

Deer density and the Cairngorms (2) – the no seed source myth and natural regeneration

Description



Creag Bad an-t Seabhaig below Carn Crom and the ridge leading to Derry Cairngorm viewed from the south west 4th May. Note the pine trees silhouetted all along the sky line

In 1995 the Mar Lodge Estate was bought by the National Trust for Scotland with a £10m+ grant from the Heritage Lottery Fund and a £4.5m grant from the Easter Trust. In 1996 NTS agreed with Scottish Natural Heritage (SNH) set of principles by which the estate should be managed including that the remnants of Caledonian Forest in glen Quoich, Derry and Lui be enabled to expand and become “self sustaining” through natural regeneration:

Deer Management

Mar Lodge Estate has been operated as a Highland Sporting Estate since the end of the 18th century. Current deer numbers are preventing natural regeneration of the native woodlands. Although the expansion of native woodland by natural regeneration is a prime objective of NTS, it is still their intention to pursue sporting objectives in a manner which is in harmony with the conservation of the natural heritage of the Estate.

Through substantial reductions in deer numbers, NTS intend to ensure that significant survival of regenerating seedlings occurs as part of the aim to conserve and expand native woodlands. The cull level will be particularly intensive in the glens of Quoich, Derry and Lui where deer levels will be reduced to three head per hundred hectares. This culling programme, and its relationship with the extent and rate of regeneration, will be monitored, with the cull level modified accordingly to ensure significant levels of

Extract from Mar Lodge Estate, Landscape Assessment, Turnbull
Jeffrey Partnership 1996

Note how back in 1996 SNH set a benchmark deer density for pinewood regeneration of three deer per square km. That is seven deer per sq kilometre less than 10 they have set for the equally, if not more sensitive, habitats at Caenlochan as I explained in my first post in this series on deer density ([see here](#))

Seven years after the purchase of Mar Lodge I was appointed to the Board of Scottish Natural Heritage, now re-branded NatureScot. During my three years on the board there was a two day meeting in Ballater which included a visit to the Mar Lodge Estate to look at how the natural regeneration was faring there.

I remember the visit well, we started up the ridge in the photo – we did not get very far as some of the board were not very fit – and saw more or less nothing, a hillside bereft of trees although a member of staff did point out some star sedge. I was left wondering what it was all about but did not have enough ecological expertise to ask the right questions or to look out for signs of deer grazing.

I don't recall any other board member knowing the right questions to ask either. We were left with the impression that natural regeneration was a painfully slow process. While I do not recall it being stated explicitly, the logical conclusion to this line of thinking was that to save Scotland's Caledonian pine forest remnants it would be necessary to plant, plant, plant.



Starting up the well constructed path to Derry Cairngorm from Derry Lodge on a day with low cloud

Twenty years later the experience of starting up that hillside is totally different and reminiscent of walking through krumholz pine in the Alps, with lots of trees around waist to chest height. It is too low, of course, to be real krumholz, since the pine at this altitude are not stunted, just young. The way the pine are spreading up the hill, however, means that one can predict with confidence that proper stunted pine and other montane scrub will develop in due course.



Looking down the path towards Derry Lodge

Ten years after I had left the SNH Board, I finally began to understand why we had seen so little natural regeneration on that site visit. The issues are well described by Shaila Rao, the Mar Lodge ecologist, in an article she wrote in 2017 ([see here](#)) and are encapsulated in her bar chart showing deer density in the regeneration zone:

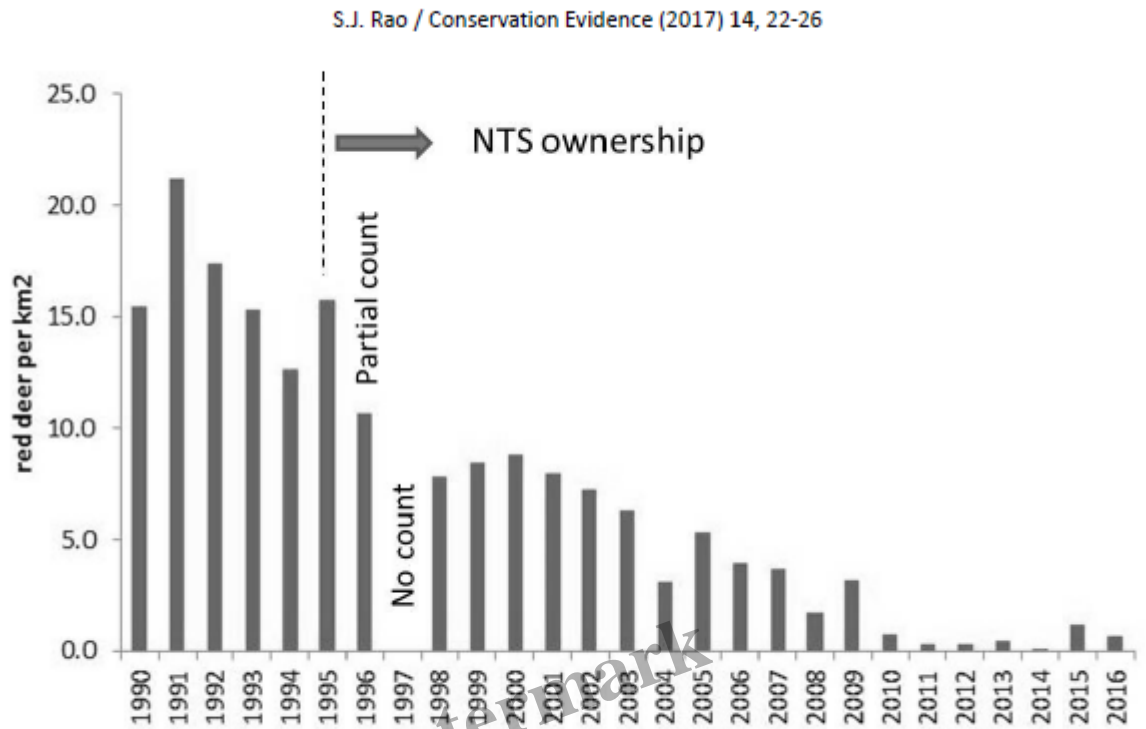


Figure 3. Red deer density in winter in the regeneration zone in 1990-2016 recorded by ground counts (pre-2001) and aerial counts (post-2001). A deer reduction programme started in 1995, when the National Trust for Scotland (NTS) took over the area.

At the time of the SNH visit deer density in the regeneration area on Mar Lodge was still significantly higher than three per square kilometre, hence why we saw so little. As the article explains that was partly due to undercounting but it was also I think a result of reluctance by estate staff at the time to reduce deer numbers as is evidenced by their still being fed, rather than shot, in winter. But the figure for deer density of three per square km, although progressive at the time, was still slightly too high.



This tree is around 12 years old

Natural regeneration only really took off when deer density fell consistently below 2 per square km from 2010 onwards. You can actually see this walking up the hill. Conifers commonly produce a whirl of new branches a year which makes it possible to estimate the age of young (ungrazed) trees. Once we were off the lowest ground, the oldest trees we saw were about 12 years old.

Scots Pine generally start to produce seed when they are 15-20 years old. Within the next decade therefore the number of trees producing seed is going to increase considerably and that should increase the rate of natural regeneration still further.



Walking up the path to Derry Cairngorm there was plenty of evidence to show that proximity to seed source and deer density are not the only factors affecting natural regeneration and that wind, soil, other vegetational ground cover and grazing all play a role. While wind distributes pine seed, it can also make it very difficult for it to get established in places.



Bushy from browsing. Note the dead pine needles around this tree's base.

In areas with granitic gravelly soils like this, where a seed lodges in the gravel and then germinates it has almost no chance of survival.



This sapling was high up on Carn Crom and partially sheltered from the prevailing south westerly winds

Even where seeds fall on suitable soils, they are so shallow that as the sapling grows it becomes increasingly vulnerable to desiccation. Most of the trees we saw higher up had brown needles, a consequence perhaps of the drought last Spring but a perennial challenge.



With fewer seeds germinating and their chance of survival lower in this harsh environment, those trees that have become established due to the dramatic reduction in deer density are nevertheless very likely to be grazed. All it takes is one unseasonal snow fall and for there to be one deer on the hill and these isolated pines become a target for grazing.



Note the pine needles around the stem of the sapling which help retain moisture and in time contribute to soil formation

Trees, however, like many other types vegetation modify the natural environment around them. It is likely that as more become established high up in the Cairngorms the rate of natural regeneration will increase.



The col between Ben MacDui and Carn a Mhaim with the Devil's point behind

Walking from Carn Crom over Derry Cairngorm, Creag a Choire Etchachan and Ben MacDui we did not see another Scots Pine until we got down to the col with Carn a Mhaim which is close to 850m in altitude.



Looking south towards Glen Lui, the ridge of Sron Riach on the left

Sitting down for a bite on a rock, I spotted one pine, went over to have a look and found four more within a short distance. Like the Scots Pine high up on Carn Crom none of the pine looked in good condition, brown needles and browsing. But the question that interested me was how had they got here? The nearest obvious seed source would be the regenerating woodland in Glen Lui, four kilometres away to the south east:



View from Glen Lui up into the centre Cairngorms massif with the arrows showing the approx extent of the current forest and the location of the col high beyond the steep slope of Carn a Mhaim on the left

If some or all of the seed from which these trees originated came from Glen Lui, it was carried obliquely to prevailing wind, was blown several hundred metres up hill, swept round a bend in the glen and somehow avoided becoming trapped in any of the vegetation on the way. If that is possible it is also possible that the seed got carried over on the prevailing wind from Glen Feshie. Or alternatively, perhaps there is a lone pine somewhere on the crags around the Lairig Ghru that provided the seed. Perhaps genetic tests could provide the answer?

Wherever the seed source, the evidence from Mar Lodge (and Wild Land Ltd) shows when deer density reduces to two per square kilometre or less, trees start popping up all over the place. For each of the pine on the col between Cairn a Mhaim and MacDui, hundreds if not thousands of other seeds will have been blown over this landscape or carried by birds and animals in the recent past. That is happening all over Scotland and for many species of tree but most people never appreciate the fact because most trees get eaten as soon as they protrude above the surrounding vegetation and are never seen by a human.

The claim commonly used by the forestry industry to justify planting trees, that there is no seed source, is in my view mostly a myth. Our public agencies have become so accustomed to the unnaturally high levels of deer in Scotland that they can no longer see what is obvious in most other European

countries, where deer numbers can often be as low as 0.5 per square kilometre. Trees and other plants will regenerate naturally, without any need for damaging planting, so long as grazing pressure is properly controlled.

Sadly, neither NatureScot nor either of our two National Park Authorities recognise the fact that deer densities in Scotland are still far too high compared to our continental counterparts, nor have they acted on the evidence that has emerged in areas within Scotland where deer densities have been dramatically reduced. Shaila Rao's excellent paper was written 7 years ago now and still nothing has changed.

Moreover, by adopting the 10 per sq km benchmark referred to in the report of the Deer Working group as the upper limit for deer on the open hill these agencies have actually compounded the problem and in the case of SNH are now far less progressive than they were 28 years ago when Mar Lodge was purchased.

I will demonstrate in my next post how the 10 deer per sq km is making it much more difficult for conservation owners to achieve their objectives and shunting costs onto them.

Category

1. Cairngorms

Tags

1. CNPA
2. Deer
3. natural regeneration
4. NatureScot

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