

Playing with fire – muirburn and the manipulation of science by landowning interests

Description



West side of A9 in Glen Truim, Cairngorms National Park, 8th January. Photo credit Louise Brimelow.

I was away up near Ullapool last week. Driving up the A9 the snow had helped pick out the muirburn in Glen Truim, north of the Drumochter and Dalwhinnie. Much of the hillside below the telecommunications mast, which is on land that appears to be owned by the North Drumochter Estate, would quickly regenerate as woodland if it was not for the muirburn.



Note the thin line of scrub running up the right-hand side of the muirburn on the left of the picture.
Photo credit Louise Brimelow

The snow also helped reveal how fires have been started immediately adjacent to patches of woodland; in its way a very skilled job but hardly prudent. It would take closer examination to determine whether any of the more developed scrub had been destroyed by the burning but at best the muirburn on this slope is releasing carbon into the atmosphere, polluting the air and preventing any further woodland development.



View of east side of A9, Glen Truim. Note the grouse butts on the middle horizon. Photo credit Louis Brimelow

There was a similar view on the eastern side of Glen Truim on land that appears to be owned by the Phones, Etteridge and Cuaich Estate. Although there is a river, railway and the A9 between it and the woodland on the other side of the glen, seed from trees can blow for miles in snow and frozen conditions. That helps explain why woodland has developed in fenced areas all along the A9. Muirburn prevents woodland regeneration whether trees are visible or not.



Scrub behind fencing on the A9 just to the left of the previous photo. Photo credit Louise Brimelow.

Sadly, the Cairngorms National Park Authority (CNPA) included no proposals to address the destructive impact of muirburn in their draft National Park Partnership Plan. Indeed they stated in their draft plan ([see here](#)) that if they reach their targets “over three quarters (77%) of the Park will still be open habitat by 2045”, i.e much of the land in the National Park will continue to appear like that in these photos – a disgrace.

While the CNPA still appears firmly under the thumb of grouse moor interests led by the Royal Family ([see here](#)), there are signs that landowning interests are starting to feel the heat from the public, hence this piece which appeared in the Herald last Thursday:



While Mr Baynes did record that the research was about the impact of burning on the soils of forests, savannahs and grasslands, he then applied the findings to moorland, a completely different habitat. It appears that the temptation to cite research from Cambridge University in defence of grouse moor management proved too great to resist.

But if you read the actual research findings ([see here](#)) it should be very clear that they don't provide support for Mr Baynes' argument.

"Fire stabilises carbon within the soil in several ways. It creates charcoal, which is very resistant to decomposition, and forms 'aggregates' – physical clumps of soil that can protect carbon-rich organic matter at the centre. Fire can also increase the amount of carbon bound tightly to minerals in the soil."

Comment: Peat, like charcoal, is resistant to decomposition but for very different reasons – it is so acidic that the microbes and fungi that help form other soils can't survive. Moreover, as peat develops

the minerals that are found in other soils are noticeable by their absence. There are serious reasons to doubt therefore that the process of “aggregate” formation and mineral binding described in the research applies to large areas of land that are currently managed as grouse moors.

“Ecosystems can store huge amounts of carbon when the frequency and intensity of fires is just right. It’s all about the balance of carbon going into soils from dead plant biomass, and carbon going out of soils from decomposition, erosion, and leaching,” said Pellegrini.

Comment. The reason why peatland is so important for storing carbon is that “dead plant biomass” doesn’t degrade in the normal way releasing carbon into the atmosphere but is preserved in the highly acid environment. Peat has the potential, therefore, to lock up carbon like no other soil and the processes which control peatland development are not comparable to the processes that affect the habitats considered in the research.

“When fires are too frequent or intense – as is often the case in densely planted forests – they burn all the dead plant material that would otherwise decompose and release carbon into the soil. High-intensity fires can also destabilise the soil, breaking off carbon-based organic matter from minerals and killing soil bacteria and fungi.”

Comment. Under muirburn regimes land is generally burned around every 12 years in order to provide a heather-mix which maximises the numbers of red grouse: enough young heather for them to eat and enough older heather to provide shelter and cover from predators. Whether “intense” or not, muirburn consumes a large proportion of the dead plant material that would otherwise go to form peat. It effectively prevents both peatland formation or, in areas of peaty soils more favourable to trees, woodland formation.

“Without fire, soil carbon is recycled – organic matter from plants is consumed by microbes and released as carbon dioxide or methane. But infrequent, cooler fires can increase the retention of soil carbon through the formation of charcoal and soil aggregates that protect from decomposition.”

Comment. In peatland very little of the organic matter in plants is consumed and released as carbon into the atmosphere as part of the carbon cycle. Therefore, whatever implications the research has for increasing the proportion of carbon in the soil in dry climates and grassland, there are good reasons to doubt that any are applicable to grouse moors. Moreover, because of the high rainfall in Scotland much of the residual carbon from muirburn is likely to be washed away before it can be trapped in the roots of new plant growth.

The scientists say that ecosystems can also be managed to increase the amount of carbon stored in their soils. Much of the carbon in grasslands is stored below-ground, in the roots of the plants. Controlled burning, which helps encourage grass growth, can increase root biomass and therefore increase the amount of carbon stored.”

Comment. There are multiple uses of the word “can” in the scientists’ summary of their research: whether burning might lock carbon into soils depends on lots of variables. While muirburn is still used by sheep farmers to increase grass growth, on grouse moors it is used to promote grouse-food, heather, at the expense of other plants. On bogs, the roots of heather and other plants forms the acrotelm, the vegetational layer that sits above the peat. This is generally saturated, because the roots of the plants help hold in the water and that helps prevent plants decomposing in the normal way, but

burn that off and you are releasing carbon which might otherwise become peat.

Mr Baynes' claim that "muirburn.....only takes off the top layer of vegetation which then regrows and locks up carbon again" is wrong. Peatland development takes a long time and if you are constantly burning off the top layer you are preventing it from developing. Moreover, regular muirburn periodically exposes the surface of the peat and subjects it to other erosional processes, such as desiccation, frost heave and trampling, which then releases stored carbon into the atmosphere.

If muirburn, a practice that has been conducted for a couple of centuries, is necessary to protect peat from more intense fires as Mr Baynes claims, it is very difficult to explain how peat bogs ever developed in the first place. All should have all gone up in smoke as a result of fires caused by lightning or humans. The reason that hasn't happened is peatland is fundamentally a wet habitat – the peat raises the water table – and very occasional fire is unlikely as a consequence to do much damage. But keep burning the habitat and the surface water drains away allowing the surface of peat to dry out, making it far more vulnerable to fire.

Muirburn therefore (along with overgrazing) helps to explain not just why moorland hasn't developed into woodland, but also why the wetter areas have not developed into peat bogs. That is why it is so important that muirburn is banned not just in our National Parks but across Scotland.

Far from taking the heat out of the muirburn debate, such as it is, Mr Baynes has added fuel to the fire. Rational debate with the owners of grouse moors has been impossible for a very long time. As D.N. McVean and J.D.Lockie put it in "Ecology and Land Use in Upland Scotland" which was published in 1969:

"the practice [of muirburn] has become so deeply ingrained as to be almost an article of faith, and any attempt at dispassionate re-assessment is not well-received" .

Fifty years later most of the arguments of McVean and Lockie about the impact of muirburn still apply but the difference now is the debate is far more public. As the grouse moor managers resort to ever more desperate arguments in the face of public criticism and the climate and nature emergencies, their selfishness – putting grouse shooting before the public interest – becomes ever more obvious. Driven grouse shooting is as hypocritical as the parties held during lockdown at No 10. The Scottish Government should be banning muirburn everywhere.

Category

1. Cairngorms

Tags

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