice the height of Ben Nevis. The greater scale of Norway gives rise to a wider range of environmental conditions and hence a wider range of habitats. Therefore when comparing it with Scotland you need to be sure you are comparing like with like.

Southwestern Norway, adjacent to the Atlantic Ocean, has the greatest similarities, with a humid, windy, climate, mild winters and cool summers. There is one significant difference, though, which is that in Scotland easterly winds, having passed over the North Sea, tend to be humid, whereas such winds in Norway are drier. Thus Scotland tends to be humid whatever the wind direction.

Additionally, Norway has a more complex topography than Scotland, resulting in great variation in climate over short distances: a windswept coastal island will be very different to the head of a deep, sheltered inland fjord. Additionally, the fjords and mountains are steeper-sided, providing many more areas inaccessible to grazing, so favouring trees.

Eastern Norway has a gentler topography and, distant from the Atlantic Ocean, is drier with long, cold winters, and complete snow cover for many months every year. The high winter snow cover both protects young trees and scrub from grazing and limits the number of over-wintering herbivores. This provides one explanation why eastern Norway has high tree cover. The far north of Norway is different again, with fewer trees and Arctic tundra affinities.

A distinct characteristic of many parts of Norway is a clearly visible climate-determined tree-line, the trees giving way to scrub, alpine heaths, meadows and fellfield. In these areas, grazing animals in summer can pass through the forest zone and graze the alpine meadows. In Scotland, a climatically determined tree-line would in many cases coincide with the tops of our hills: there are no significant areas of summer grazing above the putative tree-line, so when our grazing animals naturally move upwards in summer they are in direct competition with the trees. This makes a distinct tree-line is less likely.

On its southwest coastal fringe, Norway does possess some vegetation similar to Scotland's with oceanic plants which are found in both countries, such as heather, cross-leaved heath and bog asphodel. But a closer look will also show some significant differences. For example, in Norway the northern or bog blaeberry (*Vaccinium uliginosum*) and dwarf cornel are common throughout, whereas in Scotland they are much rarer and confined to higher altitudes; likewise bog rosemary and twinflower are abundant throughout Norway but both very rare in Scotland. Conversely in Norway, bell heather, honeysuckle and ivy are confined to the coastal fringe in the southwest, whereas they are widely distributed in Scotland. Hence, although at first glance, much Norwegian vegetation looks very similar to Scotland's, there are significant differences between Scotland and Norway. This makes you realise that the ecology is not the same in the two countries.

It makes sense to compare Scotland only with the part of Norway most similar in environmental characteristics: the northern and eastern parts of the country are climatically very different to Scotland, with most similarities along the coastal fringe of the southwest.

Grazing animals

One particular difference in western Norway is the relative rarity of red deer. Although red deer have been present for at least 4,000 years, they declined almost to extinction through the expansion of farming and hunting, until at the beginning of the 20th century there were only seven isolated populations. Their population has since been increasing, with an estimated 20,000 in Norway in 1970 and 130,000 by 2004. This has come about through a reduction in farming activity, including lower livestock numbers, and better regulation of hunting. Roe deer and elk populations have also been increasing for the same reasons.

Unlike Scotland, Norway does still have populations of wild reindeer, but these, once found throughout the country, have been reduced by hunting and are now largely confined to the Hardangarvidda area. However domesticated reindeer are present in the east and north of the country.

Role of humans

Over the past 4,000 years, coastal moorland and peat bogs in southwest Norway significantly increased in area at the expense of woodland, so that in many areas the landscape became largely open. The conversion of woodland to moorland in western Norway over the centuries is traditionally seen as being caused by humans, particularly agricultural activity and the associated livestock.

However this vegetation change also took place during a climatic shift towards cooler, wetter conditions. A similar shift took place in Scotland over the same period, with the replacement of Scots pine woods by peat bogs, as demonstrated by the presence of bog wood across much of the country. This change from woodland to peat in Scotland is now thought to be largely natural, *i.e.* not caused by humans. This means you have to a question to whether the similar the loss of woodland in Norway was in fact caused by humans, or instead by climate change, or a combination of both. Certainly the creation of fields results in a direct loss of woodland, but elsewhere why would the

introduction of livestock in Norway cause more deforestation than the red deer they replaced, particularly as deer tend to browse trees more than sheep or cattle?

Norway – the wrong model for Scotland

Over the past hundred years most of the previously open coastal moorland of southwest Norway is now tree-covered. This has happened owing to the abandonment of farming, significant woodland planting (for example in the area around Bergen) and the natural regeneration of trees. For reasons which are unclear, observations indicate that trees regenerate more freely in Norwegian moorland vegetation than Scottish moorland, perhaps related to a difference in soil conditions or vegetation type. However this regeneration has taken place during a period when deer numbers have not recovered to more natural levels. Therefore it must be questioned whether the recent tree-covered landscape actually reflects how a natural landscape would look with its full complement of herbivores.

Although Norway has a much higher woodland cover than Scotland, all its woodlands, apart from those on the steepest slopes or in the remotest areas, have been managed or influenced by humans, and in many areas they are recent secondary woods. This factor, together with the major reduction in native large herbivores over the centuries through hunting, means the landscape of southwestern Norway cannot be said to be more natural than Scotland's. Indeed, it could be argued that Scotland, having retained a significant number of its main large herbivore (red deer) throughout the postglacial period, represents a more natural landscape than southwest Norway's.

However taking Norway as a whole, for the reasons mentioned above, you would always expect more woodland in Norway than Scotland. Adding trees to the Scottish landscape to make it look like Norway is both ecologically unsound and also leads to the loss of the distinctive Scottish landscape: open temperate moorland, with woodland only in favourable locations. Indeed, trying to make Scotland look more like Norway is the contributing to global landscape homogenisation: the trend for humans to make everywhere look the same.

We should be wary of simplistic comparisons with Norway, and instead value the open moorland which characterises Scotland and which makes us distinctive within Europe.

MOORLAND: WHY DO WE WANT IT AND WHERE?

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James Fenton April 2015

> "In mid-September the moors are changing from red to a dusky brown, as the fire of the heather wanes, and the long grass yellows with advancing autumn. Then, too, the rain falls heavily on the hills, and vexes the shallow upland streams, till every glen is ribbed with its churning torrent …"

So wrote John Buchan in the opening to his story *At the Rising of the Waters*. He might seem a slightly dated author nowadays but with his characters often walking the windswept bents and heathers you can see in his works the immense appreciation he had of our open moors and hills. Again, in his *Streams of Water in the South* he writes:

> "And all around hills huddled in silent spaces, long brown moors crowned with cairns, or steep fortresses of rock and shingle rising to foreheads of steel-like grey. The autumn blue faded in the far sky-line to white, and lent distance to the furthest peaks… I am an old connoisseur in the beauties of the uplands, but I held my breath at the sight."

In the previous century, the judge Lord Cockburn in his book *Circuit Journeys* describes his impression in 1853 of the route from Braemar down Glenshee to Perth:

> "A brilliant, though cold day. But a glorious district…. O these large, heathery, silent hills. Treeless, peakless, and nearly rockless! Great masses of solitary silence, broken only by high rills, tumbling into raging and sparkling torrents in the valley! And the gradual opening of the rich low country, ending in the beauty of Perth! Were I to see it yearly for a thousand years, I cannot conceive that the impression would ever fade."

Not so long ago the open heather moors were seen as one of the country's main tourist attractions, with numerous J. Arthur Dixon postcards of purple heather, often with a Scottie dog and/or Westie in the middle surrounded by a tartan sash. In my youth it was common to see visitors returning back to England with a sprig of heather attached to the bonnet of their car, but this is a rare sight nowadays, if seen at all.

The VisitScotland website is a good place to demonstrate this change: you will be hard put there to find any pictures of heather moor or, in the Nature & Geography section, any mention of 'moorland' or 'heather' in the text; this is in spite of there being a whole section devoted to Forest & Woodlands, which are described as "teeming with wildlife and flora."

It is as if moorland is slowly being made invisible, whether heather moors or the many other types of moor. I have even heard one eminent conservationist on television describe heather as 'a weed'. So why is it slowly being written out of our natural heritage?

I put the blame on Fraser Darling who set the ball rolling for the modern view of our hills and moors being 'impoverished wet deserts' rather than a distinctive feature of Scotland's biodiversity, almost unique in Europe. His latter-day followers such as George Monbiot believe the landscape 'should' be covered in trees but it is just that the land management of recent centuries has destroyed the forest. Hence 'woodland restoration' is all the rage in conservation circles although the evidence for widespread human-caused woodland loss is thin. If many people were asked to name a national plant, I suspect that nowadays they would say 'Scots pine' rather than 'heather'.

Don't get me wrong, I find that our relict native woods can be fascinating and beautiful places, sometimes with their own special species. However in my view, such woods would naturally be rare

in the landscape at this late stage of the postglacial era, and that aiming for their significant expansion, on the basis that 'if some are good, more must be better', is going against the natural successional trends: which is why it is so difficult to achieve. Aiming to keep deer numbers down to an order of magnitude below the carrying capacity of the vegetation to allow significant tree regeneration will be an ongoing and uphill struggle. Some conservationists will argue that reintroducing wolves would keep deer numbers down to allow woodland regeneration. But wolves have only recently (in ecological terms) become extinct: and I would have thought that the fact that 10,000 years of wolves and deer coexisting did not prevent natural woodland decline shows that this is unlikely to be the case.

Why cannot we accept that open moorland, in all its myriad of forms – grass moor, heather moor, wet heath, blanket peat – is the key habitat type of upland Scotland which needs to be retained if want to conserve the Scotland we love and cherish. However it is under threat. The Scottish Forestry Strategy has a target of 25% of Scotland under trees, with 10,000 hectares of new planting a year, and moorland is the only realistic place where new trees can be planted. Forestry of course has its place but there is no Moorland Strategy to counter-balance the Forestry Strategy, to guide new planting away from key areas of moorland. We need to identify these key areas and also state clearly and unequivocally why moorland is so important to Scotland in biodiversity, landscape, cultural and economic terms.

The Scottish Gamekeepers Association is planning to produce such a document, identifying the different types of moorland, their importance, the key locations where moorland should remain the dominant land cover; and also to produce guidelines to assist land managers in deciding the balance between moorland and woodland at a given location. In view of the current pressures on moorland we see this as an urgent undertaking. Hence we are looking for support in this, particularly donations to fund the production of such a Moorland Strategy: please contact Kenneth Stephen if you would like to contribute.

HUNTING, SHOOTING, SAVING OUR MOORS

Sunday Herald Essay 11 August 2014
James Fenton

IT is high summer and the heather moors are coming into bloom, turning into that glorious purple which was at one time the symbol of the Scottish Highlands. Not so long ago the open heather moors were seen as one of the country's main tourist attractions. In my youth it was common to see visitors returning back to England with a sprig of heather attached to the bonnet of their car, but this is a rare sight nowadays, if seen at all.

The moors are still celebrated by some, particularly now that the Glorious Twelfth is upon us, the date when the grouse shooting season opens and there is a race to get the first bird down to London restaurants. For red grouse are intimately linked to heather; it is their home, and their fate and the fate of the heather are intimately entwined.

Beyond the sporting fraternity, however, heather moorland is no longer the potent symbol of the Highlands it once was. On the VisitScotland website, you will be hard put to find any pictures of heather moor or, in the Nature & Geography section, any mention of "moorland" or "heather" in the text. The absence of any reference to moorland is mirrored in the Cairngorms National Park section.

It is as if moorland were slowly being made invisible. And in truth, this most iconic of Scottish terrain is being steadily eroded to make way for forestry, windfarms, hydro-electric schemes and mile upon mile of access tracks. Why is there no widespread outcry at this loss? Why is there no NGO dedicated to preserving moorland, as there is for every other habitat or species?

Perhaps one reason for the lack of concern is precisely because the land concerned is often grouse moor or shooting estate, symbolic of the exclusive use of the land for the aristocracy. Open moorland has become associated politically with the landowning lobby: it is derided because of its association. And the association is strong. Since the decline of the clan system, landowners have been widely accused of clearing people off the land to make way at first for sheep and later for deer.

And it is true that they preferred to have exclusive use of the land, "their land" as they saw it, for their own recreational ends: there are many stories of walkers being ordered off estates. This exclusiveness has always rankled, so that on the return of the Scottish Parliament after its 300-year absence one of its first acts was to bring in the Land Reform Act of 2003, giving legal access to everyone. However people still see the moors as the preserve of the elite where deer stalking or grouse shooting is something you do once you have become rich and joined "the establishment". The "Glorious Twelfth" is not glorious in everyone's eyes.

Another possible reason for our apparent indifference is that killing wild animals for sport is frowned on by many people, so that the moors are associated with the recreational killing of deer and the slaughter of grouse. But if, from the conservationist's perspective, there are too many deer, does it really matter whether the deer are killed by someone who is paid a salary to kill them or by someone who pays a fee to kill them? Although I do not shoot myself, I do eat meat, including venison and grouse, and I would prefer that my food had come from a clean kill on the open hill than from a wild animal farmed for eventual slaughter.

Whatever one thinks about field sports, we should value the terrain on which they are conducted – and celebrate the fact that while the landscape abides as a habitat for the red grouse, so a part of our indigenous open moorland – which has an unbroken ecological link back to the last ice age, and

whose vegetation retains one of the most natural patterns in Europe – is preserved. “Naturalness” is a key determinant of global nature conservation value and, just as we all want to keep as much of the Brazilian rainforest as possible, we should be protective of our own rainforest equivalent – Scotland’s indigenous moorland. Owing to the high organic content of its soils and peat, this treeless expanse stores at least as much carbon as a forest, and often a lot more – and hence is important in consideration of climate change.

By moorland I mean any area of unwooded ground dominated by indigenous heaths, bogs and grassland. Because Scotland’s rocks are hard and acidic, our soils waterlogged and infertile, and our climate cool and damp, trees are discouraged and our native heathers, sedges and grasses take over. These moors are the tracts of open ground that we see when we drive south over the hills to Moffat or through the Dalveen Pass to Thornhill, when we drive north to Glencoe over Rannoch Moor and onwards through Glen Shiel to Skye, or to Inverness via the wilds of Drumochter Pass. They are the vast boggy lands of Caithness and the Western Isles, the rugged landscapes of Sutherland and Wester Ross and also, far to the south, of the Galloway Hills; they are the gentler heather moors of the Cairngorms and the Angus Glens, and the grassy moors of Argyll and the Southern Uplands.

Scotland is a world centre for such temperate moorland, and for plants such as heather, cross-leaved heath and bog asphodel that grow there. Many birds – such as golden eagles, hen harriers, dunlin, curlew and redshank, as well as the red grouse, also depend on these open, tundra-like landscapes.

In the past, moorland landscapes were so common that Scots probably took them for granted. Recent research has shown, for example, that at the time of the battle of Bannockburn, whose 700th anniversary was marked earlier this year, the landscape around Stirling was virtually treeless and therefore, presumably, dominated by moorland. But nowadays it can be hard to envisage what the Scottish landscape was like before the great estates started planting trees in the 18th century, before the Forestry Commission was formed in the 20th, and before agricultural improvement removed the last of the moorland from the lowlands.

Today, moorland has retreated almost completely from the lowlands, with places such as Fenwick Moor above Glasgow, Auchencorth Moss south of Edinburgh and Flanders Moss near Stirling being but relicts of their former selves. Often the memory of this moorland lingers only in place names, particularly those containing the words “moss” or “muir”. And in the uplands, particularly during the second half of the 20th century, great tracts have been lost, either converted to forestry plantations or reclaimed for agriculture. Still, the erosion continues. The Scottish Forestry Strategy has a Government commitment to plant 10,000 hectares of trees a year.

Then there is the industrial development of windfarms, hydro-electric schemes and access tracks. In the lowlands, often the last bits of remaining moorland are the rough hilltop grazings, which are too exposed for conversion to farmland. But these areas are also the windiest locations and the places with least economic constraints – hence the obvious place to build windfarms (and also telecommunication masts).

The sad thing is that for most people, this means that the only remaining places where they can experience a bit of wild nature in their locality are under threat.

But of course windfarms are being built on moors everywhere in Scotland, particularly in the Southern Uplands and in areas of the Highlands where the national grid is nearby. I sometimes think it would be better to have two new nuclear power stations producing enough electricity full-time for the whole of Scotland than to industrialise all our moors in order to squeeze out every last kilowatt

of power from the wind or water. There is a danger of us losing our wildness completely from the cumulative impact of windfarm after windfarm. Would we want to live in a country without wild places?

Nowadays, land is expected to earn its keep, to be useful. In these mercenary times it appears we cannot afford the land just "to be". And as a consequence, we are losing the "old Scotland". Those moorland landscapes contributed to the Scots being the people that they are, and helped shape our culture and mindset. That culture is being replaced by what I see as an alien, imported one from the south (and Scandinavia), a culture of trees and woodland. And in the process, we are losing our last remaining areas of untamed wildness, which were once so much a characteristic of Scotland. If the trend of moorland loss continues, we will nowhere be able to remember what nature was like in the raw. We are also losing the habitats, plants and animals that are among Scotland's main contributions to global biodiversity.

One reason for this indifference towards moorland can be traced back to ecologists such as Frank Fraser Darling, who described the Highlands as a landscape degraded by centuries of deforestation. Construing moorland as a consequence of human destruction creates a kind of moral imperative to "put trees back" into the landscape. One famous Scottish conservationist has even referred to heather as a "weed".

Even organisations devoted to conserving Scotland's wild places, such as the John Muir Trust and the Scottish Wild Land Group, are keen to keep covering the moors with trees. This tendency has also been taken up by some landowners such as the Danish billionaire Anders Povlsen who, in addition to Glen Feshie, has bought two moorland estates in Sutherland to fulfil his vision of "restoring" the ecology of the area by creating large areas of new native woodland.

I think we are being brainwashed through a potent mix of ecology and politics, that there is a subliminal message of woodland "good", moorland "bad". Looking after moorland is seen as a top-down activity preserving a degraded landscape for an elite, whereas woodland creation is a bottom-up, community activity restoring a degraded landscape for the many. For, unlike grouse shooting, woodland creation is widely promoted as a community activity by the likes of Reforesting Scotland, Trees For Life and the RSPB.

We are making a mistake. Moorland is not merely degraded woodland but an important natural habitat, one that distinguishes Scotland from the uplands of mainland Europe. Nor should it be damned by its association with field sports and the landed gentry. We need to put politics aside, and separate the activities that take place on the land from the land itself.

No-one should underestimate how much we stand to lose. Have you ever walked the moors with a wet west wind blowing cold against your cheeks? Or run downhill through deep, sunlit heather? Or surprised red grouse and watched the covey fly away downwind, crekking, while, in turn, mountain hares are watching you, trying to calculate your every move? Have you ever admired the bog cotton, brighter even than snow, as it shakes continually in the ceaseless wind? Have you walked long days and been so alone that the cry of the golden plover brings tears to the eyes?

Anyone who has spent time in these places could not contemplate the loss of those bleak, windy, windswept, midge-ridden, rough, boggy, and yet glorious moors. Who would want to replace the call of the whaup, the crek of the grouse, the pip-pip of the pipit, the beauty of parnassus, the orange glow of the asphodel, the blue of the milkwort, the smell of the myrtle and of heather in bloom, the black of the peat hag, the white of the bog wood?

Moorland is at the heart of Scotland, and it needs to be preserved for future generations. In this respect, Scottish Natural Heritage's new map of wild land is a good start because most of the areas identified consist mainly of moorland: we should use this map to prevent further encroachment of windfarms, hydro schemes, new woods and tracks in these locations. However there is a lot of moorland outwith these areas, and we also need a comprehensive moorland strategy for Scotland – on a par with the forestry strategy that already exists – in order to identify the key moors we want to retain, and the steps needed to protect them.

As it is, the chief defenders of our moorland seem to be those who want to shoot grouse and deer over it, and are willing to pay good money to do this. Hence the shooting lobby appears to be the first line of defence – although I am told that even some field sports enthusiasts are no longer coming to Scotland because the proliferation of windfarms is ruining the ambience and wildness of our moors and hills.

THE DEER-FOREST DIVIDE

The Shooting Times 14 November 2013
James Fenton

Policies on deer density and reforestation

There is currently a debate in the Scottish Highlands between conservationists and deer managers on how to regenerate native woodland. Conservationists would like to see deer numbers reduced to a level that allows young trees to survive. This requires a very low deer density of one deer per 30 to 60 acres, but this could bring them into conflict with sporting estates, which see this as too low to maintain their commercial viability. They argue that, if woodland is to be regenerated, it makes more sense to put up fences — temporarily if need be.

Initially it appears that both sides are correct, but I believe there is a fundamental flaw underlying the conservationists' argument (though I am one myself). Calculations suggest that, assuming 10 per cent of plant growth is eaten each year, the native vegetation has a carrying capacity of one deer per three acres, 10 times higher than that proposed by conservationists. They are, in fact, arguing for an unnaturally low deer density. Even if predators, such as wolves, were present, it is improbable that they would reduce numbers so dramatically. Such a low density would also be difficult to maintain in the long-term, as the amount of un-utilised grazing will always draw animals in.

Sensitivity to grazing

One reason why trees are so sensitive to grazing here is that the soil conditions are poor, with high soil moisture and low nutrient availability hindering their regeneration. Another is that the oceanic climate provides no snow cover to protect trees from winter grazing, and it also allows relatively high numbers of over-wintering herbivores. Additionally, most of upland Scotland is ecologically unsuited to thorny scrub, which in other parts of Britain can protect trees from grazing during the first stage of succession from open ground to woodland. However, along the coastal fringe, woodland can regenerate in places even with high grazing pressure: this is because milder conditions allow more winter growth of grass, taking grazing pressure off trees.

Woodland might therefore be expected to be naturally rare in the Highland landscape. Conservationists find this hard to accept. The idea of a Great Wood of Caledon, which once cloaked Scotland from coast to mountain top, is still powerful. However, one of Scotland's foremost historians, the Historiographer Royal, Professor Christopher Smout, has stated that it is a myth.

Certainly, there were once more trees in the landscape, as shown by tree stumps found in peat, but these generally date to between 4,000 and 5,000 years ago. Their loss has been put down to climate change and natural soil impoverishment. Indeed, research suggests that on poor soils, there is a natural post-glacial succession from open ground to woodland then back to open ground.

However, the concept of "woodland restoration" has such a strong hold that it is the policy of all conservation organisations. It is also backed by the Scottish Government's Scottish Forestry Strategy, which envisages a quarter of Scotland being wooded. In contrast, there is no moorland strategy, which is surprising when Scotland's open moors and bogs are seen as internationally important. In my view, this not only goes against the natural ecological grain, but will also result in the loss of what makes Scotland so distinctive: an open landscape where the great boreal forests have come to an end on the Atlantic fringe of Europe.

Though I am not a shooter, I sympathise with landowners who are being lobbied to keep deer numbers way below the carrying capacity of the vegetation. Conservation needs to be underpinned by science — and these issues need much more debate. -

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THE DARK SIDE OF THE WOODS

Sunday Herald Essay of the Week 27 October 2013
James Fenton

The Scottish countryside can be beautiful at this time of year as the trees turn to their autumnal golds, russets and reds.

The broad-leaved woodlands of Perthshire are particularly renowned and there is even an Autumn Colours Telephone Hotline to give updated information on where to see the county at its seasonal best. But it is not just the beauty of trees that appeals to us. At my home in Argyll, the rowan berries have been particularly good this season, so much so that I have just finished picking a bucketful to make into the traditional Scottish rowan jelly.

Our liking, or even passion, for trees has led to the consultation by the Scottish Government on whether Scotland should have a national tree and, if so, what this tree should be. There is a strong lobby in favour of it being the Scots pine. Certainly "granny" pines, ancient at up to 500 years old, with their flat-topped crowns, wide-spreading branches, dark green foliage and orange bark, are beautiful to behold, especially when set against a backdrop of loch, glen or hill. Indeed, in recent years Scots pines have perhaps become icons of the Scottish Highlands, even of the Scottish countryside itself.

However, when we think of the Highland landscape, this dominance of Scots pine in our imagination is surprising considering that, at the beginning of the 20th century, when woods covered only 4% of our country, pinewood covered a miserly fifth of 1% of the Scottish land area - yes, only 0.2% of Scotland. So why do pine trees have such a hold over us? One reason is that, lodged in the Scottish people's mind, is the idea of the "Great Wood of Caledon", the idea that Scotland was once clothed from coast to mountain-top with forest - and it was all destroyed by our ancestors, much like we are cutting down tropical rain forests today. Hence an argument used for increasing the number of trees is that, because humans destroyed this Caledonian Forest, there is almost a moral imperative for us to put it back. Planting Scots pine, or any native tree, is doing our bit to "save the planet".

Expanding the woodland cover of Scotland is, in fact, the policy of all conservation organisations. For example, the charity Trees For Life's vision is to "restore Scotland's Caledonian Forest". The Woodland Trust, John Muir Trust, Scottish Natural Heritage and Scottish Wildland Group all wish to see increased woodland cover.

The RSPB wants to expand its Abernethy native pinewood through planting, while the Cairngorms National Park Authority states that "woodland cover should be expanded through habitat networks ... [with] the creation of new forest nuclei". The list of organisations in favour of woodland expansion goes on and on. And people can get very emotional about the subject. The environmentalist writer and campaigner George Monbiot, for example, wrote recently that our open hills, devoid of trees which were once cloaked in forests that we have destroyed, are a "blasted, impoverished land".

Restoring the Great Wood of Caledon would be a valid argument if humans had, in fact, destroyed such a forest but the evidence for this is thin - we just know it because we know it. Although there are certainly some areas where the evidence supports human destruction of woodland, there are also areas where our presence caused woods to be conserved or even expanded because of their economic importance. It is said that the large post-Clearance sheep farms caused the woods to disappear, any young trees all being eaten by sheep and so preventing the

wood regenerating. However, woods were rare in the landscape even before this era, so the sheep cannot be to blame; and in earlier times there would have been wolves in the landscape making it impossible to keep free-ranging grazing animals in the hills.

With the recent decline in sheep numbers, the blame for lack of trees is put down to deer: "there are too many deer" is the mantra and their numbers must be brought down to allow the woodland to recover, particularly as they have no predators to control them. In fact humans are a major predator of deer, and wolves would have to eat more deer than are shot by stalkers to keep their numbers down, which seems unlikely. It is possibly true that, if wolves were present, they would move deer around, allowing trees to grow in some places but the fact remains that the trees in Scotland largely disappeared in the period when wolves were present. Deer certainly do damage trees: but rather than being a problem, they are merely a shaper of the ecology of Scotland.

Of course, humans could have just cut or burnt down the original forest, causing it to disappear. However, much of upland Scotland has always been very remote with a low population density, and a simple question is: if the humans removed the trees, why did they not regrow again?

No, the reason for woodland naturally being rare in the Highland landscape is explained in one of the Forestry Commission's own information notes: "A combination of very low soil nutrient availability and high soil moisture provides very unfavourable conditions for colonisation of birch, rowan and Scots pine."

I actually think it is more complicated than this, with grazing and other factors also playing a part but the essence of my case is stated there: the simplest explanation for why most of the Highlands are open moor rather than forest is that trees find it hard to perpetuate themselves here. There are exceptions to this, particularly along the coastal fringe where woods can regenerate freely.

Undoubtedly there were more trees in Scotland following the ice age; indeed, as anyone who has ever cut peat or walked the hills will know, stumps of ancient pines can be found in bogs in many areas where there are no trees today. However, these stumps generally date from 4000 to 5000 years ago and were often relatively short-lived forests that expanded then died out naturally.

Research suggests that, following an ice age, woodland can expand only to decline over time irrespective of human influence. The organisers of a conference on native pine woods in the 1970s concluded that pine woods may be an endpoint, "before return to open moorland as a result of soil degradation".

However, the concept of the Great Wood has been around since Roman times and we in Scotland just take it as unquestioned truth. This is in spite of the fact that Scotland's most distinguished historian, Historiographer Royal, Professor Christopher (TC) Smout, has dismissed it as a product of our imagination. "Let us begin with the Great Wood of Caledon," he writes in Nature Contested, his environmental history of Scotland and northern England. "It is, in every sense of the word, a myth." Likewise, the historian David Breeze, in his paper The Great Myth Of Caledon, argues: "Roman descriptions do not allow the forest to be located with any exactitude; the sceptic might even doubt whether it ever existed, and that all we are dealing with is a myth repeated by many writers."

So why does the myth of the Caledonian Forest, together with the importance of Scots pine in the landscape, still dominate our thinking? So much so that the Government's Scottish Forestry Strategy commits us to covering a quarter of Scotland with trees. Certainly, emotion is involved: the term "Scots pine" has the word "Scots" in it and the phrase "Caledonian Forest" has a nationalistic ring. In fact Scots pine is probably so called because it is not found naturally in England; however it is the

most widely distributed conifer in the world, being found all the way across Europe and Asia to the Sea of Okhotsk in the Far East.

So what is the problem with putting more trees into the Highland landscape? Fundamentally, if humans did not destroy the once mighty Caledonian Forest and trees largely disappeared through natural causes, then the area can hardly be described as a "blasted, impoverished land". In fact, it may well represent one of the few remaining natural vegetation patterns in Western Europe and, as such, should be prized by conservationists. Our Scottish open hills and moors, which contain an unbroken link back to the ice age, should be put in the same category as tropical rainforests, mangrove swamps and arctic tundra: any human intervention which reduces their naturalness, such as planting trees, will reduce their conservation value.

By choosing to expand Scots pine forest we are, in fact, creating a common European woodland type, thereby displacing open moorland which is rare in Europe. We humans tend to give more value to the rare than the common: hence, with woodland rare in the Scottish landscape, we give it greater value than the abundant open moorland. And the general feeling is, although it is a non sequitur, if some is good then more must be better.

The "restoration of the Caledonian Forest" rationale is still commonly used to justify this expansion. Curious to know what the Historiographer Royal makes of this argument, I contacted Professor Smout last week. "When Scots pine is planted in places where there has not been any for millennia, then this is not so much restoring a lost ecosystem as creating a new one. That is not necessarily a bad thing," he replied.

"But it is wrong to say that it is an accurate historical restoration, since the entire climate and ecological circumstances were different to what they are now." In other words, there might still be a case for woodland expansion, but it should not be based on the "restoration" argument. So what are the other arguments that conservationists use?

One justification put forward by the Government and others is based on the fact that Scotland's woodland cover is way below the average for European countries, and hence we need to raise it. The logic eludes me. Italy has fewer peat bogs than the European average; should Italy create more bogs? Austria has fewer sand dunes than the average; should these be created? Our glacier cover is less than the Scandinavian average; should we have more glaciers? In any case, why are we trying to make Scotland look the same as most of the rest of northern Europe? Why are we not instead trying to conserve our own distinctive open hills and moors?

Another argument put forward for more woodland is the vague notion that woods are good for biodiversity. Well, heather moorland is also good for biodiversity. Pine woodland and the open habitats of wet heath, dry heath and bog are all recognised as important for biodiversity in European terms - and expansion of one will be at the expense of another. Why is woodland more important? Because it is rarer?

It is also argued that linking together isolated areas of woodland is a good thing, as it allows wildlife to move around the landscape: however, the end result of such a network of woodland is to fragment the existing network of open moorland. Is it sensible to destroy one network to create another? Perhaps, once moorland becomes rare because of all the tree planting, then people will say it is important, and trees must be cut down to make more of it.

With climate change in the news, another argument put forward for woodland planting is that it helps slow down climate change through the trees storing carbon in their wood. However, while a

valid concept in many parts of the world, one has to be wary of assuming this to be the case in Scotland - where most trees are being planted on carbon-rich soils which generally store more carbon than the trees themselves. In fact, trees can cause the soil to dry out and so release this carbon into the atmosphere.

There is, though, one rather more credible argument: we all use wood and need more timber. This I can understand, but society will have to decide how much more of our distinctive open hills and moors we are prepared to lose to commercial forestry plantations.

If the Great Wood of Caledon is a myth, and most woodland died out naturally over the millennia, then there is no real case for woodland "restoration". Indeed, covering our globally rare heather moorland, and all the other moorland types, with trees is causing a loss of the distinctiveness of Scotland. Moorland may at times be bleak and windswept, blasted by rain or snow, or enshrouded in mist, but its open, free-ranging and cloud-studded landscapes have given the people of Scotland a wide perspective: it is the "old Scotland" which nowadays we are wanting to smother with a modern, imported culture of woodland.

No, I am not convinced that there is a strong need for Scotland to have a national tree, although if there has to be one I would recommend the rowan or birch, which are common throughout and so characterise the country. Instead I would suggest that heather should be the national plant, or perhaps "national shrub" if height is important.

Do not get me wrong: I like our native woodlands. But we are the world centre for heather and it is open moorland that makes the Scottish countryside distinctive. And we seem determined to destroy it.

UNPUBLISHED ESSAYS

ARE GARDENERS IRRESPONSIBLE?

James Fenton 13 September 2017

A recent report written by the Conservative Environment Network and approved by Theresa May concludes that getting more people gardening should be a key government policy because of the health, social and aesthetic benefits that gardens provide. Gardening is unequivocally seen as a good thing, whether the stereotype of the quintessentially English cottage garden as exemplified in Miss Marple's peregrinations, the aristocratic garden where Lord Emsworth is continually at war with aphids or the modern community garden providing much-needed green space and wholesome produce to the urban masses. What on earth could be wrong with all this?

There is a dark side to gardening, though. As ecological awareness slowly dawned on us during the 20th century (a dawn which is receding in the 21st?) it became apparent that moving species willy-nilly around the planet was not a good thing. Many of the species introduced by humans to new places, either accidentally or on purpose, have outcompeted the indigenous ones and themselves become problems. This includes all life-forms, whether mammal, insect, plant or pathogen.

The process has been going on a long time: for example, rats from China or arable weeds coming in with the first cereals. Scots émigrés to New Zealand took with them the species which reminded them of home and which since then have significantly damaged the native ecology: heather, gorse, trout and red deer to name but a few. Such transport has accelerated considerably in recent years with the increase in global trade and travel. With our passion for gardening, when we see a plant we like, we want it – all without any regard to whether it will be satisfied in being constrained by the bounds of our garden. And when we are fed up with it, we just chuck it over the garden fence from where it can proceed unhindered into the wider countryside. There is also the issue of the wholesale destruction of peat bogs brought on by our desire to use peat as a compost.

A whole horticultural industry has grown up to fulfil this demand with, for example, mass transport of plants grown in Holland to UK garden centres. Unfortunately unwanted hangers-on can also enter the country with the imported plants: think New Zealand flatworms which are decimating our earthworm populations. And remote Fair Isle is an interesting case in point: as the islanders have become richer they have been importing plants from garden centres along with the pests which had never managed to get the island on their own accord. But how many of us really take biosecurity seriously? For example, do we find irksome any restrictions preventing us bringing plants back with us from our travels?

It is a fact, though, that one of the main causes of species extinctions on this planet has been due to the spread of invasive, non-native species. And as we all tend to have the same likes and dislikes, albeit subject to fashion, our gardens tend to have the same species: and when these leap over the wall and invade the surrounding countryside we will eventually find that everywhere looks the same. A few common garden plants will take over from our native flora. We will lose the distinctive ecology of Scotland, ending up with a globally homogenous landscape type.

To name some of the culprits: the well-kent ones are rhododendron ponticum, which will eventually take over the whole of our uplands if not controlled, Japanese knotweed, giant hogweed and Himalayan balsam which will likewise colonise all our river courses. But there are many, many

more: leopard's bane, periwinkle, the giant gunnera, salmonberry, Himalayan honeysuckle, sisirynchium, several cotoneaster species, the ubiquitous montbretia, the ever-commoner lady's mantle, buddleia, acaena, gaultheria, griselinia, the rapidly spreading lesser knotweed … Should we not be more careful in choosing the species to plant?

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A STORY OF WOODLAND

James Fenton January 2015

Do we not all prefer a good story to the truth? Do we not all use science selectively, using only the evidence that supports our prejudices, and finding good reasons why evidence in contradiction to them is flawed? Do we not realise that sometimes our pet theories may be slowing dying a death of a thousand qualifications? i.e. we find reasons why contrary evidence does not apply to our particular case. If, for example, we want to prove that predators control prey numbers we choose an example where this happens, and if we want to prove the opposite likewise we choose the best example.

Let me tell you a story, suitable for children on a long Christmas night …

Once upon a time, my best beloved, there was a wonderful forest full of God's creatures which cloaked Scotland from head to toe. It was a diverse wood of many different trees, full of nuts and berries and mushrooms for people to eat, people who lived in harmony with the trees, harvesting them selectively so that there would always be wood for fuel and timber for building. The people shared the wood with a host of large animals, animals who kept to themselves but did not harm the trees; some, like the bear and the wolf were fierce and to be avoided, although presenting a challenge to any hunter wanting to show off their prowess; others like the lynx were rarely seen. The deer kept to the forest, hating any areas of open ground to which they were not suited and again were rarely seen because they were kept on their toes by the wolf, who was always out to get them. The blue hares up on the tops of the hills were careful to avoid eating the abundance of shrubs found above the forest itself.

In this harmony of Eden the trees were well-behaved: they ensured there were always enough of their youngsters: children, parents and grand-parents growing together in equal numbers, and they were not racist – they liked to grow with others unrelated to themselves. The great enemy was the rain, always trying to fell the forest by stealth. The rain had tried a hard approach, encouraging the spread of metallic iron in the soil which the soft tree roots could not defeat; and a soft approach, washing out all the plant food and encouraging plants which waterlogged the soil and caused the tree roots to die. But the forest was strong, it was resilient and robust, it recycled its own food and it kept these forces of darkness at bay.

But there came a time when the people, who once saw the forest as their home, out of their own greed turned their faces against it. They cut it down, they burnt it, they destroyed it for their own selfish ends. Industrialists came up from the south with metal of their own to reap the rich rewards which could be had from its destruction. And when the forest was all but gone, it was finished off by the myriad sheep who had replaced the friendly cow, the woolly locusts who could not help themselves in eating the last trees of this once great wood.

And it was we, my best beloved, who brought in the sheep, it was we who cut down the trees, and it was we who destroyed the wolf. We are now reaping the deserts of our actions. The deer have taken over the land, keeping their new sworn enemy (where once it had been their friend), the tree, at bay, and the iron and the peat have taken over the soil, leaving a desolate and devastated landscape in their wake. And so, my child, when you grow up I would like you to take the fiery cross in one hand and a tree in another and restore to this great country of Scotland what should rightfully be there …

Re. A Woodland Story

The above story is a very good one and it resonates with many: indeed, as a young ecologist I used to believe it. However, over years direct observation of nature began to conflict with what I then knew to be true. For everyone knew it to be true, and most still do, although, in my view, on the flimsiest of evidence – or none at all: we just know it because we know it. However, like all myths it does contain some elements of truth. Let's, then, separate out the truths from the myth – but I do this with some trepidation for no-one likes their cherished beliefs to be challenged …

1. Once upon a time, my best beloved, there was a wonderful forest full of God's creatures which cloaked Scotland from head to toe.

There is no *a priori* ecological reason why woodland should be the climax vegetation of Scotland: because it is in other parts of the world it does automatically follow that it should be here.

There have certainly been more trees in Scotland in the past as indicated, for example, by the sub-fossil tree stumps under peat in places where there are currently no trees. However research shows that these generally date to 4-5,000 years ago and represent an episode of tree colonisation. Research also indicates, for example, that in areas where there are still relict populations of pine trees, fragmentation of this woodland type began as early as 7,500 years ago (see reference at end). The historian Christopher Smout calls the 'Great of Caledon' a myth 'in every sense of the word.

What is perhaps surprising is the lack of tree remains in peat dating from the past few thousand years. If trees had been common in the landscape we would have expected more incursions of trees onto peatland, particularly in the drier periods of natural climate fluctuations: we know, for example, that today it can be difficult to keep trees from colonising raised bogs if seeding trees are nearby.

If in post-glacial times woods first expanded in extent and then declined, then we would expect the same to have happened to the associated woodland birds and mammals – perhaps even to extinction.

2. It was a diverse wood of many different trees, full of nuts and berries and mushrooms for people to eat, people who lived in harmony with the trees, harvesting them selectively so that there would always be wood for fuel and timber for building.

There is no *a priori* reason why the woods should have been ecologically diverse, whether in trees, shrubs, woodland flora or fauna. Observations today show that most tree species naturally regenerate episodically as even-aged, mono-specific stands. When woods colonise open ground as part of a regeneration cycle, the ground flora is often very species-poor. Because many of the woodlands tended to move around the landscape over time, the concept of 'ancient woodland' is problematical. Only on the richest soils and areas of most temperate climate (for example on Argyll coastal slopes) would there be woods both diverse in tree species and with a rich ground flora. Sessile oaks and Scots pine, with their acid litter, result in a particularly species-poor ground flora.

Woods were a valued resource, so it is probable that over most of history humans tended to conserve them rather than destroy them – so protecting them from natural decline.

3. The people shared the wood with a host of large animals, animals who kept to themselves but did not harm the trees; some, like the bear and the wolf were fierce and to be avoided, although presenting a challenge to any hunter wanting to show off their prowess; others like the lynx were rarely seen.

As woods naturally expanded and declined over thousands of years, it would be expected that the fortunes of obligate woodland animals would do likewise. However it is certain that humans caused extinction of some, such as the wolf, and possibly caused or accelerated the extinction of others. There is no *a priori* reason why large mammals would not harm trees: large herbivores can be drivers of ecosystem dynamics, such bison on the American prairies or the range of grazing species on the plains of the Serengeti.

4. The deer kept to the forest, hating any areas of open ground to which they were not suited and again were rarely seen because they were kept on their toes by the wolf, who was always out to get them.

Observations show that red deer have a wide ecological amplitude, surviving in wooded, semi-wooded and unwooded ecosystems. Hence, unlike roe deer, they should not be seen as 'obligate woodland animals'. To what extent the wolf would have affected red deer population size and distribution in Scotland is unknown, as is the past population sizes of red deer: it could be that the killing of deer as a food source kept deer numbers down (and hence encouraged trees), or it could be that, away from settlements, humans had little impact on deer population size.

The population of large herbivores is generally regulated by the ecological carrying capacity of the vegetation, with predators acting as an overlay on top of this. Wolves would have had to eat annually a large percentage of the red deer population to keep their numbers down, although their presence would be likely to locally affect the distribution of deer. In terms of the interaction of wolf/deer/trees, woodland naturally declined over thousands of years even when wolves were present; hence it is unlikely that the reintroduction of the wolf would result in them controlling the red deer population enough to cause significant woodland expansion. However it is possible that the role of lynx might be stronger in controlling roe deer numbers than the wolf in controlling red deer numbers.

5. The blue hares up on the tops of the hills were careful to avoid eating the abundance of shrubs found above the forest itself.

The lack of tree remains at the base of high altitude blanket peat indicates that montane scrub has probably always been rare in Scotland. Unlike, say Norway, Scotland does not have a consistent winter snow cover which would protect high-altitude scrub from grazing. Additionally, Scotland's temperate climate allows relatively high numbers of over-wintering herbivores; and midges, disturbance and better grazing tends to attract deer to the higher hill slopes where scrub would otherwise grow.

Much of the low ground became overlain by peat, with the vegetation providing little grazing value. Any small areas of willow-scrub, with their succulent shoots, would tend to attract both red deer and mountain hares. The acid soils of most Scottish hills would preclude a high diversity of montane scrub species. The willow species perhaps most characteristic of upland Scotland, *Salix aurita*, is still common in the landscape although it only forms dense stands in the absence of grazing.

6. In this harmony of Eden the trees were well-behaved: they ensured there were always enough of their youngsters: children, parents and grand-parents growing together in equal numbers, and they were not racist – they liked to grow with others unrelated to themselves.

Observations today show that most tree species naturally regenerate episodically as even-aged, mono-specific stands, with a tendency to species-poor woods except on the richest soils in the most favourable locations. The most common tree species (downy and silver birch, sessile oak, and Scots pine) tend all to be shade-intolerant, *i.e.* young trees cannot grow under the closed canopy of mature forest. Hence woods would not be expected to have a balanced age-range of trees at a given site. Woodlands could naturally expand, stay the same or decline to extinction depending the balance of factors affecting tree regeneration – see list of factors at the end. There is no *a priori* reason why the woods should have been ecologically diverse, whether in trees, shrubs, woodland flora or fauna.

7. The great enemy was the rain, always trying to fell the forest by stealth. The rain had tried a hard approach, encouraging the spread of metallic iron in the soil which the soft tree roots could not defeat; and a soft approach, washing out all the plant food and encouraging plants which waterlogged the soil and caused the tree roots to die.

Most of Scotland's rock types erode to form nutrient-deficient, acid soils. In a climate where precipitation exceeds evapo-transpiration throughout the year, nutrients are leached out of the soil (podsolization). Over time an impermeable iron-pan develops, preventing further downward drainage of water, leading to waterlogged soils, forming a barrier to root growth and isolating roots from the more nutrient-rich layers below – all detrimental to tree growth and tending to result in peat formation. Additionally, the combination of waterlogged soils and relatively high winter temperatures can cause physiological stress in trees.

8. But the forest was strong, it was resilient and robust, it recycled its own food and it kept these forces of darkness at bay.

Research shows that birch trees can to some extent prevent the above soil processes by re-cycling nutrients from the deeper layers of the soil to the surface layers (through annual leaf fall). Scots pine in contrast tends to accelerate soil acidification. However research suggests that podsolization/iron pan development/peat development was a pretty relentless process over thousands of years. Additionally, the tree species most suited to these acid soils (downy and silver birch, Scots pine, sessile oak) are all shade-intolerant, *i.e.* young trees cannot grow under the closed canopy of mature forest. This is likely to lead to episodes of open ground where soil leaching can take place. Evidence suggests that much of the level ground of Scotland at low altitudes, whether coastal plain, raised beach or glen floor naturally became raised bog rather than woodland.

9. But there came a time when the people, who once saw the forest as their home, out of their own greed turned their faces against it. They cut it down, they burnt it, they destroyed it for their own selfish ends.

Inland Scotland was an inaccessible place until the road-building programme started in the 1700s, with huge tracts of mid to high altitude upland distant from any human population. There could not have been large-scale extraction of timber except along large rivers or lochs where present. If the trees were cut down, the question arises: why did the trees simply not regrow? Soil disturbance from felling results in ideal regeneration conditions, as do occasional fires, and summer-only cattle

grazing (the shieling system). The presence of the wolf would have precluded large free-ranging flocks of goat or sheep which might have hindered regeneration.

10. Industrialists came up from the south with metal of their own to reap the rich rewards which could be had from its destruction.

Certainly the development of iron furnaces in the 18th Century needed considerable amounts of wood for charcoal but at, for example, the longest running iron furnace at Bonawe, woods were as extensive at the end of the iron-smelting period as the beginning: the woods must have been sustainably managed for charcoal. Oakwoods are still common in many former iron-working areas such as Loch Maree and Argyll.

11. And when the forest was all but gone, it was finished off by the myriad sheep who had replaced the friendly cow, the woolly locusts who could not help themselves in eating the last trees of this once great wood.

Large-scale sheep farming in the Highlands, which began in the 1700s, could not happen until the wolf had been made extinct. However the woods were largely gone by 1600: hence sheep cannot be held responsible for decline of a 'widespread forest'. Sheep may have caused further decline of some woods locally, but woodland can sometimes be seen expanding in the presence of high sheep numbers. Sheep do not necessarily prevent woodland regeneration, although they will impact on some trees more than others, their preferences being willows, rowan, broom and gorse rather than birches and pine.

14. And it was we, my best beloved, who brought in the sheep, it was we who cut down the trees, and it was we who destroyed the wolf.

Certainly we brought in sheep but they cannot be held responsible for creating the Highlands' largely open landscape. Likewise there is little evidence that human tree-felling has created the Highland-wide open landscape, although this may have contributed to some local areas being unwooded. We certainly made the wolf extinct, but the wolf as a predator of grazing animals had over the previous 10,000 years failed to prevent woods declining in the landscape. Evidence points to a long-term natural expansion of woodland in the Highlands followed by a long-term natural decline, brought about by a complex array of factors, including climate, soil development, peat development, the nature of the plants themselves and grazing by native herbivores. Natural decline of woodland might have continued if it were not for the modern human intervention: it is possible that future climate change could reverse the natural decline processes or accelerate them – there is uncertainty here.

15. We are now reaping the deserts of our actions.

No, except in and around settlements (inbye land, land below the head dyke), we have inherited in the Highlands one of the most natural vegetation patterns remaining in western Europe. Certainly intensive moorland management for grouse shooting has reduced the naturalness of the locations where it occurs. However these locations would still be moorland without management, and the management itself can increase the overall species diversity (plants and animals). Our open moorland contains globally rare plants such as cross-leaved heath and bog asphodel, and in places is internationally important for its mosses and liverworts. It also encourages Arctic bird species to breed further south than they would otherwise do.

16. The deer have taken over the land, keeping their new sworn enemy (where once it had been their friend), the tree, at bay, and the iron and the peat have taken over the soil, leaving a desolate and devastated landscape in their wake.

The wolf as a predator of grazing animals had over the previous 10,000 years failed to prevent woods declining in the landscape; the generally open landscape is the result of natural processes. Hence, although there is a conservation case for bringing back the wolf to restore the naturalness of the Highland ecosystems, it is unlikely to control red deer numbers enough to allow significant native woodland expansion – bearing in mind the generally poor soil and ground conditions for woodland establishment. It is possible that when humans first colonised Scotland they hunted red deer for food, thus allowing an unnatural expansion of woodland through grazing reduction (although this is speculation).

It has generally been the case in Europe and elsewhere that humans have considerably reduced the populations of large mammals, many to extinction. Hence, in places where a significant populations of large mammals have managed to cling-on, such as red deer in the Highlands, we, not being used to seeing large numbers of animals, instead of saying 'fantastic', say 'there are too many deer'. We do not complain, for example, about the large number of herbivores found on the plains of the Serengeti and which help maintain an open landscape. Large herbivores should be seen as keystone species, driving ecosystem dynamics. If woodland cannot survive their presence, and it cannot over much of the Highlands because of the natural absence of thorny scrub which, in most of temperate Europe, protects regenerating trees (the Frans Vera model), then woodland is likely to be scarce. Additionally, grazing generally increases the species diversity of the ground flora (although excluding some species), maintains soil fertility through enhanced nutrient cycling, and discourages peat development (through eating plant litter which would otherwise form peat).

It does appear to be the case that in recent years the number of red deer has been increasing in some areas; however over the same period there has been a considerable reduction in the number of sheep so the overall level of grazing may not have changed much. Ultimately the main factor affecting herbivore numbers is food availability.

17. And so, my child, when you grow up I would like you to take the fiery cross in one hand and a tree in another and restore to this great country of Scotland what should rightfully be there …

Be careful – and be sure what it is you are trying to restore and why. If you are trying to restore natural ecosystems to Scotland, you need to be certain that their currently state is not largely natural. You need to be objective and fully understand the long-term ecological dynamics of the landscape. You must lose your obsession with trees – and see a tree as just one more plant that might or might not be appropriate to the locality. You must not be blinded by 'diversity' – expecting to see lots of different species everywhere: there is no reason why ecosystems should be diverse.

If it takes a lot of effort to force your vision on the landscape, then you need to question your vision because the difficulty of implementing it suggests you are working against natural processes. You must beware of damaging the remaining naturalness of the Highlands by your actions, because places where nature is still in charge, and has been for thousands of years, are becoming increasing rare on this over-crowded and over-managed planet. Taking up the fiery cross can be appealing, but be careful that its emotional appeal does not lead you to places where nature is reluctant to go.

Notes

Extracts from pages 58-9 of: Paterson D, 2011. *The Holocene history of Pinus sylvestris woodland in the Mar Lodge Estate, Cairngorms, Eastern Scotland*. PhD thesis, University of Stirling.

"In core areas [of pinewood], woodland is subject to fragmentation from as early as *c*. 7500 cal BP; fragmentation is diachronous and is believed to have been earliest in the west ... Human activity is sometimes implicated in woodland fragmentation but is more often cited as reinforcing the effects of a maritime climate preferentially affecting *Pinus* dominated woodlands … Only in Speyside is human activity thought to initiate disintegration.

"In west Glen Affric, *Pinus* began to decline at c. 4000 cal BP with woodland continuing to fragment until c. 2000 cal BP … by which time the valley consisted of the 'apparently monotonous treeless landscape' seen today.

"Arrival of *Pinus* at Geldie Lodge [Mar Lodge Estate] is undated but occurs before *c*. 7550 cal BP. Woodland is always more open; *Pinus* is co-dominant with *Betula,* showing affinity with other peripheral areas. *Pinus* woodland fragments at all Mar Lodge sites from c. 3900 cal BP, disappearing from Geldie Lodge by c. 2800 cal BP and White Bridge by *c*. 1900 cal BP. *Calluna* replaces *Pinus* as the dominant species at all three sites. The disappearance of *Pinus* is thought to relate to regional climatic change toward wetter conditions."

Factors influencing tree regeneration

– Seed production and fertility
– Seed dispersal (including role of jays/squirrels with oak)
– Soil conditions: nutrient availability (pH), water content, presence of iron-pan
– Competition between seedlings and other plants
– Shading of young trees by taller plants (can encourage mildew on oak seedlings; oak, birch, Scots pine generally shade intolerant)
– Dense litter preventing seedling establishment
– Trampling by large herbivores (creates seed beds)
– Grazing of seedlings/saplings
– Caterpillar grazing (caterpillars falling from oak canopy eat leaves of seedlings)
– Lack of thorny shrubs (protect young trees from grazing)
– Presence of deadwood (as an establishment site for seedlings/preventing grazing)
– Availability of mycorhizza fungi in the soil
– Air/soil temperature
– Wind exposure
– Late frosts
– Warm & wet winters (tree respiration remains high, but trees stressed owing to roots being in waterlogged/anaerobic conditions)
– Lack of winter snow cover (snow protects trees/shrubs from grazing)
– Presence of winter snow cover (Scots pine in Norway can get attacked by fungi under snow; in Scotland?)
– Disease
– Chance

All these issues are discussed further:

1) Visually in *Towards a New Paradigm for the Ecology of Northern & Western Scotland: A Synthesis of Issues*

2) *More scientifically in the 2008 paper A postulated natural origin for the open landscape of upland Scotland*

AN ESSAY ON HUMAN NATURE

or **Should we blame ourselves for environmental problems?**

James Fenton 14 January 2015

The modern world is a complex place, so much so that many of us long for a simpler one where black is black and white is white. This may partly explain the return to religious fundamentalism that is becoming prevalent in certain areas: a certainty that there is only one way to lead our lives, with simple rules and laws. It may also explain the current zeitgeist of a retreat from internationalism, with a certainty that all would be well if only we could manage things by ourselves: collaboration and compromise is just too difficult. This, of course, ignores the problem that, because humans are now so abundant across the planet, issues are global and can only be solved if we all work together to a common agenda.

Preventing runaway global warming is an example where such an approach is needed. Environmentalists tend to argue that many of the environmental problems we encounter have arisen because we are out of tune with nature, that we are now too divorced from natural systems. If only we could all 'go back to nature' all would be well: back to a Golden Age.

However humans have had a long evolutionary history so if we could go back, back to where? To when we first shaped stones? To when we learned that we could hit each other with sticks? Lit our own fires? Put on our first clothes? Made our first pots? Tamed our first dogs? Painted our first caves? Put on our first bangles, painted our faces or put a feather in our hair? First symbolised our thoughts in language? Or on stone or parchment? First banged a bone against wood? Or strung a gut? Built our first houses? Domesticated livestock? Cultivated our first crops? Made our first wine? Carried potatoes or maize to Europe?

In practice we have been diverging from other species for such a long time that 'returning to nature' becomes meaningless. We have tamed fire, carved stone, moulded soil, manipulated wood, turned animals into clothes, herbivores into livestock, plants into crops. These actions have in fact directed our own evolution: cooking, through use of fire, enabled us to have a shorter gut and non-protruding jaw, and perhaps it was our love of clothes that encouraged our nakedness. And we have never stopped in using our undoubted intelligence to manipulate the natural world to our own ends. We are probably incapable of stopping. It is not in our nature to do so. But what is 'our nature'? To find a clue to this it is necessary to delve into the characteristics of the natural world out of which we have evolved.

Fundamentally this is a planet of life in a universe that appears to be generally hostile to it. And over the aeons life has altered the world's climate and geology. James Lovelock in his Gaia hypothesis argued that life has maintained conditions suitable for its own continued existence. But I am not convinced. Over the billions of years of its existence, life has transformed the surface layers of the planet in ways it cannot have predicted – and then has had to put up with the changes it has unwittingly instigated.

For example the evolution of photosynthesis (the capture of light energy by plants) resulted in the atmosphere becoming oxygen-rich. The original single-celled organisms who first liberated all this oxygen could not know that it would result in climate and geological change on planetary scale – that, for example it would cause global cooling (snowball earth) through oxidation of the then abundant greenhouse gas, methane, or likewise, in the long-term convert the output of volcanoes from being methane-rich to being carbon dioxide-rich; or that the presence of oxygen would

eventually allow a protective ozone layer to form and hence allow multi-celled organisms, including all animals, to evolve.

In the Carboniferous period, plant growth absorbed huge amounts of carbon and stored it underground into geological formations of coal, which we humans are only now releasing back into the air. Additionally, marine organisms with shells of calcium carbonate also removed vast amounts of carbon and stored it in what are now massive limestones. The arrival of terrestrial plants changed the whole pattern of rock-weathering, water cycling and gas exchange.

Life also has an internal dynamic. The first multi-cellular animals spent many millions of years happily growing and reproducing in a predator-free environment, until carnivores appeared and started eating them. Life would never be the same again! The harmony of life in the primeval Garden of Eden was upset a long time ago. Much, much later, when continental drift caused North and South America to join, the mammals from the north caused major extinction of the more primitive mammals of the south, a natural example of introduced species causing havoc.

The lesson from our geological past is that life has had to adapt to changes it itself has instigated. Hence it is the 'nature of nature' to have no forethought: it has to create work-around solutions to the problems it has itself created (which also applies to the sub-optimal design of the human body!). Life has also had to put up with extinction events every few hundred million years through no fault of its own, brought about by meteorite impacts and massive magma extrusions.

There are other characteristics of life which our early ancestors would have noticed, characteristics which would have shaped how we think and how we view the world. Often life comes across as 'a balance of contradictions'. For example, life depends on death: no animal can survive without destroying all or part or of another living being. Plants also rely on the recycled nutrients from their dead predecessors and fungi, as saprophytes, rely on death to grow. Reproduction is associated with mortality: the world could not function if every spore, every seed, every egg, every born young survived. Most young are destined to die before maturity ('sacrifices to the food chain' to quote Gary Snyder).

Also there is a contradiction between predictability and unpredictability: compare, for example, the predictable facets of sunrise and sunset, lunar cycles, tides and seasons with the unpredictability of earthquakes, storms and floods. Related to this is that the world comes across as both discriminating and undiscriminating: illness, disease, ill-fortune or good luck can at times appear random, at other times selective of individuals. And the same features, water, sunshine or fire for example, can be both life-enhancing and life-destroying: snow can be soft and gentle or hard and dangerous. And in the natural world we see the coexistence of joy and pain: life is full of joy and energy; life is full of agony and fear. A dog running around happily with a half-dead rabbit in its mouth, or a cat playing with a mouse. The natural world can be beautiful. The natural world can be terrible.

Nature is thus is full of contradictions which we began to notice as our reflective consciousness emerged but, although we noticed them we could not really explain them. And they appear to be fixed. For example, life has to depend on death – it appears to be the nature of nature. And, being unable to explain all this, we called nature 'God': a permanent 'presence' dictating the laws of nature but also full of psychological contradictions related to the contradictions outlined above – a 'totality of opposites' to use Jung's definition of God.

We humans cannot escape this biological heritage. We have evolved from nature and so we have inherited these contradictions: they have become part of our nature. Indeed, we are nature made

conscious, for what else can we be? Our nature must in reality be a reflection of the wider nature of nature. This means that there is rarely anything new in what we do: life has already explored most of the behavioural possibilities. Are there any behavioural or societal or possibilities left? Witness, for example, the vast range of mating habits of insects, many of which appear very deviant to us; the ten percent of birds which are homosexual; the artistic appreciation shown by bower birds; or the various types of insect society – some hierarchical such as bees and ants, some egalitarian such as pond skaters (with every other type of society in between).

With our large brain we are able to express all nature's behavioural possibilities within our own single species, either within an individual or across individuals. This is illustrated by all these possibilities now being embodied on the internet, from what we see as normal to what we would see as extreme. And we have no choice but to follow our nature which is, by any definition, a given, something inherited from the natural world, something we cannot change.

Only now that we have been successful, and significantly enlarged our population, is our enhanced intelligence appearing as a Faustian bargain: the use of fire follows through to our dependence on energy, which in turn affects the environment for all of us; likewise the wearing of clothes or the use of farming. But is this perhaps not the same pattern that life has always followed, not worrying about the impacts of its own evolution? Our global impact, whether habitat loss, species extinction, nutrient enrichment, pollution or climate change is merely one of a long line of biologically-induced planetary changes.

It would appear that life has had no moral position on all of this, is amoral. In nature, whether many plants and animals benefit from a mild winter or a favourable summer, or whether a whole hillside with all its plants and animals is destroyed by an earthquake, is not a concern of nature. A female spider, presumably, has no moral compunction about killing and eating the male after mating. A fox no moral compunction about eating baby rabbits. But we, as nature made conscious, can see both sides of the contradictions, and we decide that one course of action is to be preferred over another, particularly as it relates to ourselves. We believe in morality. We do not think it right, for example, that most of our children should die before reaching maturity, which is the case with most other species; other animals may not like it, but have to accept it.

The evolution of reflective consciousness gives us this realisation that nature is amoral and so puts us above nature: we are not happy that nature, by its very nature, can be cruel, that young are taken advantage of, that disease is unfair, that the injured are left by the herd to die. We do, however, like the 'good bits' – watching fox cubs at play, climbing the hills in glorious weather, walking the beach at sunset.

Hence one of the facets of human nature is that we make moral judgements about nature's approach: we become selective as to which bits of nature (which by definition includes our own nature) we think are 'good' and which are 'bad'. Morality has emerged. This, as Jung argues, makes us superior to God – we can see his imperfections. However in practice we do find it very hard to override our own imperfections: so being superior does not necessarily make us any better.

We see global change caused by us, such as pollution, loss of wildlife and climate change, as 'bad' and that caused by nature, if not good, at least as 'just what happens'. However the history of the planet suggests that life in the round will survive all self-induced changes, and humans, with a population numbered in billions, are unlikely to become extinct whatever happens from human-induced planetary change. In fact our species is more likely to survive the expected global warming than the global cooling (the next ice age) that might otherwise have happened.

How, then, do we solve the global problems we ourselves have brought about? Rather than grand visions and grand statements about changing the nature of society, I am in favour of the pragmatic approach favoured by Karl Popper in his book 'The Open Society and its Enemies': tackle each problem as it arises on a case by case basis. This, after all, is how life has coped: as each environmental change occurs, self-induced or not, life adapts. We will have to use our creativity to invent work-arounds to the problems we ourselves have created.

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LANDSCAPES OF THE IMAGINATION

James Fenton 22 January 2014

Maybe it is the long winter nights, but at this time of the year our imagination tends to run riot: the Christmas images of snowy scenes, winter wonderland, Santa's sleighs, festivals and feasts, the birth in the barn; the resolutions for a better world in the New Year and the long summer days still beyond the horizon. It is comforting to hold such images, such landscapes of the imagination where reality is not particularly welcome.

However I have come to the conclusion over the years that we also view the solid world in which we live through the prism of the imagination: we do not necessarily see what is in front of our eyes. We do not in fact see the real landscapes of Scotland. Because the term 'landscape' has many meanings, I should stress here that I mean the physical landscape of land, buildings, soil, rock, water, vegetation and sky, not the more abstract landscapes that modern jargon has introduced such as the 'policy landscape' and the 'political landscape'. In this essay I will be concentrating primarily on the Highland landscape.

Let us stand back for a minute and imagine the exile coming home to Scotland by sea.

... In your years abroad you held the landscapes of Scotland dear in your mind: the unspoiled hills and glens, the white but n' bens scattered across the countryside, the lochs with their wood-fringed shores, the town centres of solid buildings that have stood the test of time, rivers that tumble unhindered to the sea, the monarch of the glen standing in a rugged mountain landscape… As the coastline heaves into sight a two-dimensional Scotland is revealed, the outline of hill and bealach diffuse in a purple and blue, blemishes removed, nothing more. Excitement arises. Homecoming 2014. You imagine the pure, unsullied landscape that will slowly disaggregate before your eyes. You remember the VisitScotland website you had checked out before returning: "The dramatic scenery of the Highlands is true natural beauty on a grand scale… Come and discover Scotland, world-famous for its awesome scenery… The magnificent diversity of Scotland's mountain landscapes is equally matched by the breathtaking scenery and rich wildlife." And the Scottish Highlands website: "Scotland's breathtaking and stunning glens are unique and inspiring places which have remained unchanged for thousands of years…"

"Unchanged for thousands of years." That was reassuring, and a romantic glow permeated the heart. There was no stopping the ship as the shore drew near and the detail of the land began to emerge. You noticed first that the profile of the hills were broken by new structures, that their slopes were compartmentalised and scarred; then you noticed the pinpricks of white that emerged into houses, more than you remembered, and that was good, but you noticed many stood apart from the landscape, not forming part of the whole; and as the ship came in to berth you noticed the ugly, reinforced sea walls, large rocks scattered carelessly along the shore ...

Is the exile's view any different from our own? Do we not all to some extent hold the romantic image of the unspoilt Highlands in our minds, reinforced by the constant reiterations from marketing circles and the glossy pictorial calendars? The Highlands are distant from most of the population and when we leave our homes and head for the hills, do we notice anything that is not included on our romantic pre-existing mental map?

Maybe because landscape is change is slow, with the things we value lost through slow attrition, we do not notice the changes. But we should because I believe that we are slowly losing the aspects of the hills that we cherish in our hearts: the grandeur of nature unsullied by human interference,

distant views across wild scenery, the roaring burn, the undammed loch. You will find that the landscapes of reality differ markedly from those of our imagination. I can remember in my lifetime when you could drive east to west across the watershed of Scotland without seeing a fence or much sign of human infrastructure at all. Now this is impossible. There has been an ever-changing stream of development over the past century or so. First it was the long fences erected over the mountain tops at the start of the sheep farming days; then it was the Forestry Commission which, starting in 1919, created what was termed 'blanket forestry', particularly once deep ploughing was developed where ploughs ripped straight lines across everything in their path. There followed of a period of taking-in hill land and of ploughing ditches in the moors (moor grips) as part of agricultural improvement schemes – and the ditches still stand out today. Then it was the hydro-schemes of the Tom Johnston years, resulting in about 50% of Highland catchments being modified, and the associated network of dams, pipes, pylons and poles. Then phone masts. (I remember holding a one-person campaign by refusing at first to have a mobile phone because of the need for masts in the hills: it failed dismally!) Then new hill tracks for agriculture and sporting purposes, in addition to the ones needed for access to the ever-increasing forestry, hydro-electric and phone mast schemes. More recently it has been deer-fencing for native woodland, together with the soil mounding and tree planting that goes with many of them. And then there are the windfarms which have entered the remotest areas where in the past nobody ever thought development would occur; and these, of course, have their associated miles of new access track. Now it is small scale hydro schemes, where it seems the fate of every burn or river to be dammed and piped. And there are other smaller, less obvious things going on. I remember walking in Jura a couple of years back and noticed that the burn I was walking up had had a digger along, deepening all the pools for fishing, dumping the rocks alongside; and then there are the small pools dug on grouse moors; and the tracks of off-road vehicles leaving pockmarks across the soft, peaty land or eroding the hilltops…

There is also, of course, is the Scottish Forestry Strategy which has a target of 25% of Scotland under trees. If arable land and permanent pasture is included (we need to grow food), this would mean 33% of the remaining land being wooded; and if areas of deep peat and unplantable areas such as mountain tops are excluded, this would result in an additional 25% of our open moorland being under trees. Considering that in 1900 only about 4% of Scotland was wooded, from any perspective, this is a fundamental change in the landscape of Scotland? Have we really thought this through? Is this really what we want?

One result of this tree planting and other effort is that the landscape has been transformed from a 'natural landscape', defined as where the scenery and vegetation pattern has been 'designed' by nature to a 'cultural landscape' where they have been designed by people (us!). Natural landscapes are becoming increasingly rare on a global scale as humans increasingly take over the whole planet, and Scotland is no different. Do we really want to pass on to future generations a Scotland where every square inch is being utilised for an economic purpose, whether every last watt of wind or water is extracted for electricity, all the plant production harvested for food or timber, and all the animals managed for food or sport? Where, in other words, nature is not allowed to be wild. If this becomes the case, we will lose understanding of how natural systems operate, of nature itself.

What is perhaps surprising is that there are <u>any</u> areas of such untrammelled land free of artefacts left in Scotland, what is nowadays termed 'wild land'. Unfortunately for most of us, our landscape is safeguarded through technical planning legislation which has to be ploughed through if we want to understand the issues. Recently Scottish Natural Heritage (SNH) identified 'Core Areas of Wild Land' and a consultation on their location has recently finished. These areas are also subject of debate in

relation to the Scottish Government's current update of its planning policy – the Main Issues Report of the National Planning Framework (NPF3) and the Scottish Planning Policy (SPP). The consultative draft of the SPP stated: "Plans should identify and safeguard areas of wild land character… displayed in some of Scotland's remoter upland, mountain and coastal areas, which are very sensitive to any form of intrusive human activity and have little or no capacity to accept new development."

However the Government has stated that it does not want to give statutory protection to any Core Areas of Wild Land so we need to be on our guard to protect those that remain. For example, in relation to the consultation on NPF3 the Government states that a number of respondents "stressed that any framework should not be overly restrictive, but rather should allow for the flexibility to deal with applications on a case by case basis. There was also a concern that certain areas – be they National Parks and National Scenic Areas or Core Areas of Wild Land... should not become 'no go' areas for new wind farm development…" Incidentally National Scenic Areas are the main national designation to safeguard Scotland's finest landscapes, although few people seem to have heard of them!

The construction of vehicle tracks into our wild hills has been an issue for many years and we have now reached the situation where areas remote from vehicle tracks are few and far between. A recent report produced by a consortium of NGOs states: "Hundreds of kilometres of tracks for forestry, agriculture and field sports have been built to very low standards under Permitted Development Rights (PDRs), and yet PDRs have not been amended… Local communities and national communities of interest are denied any say over the construction of tracks in Scotland, yet bear many of the impacts. Natural amenity, often of great importance to rural communities and highly valued nationally is lost."

Currently tracks built for agricultural and forestry purposes which are not in National Scenic Areas or nature conservation sites are exempt from any sort of planning control – they have Permitted Development Rights and can be built at the whim of the landowner. Tracks built for field sport purposes do not have such PDRs and should be subject to planning scrutiny. It would appear, however, that many are built without planning consent; in fact where an estate has both agricultural and farming interests it can be difficult to disentangle whether a new hill track is for sport (needing permission) or agriculture (not needing permission). The conspiracy theorists would say that agriculture is sometimes used as a spurious post hoc justification!

NGOs have been lobbying the government for many years on bringing all hill tracks under planning control, but the government remains equivocal on the issue. Which leads on to the government's views on protecting Scotland's landscapes generally. A look at their websites indicates that the most inspiring language that they can come up with is: "Scotland is renowned for its distinctive and diverse range of landscapes." However they come across as slightly schizophrenic about our landscapes, not being sure in themselves whether they are there to provide an aesthetic backdrop to daily life or exploited for their economic potential: "Scotland's countryside and landscapes are important both for their intrinsic environmental value and because of the opportunities for social and economic development." This perhaps is reflected also in the National Parks legislation where a commitment to realising development potential sits alongside conservation.

And what about the independence White Paper? What does this say about how committed a future independent Scotland is to protecting the Scotland that is perhaps strongest in our imagination: the hills, mountains, lochs, glens and islands? The actual country in which we live? It starts well, with the First Minister stating: "Scotland is an ancient nation, renowned for the ingenuity and creativity of our people, the breathtaking beauty of our land…" But in the 650 pages of the

document that is also about the end of it! There is only one paragraph on wildlife and landscape: “Scotland has a spectacular natural environment and rich biodiversity. The Scottish Government recognises that our natural assets underpin our economy and the health and wellbeing of our citizens and visitors”, the only identified action being: “If we form the government of an independent Scotland we will seek to enshrine environmental protection in the constitution.” One paragraph on the whole natural environment of Scotland!

Additionally there is only one question in the 207 pages of 650 questions on the issue, and the only additional information that can be gleaned is that the government would be “committed to ensuring that an independent Scotland will deliver on its European and international obligations.” Not much detail here… Is the Scottish landscape so unimportant that this is all it merits? There is in fact no European or international law dedicated to landscape conservation, although there is the less formal European Landscape Convention. What action is the government of Scotland going to take to conserve the beauty that the First Minister refers to? Are they afraid that looking after the only planet on which we all live will bring about the depopulation of Scotland?

Am I just a romantic Luddite, with anti-development views that will only lead to depopulation of the glens, bringing on a second Highland Clearances? For talk such as this, of wanting the hills to remain wild, can lead to such accusations. Don’t get me wrong: we need development but it should always proceed on the understanding we know what we are losing and society is happy that the gains outweigh the losses. After all there is only one Scotland and it has to last all of us for ever. But I fear that, without greater commitment to looking after it, the landscapes of the imagination might be all that are left.

UPLAND SHEEP FARMING AND THE ENVIRONMENT

James Fenton 16 December 2013

Note that in this article I am referring to the impact of sheep farming on the unimproved hill land, not the inbye land. I am also referring here primarily to the uplands of Scotland, particularly north of the Central Belt – I hesitate to say how much will apply to the other upland areas of Britain and Ireland.

Sheep – friend or foe of the environment?

Sheep have often had a bad press in conservation circles. How many times have you heard sheep blamed for destroying the woodlands that once clothed upland Scotland? Or of overgrazing damaging habitats and devastating landscapes? For example, in a recent article in *The Spectator* 'Meet the Greatest Threat to our Countryside: Sheep', the environmentalist George Monbiot states: "We pay billions to service a national obsession with sheep, in return for which the woolly maggots kindly trash the countryside. The white plague has has caused more extensive environmental damage than all the building that has ever taken place..." George Monbiot, the reforesting lobby generally and the rewilding lobby would like to see our uplands returned to their natural state which, in their view, means covered in trees.

However in recent years a contrary view has emerged, promoted in particular by the European Forum for Nature Conservation and Pastoralism. This is the concept of High Nature Value Farmland, land which in Britain largely equates to the unimproved hill land containing semi-natural and natural vegetation, i.e. the hill farms and common grazings. In practice the vegetation here may have been modified to a greater or lesser extent by sheep grazing and associated muirburn but it does comprise plant communities that would occur in naturally in that locality. Recently, in relation to CAP reform, a consortium of organisations, including many conservation NGOs, wrote to the Scottish Government seeking greater support for hill farmers so that they can continue to farm in the extensive manner that maintains the value of this high nature conservation land.

So which view is correct? Is sheep farming responsible for damaging the environment, particularly through removal of the trees and shrubs that should naturally be there, or does it result in land of high conservation value?

To answer this, we need to answer the question: "What would Scotland be like if sheep had never been introduced?", i.e. have they been responsible for eating all the trees so that without them Highlands would be forested. In my view the answer to this would be that our uplands would look much the same, sheep or no sheep – and this is for several reasons.

Firstly, the number of grazing animals that a given area of land can support is determined primarily by the productivity and palatability of the vegetation present. The maximum number is determined by the food available in the months without plant growth, which in Scotland is winter and early spring. In nature, grazing animals will tend to increase until this carrying capacity is reached, and if there are too many they will die – as can be observed today in the unmanaged sheep flocks on St Kilda. The main native herbivore in the uplands is red deer and, because the grazing impact of sheep and red deer is similar, if sheep had never been introduced then deer would have continued to the graze the hills at their carrying capacity. Sheep merely replaced deer. This might explain the fact that red deer numbers in Scotland have increased in recent years – they are taking over the now unutilised grazing as sheep numbers have fallen. However, although deer numbers are going up, the overall grazing impact on the landscape is possibly not changing. Some ecologists argue that the lack of predators (i.e. wolf) would have kept deer numbers down below the carrying capacity, low enough, in fact, for trees to be able to regenerate. However the order of magnitude

discrepancy between the density of deer that the vegetation can carry (around 80/sq km) and the density which allows woodland regeneration (5-8/sq km) suggests that this would not be the case. In any case deer are predated – by stalkers, at an average of 13% of the deer population *per* year: predators would have to eat more than 13% of the deer population, which seems unlikely. In summary, grazing by large herbivores would have been a natural facet of the landscape, and the replacement of the native herbivores (red deer) by introduced herbivores (sheep), has probably not made much difference.

Secondly, because of the specific climate and soil conditions, there is a propensity on flat and gently sloping areas for peat bogs to develop: research suggests this would happen regardless of whether there was grazing or not. Hence the large open peatland landscapes, such are now found in the flow country of Caithness and Sutherland and on our smoother hills, represent a natural vegetation type largely uninfluenced by sheep.

Thirdly tree regeneration can sometimes be observed even in the presence of very heavy sheep grazing – the sheep are just not eating the young trees. For example, Hebridean sheep were at one time brought in by the National Trust for Scotland to prevent the heather moorland of Culloden Battlefield scrubbing over. However, although the sheep ate some species of tree, particularly rowan and willow, they left the birch and pine largely untouched: the woodland was expanding even with heavy grazing. I have observed this situation in several localities, particularly low altitude sites in the west. Here it is probable that the presence of wintergreen herbage takes the pressure off tree browsing, allowing woodland to regenerate. Grazing and trampling by sheep also provides good germination sites for tree seedlings – which is why an intense burst of tree regeneration is often observed when grazing is relaxed. Hence, although sheep grazing may prevent woodland regeneration in some sites, it is not universally true that the presence of sheep destroys woodland.

Woodland naturally rare in the landscape

Conservationists in Britain have tended to see high grazing levels as bad thing, probably because they have been focussed on woodland and on the myth that upland Scotland 'should be wooded': everything is focussed through the prism of woodland regeneration. Sheep destroyed the woodland, so the theory goes, so sheep must be bad for the environment. But, as the Historiographer Royal Professor T C Smout states in his book *Nature Contested* with respect to the Great Wood of Caledon: “It is, in every sense of the word, a myth.” It was in fact the eminent geographer, James Geikie writing a far back as 1866 who concluded: “As it can be shown that the destruction of our ancient forests has not been primarily due to man…” If the woods were never there during the period when the large-scale sheep farms were first created, then the sheep cannot be responsible for their demise. Before the era of large farms, it would not have been possible to keep large flocks in the hills, particularly the remoter areas, because there were still wolves in the landscape.

If ones moves away from the mindset that the uplands would be wooded in their natural state to the mindset that the openness of our hills is a perfectly natural state, then this liberates the mind to a realisation that upland grazing is a perfectly natural situation. Admittedly in the natural state, grazing would be predominantly by red deer than sheep, but, as stated above, the grazing preferences of the two species are not hugely different: if anything, deer do more damage to trees than sheep.

In many parts of the world it is natural for the landscape to be kept open by grazing animals, particularly in environments where the soils and climate are sub-optimal for tree regeneration (which is the case in upland Scotland): witness the Serengeti plains of Africa, or the American

prairies where, in the old days, huge herds of buffalo kept the prairie open. There is no *a priori* reason why numbers of grazing animals should be low in natural systems. Quoted recently in *New Scientist,* environmental historian Jed Kaplan states in relation to the openness of some natural landscapes: “It is important to keep in mind that landscape is also shaped by animals”. Even the presence of predators does not necessarily lower numbers of grazers enough to allow tree regeneration: there are a lot of predators, for example, on the open Serengeti plains and, closer to home, woodlands in upland Scotland naturally died out in eras when wolves were present in the landscape.

I am of necessity making gross generalisations here which, because Scotland is a diverse country, will not hold true everywhere. For example, woodland can be seen to be expanding in parts of Scotland even with very high grazing, mainly those low altitude areas of the southwest Highlands where the soils are better and natural colonisation of pasture by the prickly shrubs bramble, hawthorn and sloe allows trees to colonise without being eaten (the Frans Vera hypothesis). And, as I have already mentioned, coastal woodlands on the west coast can expand at times even in the absence of thorny scrub because there is enough wintergreen herbage for the sheep. However most of upland Scotland has soil types unsuitable for these species so it is perhaps not surprising that the landscape remains open and unwooded.

Overgrazing or not?

There has been much talk in conservation circles about overgrazing causing habitat damage in the uplands, nowadays particularly in relation to red deer (often accompanied by the statement 'there are too many deer'). In fact the term 'overgrazing' this has little meaning except in respect to a desired outcome: it is just that different grazing levels result in different vegetation types. If woodland regeneration is the aim and grazers are eating the young trees then this is overgrazing with respect to woodland; but if woodland is not a desired endpoint, then it will not be overgrazing. If maintenance of heather is a desired outcome, then grazing at a level that will cause heather loss will be overgrazing with respect to heather. However, observations suggest that heavy sheep grazing will only cause heather loss on richer soils, which, in any case, will be providing a sub-optimal habitat for heather. On St Kilda, for example, where there is unregulated sheep grazing, there is no evidence of heather loss.

The word ‘overgrazing’ on its own has little meaning for natural systems because it is based on a human value judgement. We all know that in Scotland there is an excess of edible herbage in the summer months – at even the highest grazing levels it cannot all be eaten – so overgrazing is impossible. And in winter it is impossible because the animals will die; this, admittedly, is from an ecological perspective. If animals are dying, then this will be overgrazing from a farming perspective.

If grazing is reduced to a very low level, for example to encourage woodland regeneration, then this can cause the general vegetation height to become taller, with many smaller grazing-dependent plants disappearing: generally, the higher the grazing level the greater the number of vascular plant species per square metre. Grazing encourages plant diversity. It is true, though, that some grazing-sensitive plants may disappear with heavy grazing, or at least become confined to inaccessible cliffs and slopes: but this surely is a natural situation? As an aside, some Scottish upland woods can have a very low floristic diversity compared to nearby grazed areas.

Additionally, lower grazing levels will cause a build up of dead plant litter, will reduce nutrient cycling, encourage soil acidification and peat development, and generally lower the fertility of the soil and the landscape. However, reducing the number of sheep will not necessarily reduce the

grazing pressure on the best grassland, particularly if this comprises a relatively small percentage of the holding, as sheep will always tend to concentrate here. In practice, as all sheep farmers will know, the intensity of grazing can vary enormously across the hill, the best grassland grazed low and poorer ground remaining virtually untouched.

Certainly high grazing levels can result in some localised damage or erosion through trampling, particularly if rabbits are also present, but this likely also to be case also with natural systems: some degree of erosion can be seen as a natural process. Interestingly, a suite of reports commissioned by SNH in recent years on habitat condition in the uplands has not, at a strategic level, identified 'overgrazing' as a major issue – unless woodland regeneration is being sought. One report published in 2010 (SNH Commissioned Report 402), recognising that a range of different habitats occurs in the uplands, concludes "It may therefore be hard to devise a management regime that will maintain all the habitats in a favourable condition." The natural state of our uplands is of course to be unfenced, so this report is really stating that it is impossible to keep all habitats in favourable condition at once without fencing each one separately – and who wants to see yet more fencing compartmentalising our open hills? This, presumably, will also apply to the areas of the Highlands where it is a natural system with red deer instead of sheep as the dominant grazer. It would appear that there is an almost Darwinian 'survival of the fittest' selection for the habitats which can survive, and habitats that we as humans may cherish or find useful, such as woodlands, may not be necessarily part of the natural scene.

Muirburn is an activity traditionally associated with sheep farming, and it is true that, unlike the grazing animals themselves, repeated muirburn can cause environmental damage. However, this issue is not discussed here where the focus is on grazing impact.

The importance of upland sheep farming

The above discussion suggests that extensive sheep farming is more likely to maintain 'high nature conservation land' than to cause environmental damage. The open landscapes of upland Scotland contain habitats rare on a European scale – the oceanic dry and wet heaths, peat bogs, species-rich grassland – and sheep grazing helps maintain them. The ideal from a nature conservation perspective would be conservation of these areas through maintaining the complete natural ecosystem, with grazing from red deer rather than sheep. However, if put into practice, this would mean the loss of upland farming, with the associated loss of jobs, culture and a rural way of life. By ensuring the continuation of extensive upland farming, the conservation of these areas can be assured, thereby maintaining the distinctive Scottish landscape of open hills and moors.

However, as we all know, the future of upland sheep farming remains fragile. And if sheep farming is lost in these areas then the likely outcome will be forestry: the Scottish Forestry Strategy commits the Government to a target of 25% of Scotland being covered with trees, which, if arable land and improved pastures are excluded (we need to grow food) rises to 33% of the remaining landscape – and it will be even higher if deep peat, mountain tops and other unplantable land is excluded. In practice the only land available to achieve this target is on our upland farms and sporting estates. The loss of such farmland can be seen in Galloway, for example, where the remaining unimproved moorland, particularly that in the lowland and foothills of Galloway, tends to be the focus of new woodland schemes. This is resulting in the loss of the distinctive Galloway landscape of open hills and moors interspersed with rocky outcrops and green fields; the end result will be intensive farmland on the best ground and woodland elsewhere, with areas of moorland habitat disappearing and an associated loss of species and diversity. Birds characteristic of open

ground such as golden eagles, red grouse, larks and waders are of course particular prone to disappear when the moorland is planted up.

I will finish with a quote from SNH's own 'Landscape Policy Framework' for Scotland.

"SNH's overarching aim for Scotland's landscape is as follows: To safeguard and enhance the distinct identity, the diverse character and the special qualities of Scotland's landscapes as a whole … this means working to ensure…

– an enhanced contribution of forest and woodland to many landscapes;

– distinctive landscapes of upland, hills and moors, recognised for their openness and quality of wildness…"

Hence, although SNH recognises that there is a place for more woodland in the landscape, their key aim for the hills and moors is to retain their openness. Upland sheep farming surely has a key role to play here.

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COUNTRYSIDE AS GARDEN

James Fenton 21 December 2013

As spring comes and the first snowdrops and daffodils appear…

We all know there are some pretty uninspiring housing developments in Scotland: houses of grey harling in a grey climate built with no concession to the landform. As if just dumped unceremoniously on the landscape with, trees, of course, largely lacking. Hopefully we would not build such places nowadays because we understand the importance of good design and green space to the quality of life, at least I hope we do; accountants and politicians might see such additions as unaffordable and unnecessary frills. Maybe it was poverty of the imagination which has led to these houses in the first place, or maybe it was a Presbyterian no-frills mentality; but hopefully the reverse is not true, that the poverty of the environment leads to the poverty of the imagination.

There is, though, general agreement today that the presence of greenery, whether seen out of a hospital window or in the area where we live, is beneficial to our health, mental or physical. To this end, the Central Scotland Forest Trust has been planting trees to improve the environment of the Central Belt since the 1980s and the more recent Central Scotland Green Network has as its vision: "By 2050, Central Scotland has been transformed into a place where the environment adds value to the economy and where people's lives are enriched by its quality." Ironically the Green Belts around our towns and cities, first created under enlightened 1940s and 1950s planning policy, are constantly under threat from developers some of whom see these areas as easy pickings, particularly in the current political climate of 'development at all costs': "If we cannot build this development at the site we have chosen in the Green Belt, we will not build it in Scotland." "We desperately need new housing/schools/hospitals and the Green Belt is the only suitable place." Hypothetical situations?

Green spaces in urban areas certainly brighten up our lives, whether parks, woodlands, wildflower meadows or ponds. They are places to remind ourselves that the natural world does exist out there, and they allow ourselves, to use a clichéd phrase, 'to reconnect with nature': to see the clouds and the sky, to walk on grass, to find shade amongst the trees, to enjoy the flowers, to hear the birds, to watch the ducks on the pond. We feel better for it and these places are essential to modern, civilised living.

But how do these areas relate to the real Scotland? What do they tell us about the wild plants, animals and habitats which are the true nature of Scotland? Are they designed to maximise our pleasure, or to bring back some of the natural environment that was originally destroyed? When you see trees planted in a supermarket car park, a roundabout enlivened by plants, a landscaped garden around the frontage of a new office or a newly planted urban woodland, do they reflect what the original town replaced? Do they help us bond with the native plants of Scotland, remind us of the natural Scotland we are increasingly distant from? I think not. The trees and shrubs planted in landscaping schemes tend be the same few species whether in Truro or Thurso, Winchester or Wick. Daffodils are planted to liven up the spring, or snowdrops planted along the roadsides. Maples are planted to provide autumn colour, pyracanthra and cotoneaster for their berries, conifers for their winter green. None of these are indigenous to Scotland, unless the conifer is Scots pine or our native juniper. The plants may well be sourced in England or Holland.

But does it really matter that we manage these areas in the same way as we would a garden: for our personal enjoyment? I think it does, for if this is most people's day-to-day experience of nature they are gaining the wrong impression of Scotland's own natural world. More importantly, though, it can create the wrong mindset of how we should manage nature furth of our towns and cities: it can

lead to the mindset that all of Scotland's wild nature should be managed to maximise our pleasure, should be a glorified 'Scotland in Bloom': that the countryside be managed as a garden. For example in rural villages you can see daffodils being planted along roads distant from any houses.

So what principles are followed in the creation and management of these urban green spaces? And how do they differ to those which should be applied in the wider countryside? Their main aim is to brighten up our towns and cities, to make them attractive places to visit; spring colour, summer flowers, autumn leaves will all be important. A pond would add to the attraction, as would an area of grass for running around on and a wood for walking dogs. Diversity is a key feature: let's maximise the opportunities to see wildlife by providing a wide variety of habitats. Similarly in our gardens if we want to 'do our bit for wildlife' we may well put out food for the birds, place bird-boxes on trees, dig a pond, plant a tree, create a wildflower meadow, choose flowers for butterflies, create habitat piles for hedgehogs... We are aiming to maximise diversity and whether it reflects the nature which was originally present is neither here nor there.

A word that has come into common parlance in recent years is 'biodiversity', short for 'biological diversity'. And nowadays all the talk is of conserving biodiversity. However the inclusion of the term 'diversity' makes most people think that the aim is to maximise the diversity of plant and animals in a given location – the approach taken to producing a wildlife garden as outlined above. And the approach is carried to forward into the country with, for example, work undertaken to maximise the numbers of plants and animals in woodland plantations, on farmland or in nature reserves. You may well go to a nature reserve where ponds have been dug for wildfowl, scrapes created for waders, woods planted for woodland species and open areas created for species of open habitats. The full nature experience in one site. It is wildlife gardening but on a bigger scale than most of us can manage at home. And visitors will go away disappointed if they do not see the full array of wildlife. It is the urban view of wildlife taken into the country.

It is probably the approach that of necessity has to be taken to manage the remaining areas of wildlife in lowland Britain, where intensive land use has destroyed all but the small handful of sites where Britain's indigenous vegetation and habitats can still be found. If these islands of nature in a sea of farmland and urban sprawl are not microscopically managed, then many plants or animals will disappear from the lowland landscape completely. However this gardening mentality has been carried north into the mountains and moorlands, the free-ranging landscapes where the situation found in the lowlands is reversed, where farmland and settlements are islands in a sea of extensive hill land. You can hear it from everybody: conservationists and landowners say, for example, that deer must be managed, botanists might want the rare plants made more common and bird watchers the range of rare birds extended, woodland enthusiasts say that woods must be protected from grazing, keepers say that heather must be burnt and vermin shot, fishermen say they want sawbills controlled, animal rights people say that it is cruel to let wild animals die, visitors say they want to see red squirrels... And even the nature reserves here, far distant from the centres of population, may well be managed to maximise the number of plants and animals.

But is this not the same urban mindset of seeing the hills as one big garden with everything maximised for our interest and enjoyment? And nature, of course, cannot do without our helping hand… (How did it manage without us for the first few millennia of the world's existence and how does the rest of the universe manage, one might ask?). However I would not totally disparage this approach: indeed, as I have said before, it is essential in much of lowland Britain. And where humans have caused proven damage some management is always necessary; for example reintroducing

animals made extinct by our hand, controlling non-native invasive plants, or filling in ditches in peat bogs.

However, perhaps because nature conservation first arose in intensively managed England where natural habitats are in the minority, the prescriptive mindset to managing nature has become the norm, even in the Scottish uplands where the approach does not really work. To date the trend has to be to create action plans: ecosystems are disaggregated into their component parts and action plans for each created. For example, taking a hypothetical Highland estate, there will be an action plan for birch woodland, for Scots pine woodland, aspen woodland, heather moorland, peat bogs, species-rich grassland, montane willow, capercailzie, black grouse, red grouse, wood ants, deer, red squirrels, butterflies, dragonflies, fungi, rare plants, mosses, lichens… The situation is complicated by each group having its own specialist NGO lobbying for their particular species. But it is often the case that different habitats and species have contradictory habitat requirements. For example, species-rich grassland is maintained by high grazing, and montane willow scrub can tolerate no grazing: how do we manage the area if they occur side by side (as they do in Glencoe, for example)? If pine forest expands it can only expand onto heather moorland: the woodland expansion will put the woodland in favourable condition but the declining moorland in unfavourable condition.

Ecosystems are complex and the approach of reducing them to their component parts, identifying the optimum management for each and then putting it all back together again quickly fails under the weight of its own complexity. In practice, such an approach only works if action is targeted at one or two habitats or species. We cannot fence every individual vegetation type so as to keep each in optimal condition: in any case, nature does not use fences. This prescriptive approach where the different facets of the landscape are compartmentalised in our minds leads to compartmentalisation on the ground: it is this compartmentalisation that I see as the biggest threat to the previously free-ranging Highland landscapes. Interestingly the statutory nature conservation agency Scottish Natural Heritage commissioned a report three years ago which concluded: “It may therefore be hard to devise a management regime that will maintain all the habitats in a favourable condition.” Help! How do we reconcile the irreconcilable?

The difficulty of applying this prescriptive, gardening approach to the large scale landscapes of the uplands may be a reason why in recent years a contrary approach has arisen: that of ‘re-wilding’, of letting the landscape be wild, of withdrawing from management, of allowing natural processes to be in charge. I fully support the approach and tend to believe that much of the conservation management undertaken in the Highlands in recent years has been detrimental to its conservation value (excepting, as mentioned above, action to put right human damage such as removing introduced species). If all the effort directed to the Highlands in recent years had been directed to the lowlands, where development pressure is intense, then, in my view, more would have been achieved for conservation. I believe that much of the Highlands has always been ‘wild’ so we do not need the ‘re-‘. Unfortunately also is the fact that ‘rewilding’ has become synonymous in many quarters with creating woodland which to me, as discussed in a previous Sunday Herald essay, is the opposite of allowing the area to be wild: it is forcing our mental image on the landscape.

I have mentioned how the term ‘biodiversity’ has become the dominant one in directing nature conservation activity and how it is easy to be misled by the ‘diversity’ bit. There is a scale issue here which is not often brought into consideration. At a global level, conserving biodiversity means conserving all the plants and animals which characterise each part of the planet. And here we <u>do</u> want to conserve the maximum biodiversity. In fact we cannot increase biodiversity at this global scale as it has previously been given to us by nature. At the Scottish scale it means conserving all the

plants and animals which would naturally be found in Scotland and which give the country its distinctive characteristics at the global level. Again we cannot increase this biodiversity because the suite of species we have inherited from nature is a given. In terms of Scotland's natural habitats, these may be species-rich or species-poor, diverse or undiverse. At a global scale, conserving the full range of the planet's biodiversity means conserving the species-poor areas in addition to the species-rich. Conserving the species-poor woodlands, moors and bogs of Scotland is as important as conserving the species-rich ones: diversifying them or attempting to increase their species-richness will actually reduce the global biodiversity.

If we want to conserve the full range of plants and animals on this planet, we have to put aside what we as a species personally prefer or we will end up losing its rich panoply of wildlife. At the end of the day, miles of Caithness peatland can seem pretty boring, as can miles of Arctic tundra or Sahara desert. By trying to diversify these areas to make them more interesting to us, we are contributing to the loss of global biodiversity. So no, we should not manage the natural and semi-natural areas of Scotland which are still large-scale: they are not gardens or urban parks there for our pleasure. They represent the last remaining areas of the planet where nature is still in charge, areas we can go to enjoy it (or hate it), to study it, to understand it. If we do not maintain such areas, we will no longer be able to understand how nature operates; we will be left isolated, having to manage everything ourselves and, in the complexity of so doing, we are bound to lose many more of the planet's plants and animals, particularly the obscure and little-noticed ones. This will not mean that we will no longer be able to survive as a species, but just that our descendants will inherit a less rich planet. This is where managing the countryside as garden will eventually lead. Maybe we also should spend more effort in ensuring our urban green spaces reflect the Scottishness of the country in which they are found.
