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Game & Wildlife CONSERVATION TRUST Scotland

CONSULTATION ON PROVISIONS RELATING TO MUIRBURN DATES IN RELATION TO CLIMATE CHANGE ADAPTATION

The Game & Wildlife Conservation Trust is an independent wildlife conservation charity. Our 60 scientists carry out research into Britain's game and wildlife. The Trust advises farmers and landowners on improving wildlife habitats and lobbies for agricultural and conservation policies based on science. We are members of Scotland's Moorland Forum and act as advisors to Scottish Government in a number of other capacities. We hope that our views on proposals for amendments to the Hill Farming Act will be considered as part of this process.

Background

Research has shown that losing grouse shooting as a result of low grouse abundance can lead to loss of heather dominated moorland as investment in labour thus habitat management is withdrawn and land use changes. While there is evidence that stochastic weather events do affect grouse we cannot show that long-term climate change has yet directly affected grouse productivity or distribution. We also know that British moors have been subject to overgrazing and undergrazing, predation pressure and grouse parasites, all of which will reduce grouse productivity.

Research suggests that climate change could operate to magnify these effects on specific sites. Thus inherently productive/nutrient-rich moors and attention to grazing management, muirburn, parasite control and predation control are all likely to buffer against any trends in climate. The empirical evidence seems to support this view as grouse productivity and density are often at their greatest on moors where management for grouse is intense, despite these moors being low in both latitude and altitude. Conversely many of the apparent climate related effects are most apparent on Scottish moors where management for grouse is less intense as a result of the larger management units, multiple land uses and intrinsically lower soil and plant quality. This view, that climate acts in synergy with other drivers of change, is a key point because it strongly suggests that moorland management can be used to offset some effects of climate change.

There have been suggestions to provide a power for Scottish Ministers to vary the permissible dates for muirburn in some responses to the consultation on the Scottish Climate Change Bill. If taken forward, these amendments to the provisions of the Hill Farming Act 1946 would apply in Scotland only. However, there have been contemporary reviews of this issue from other parts of the UK. Recently changes to the legislation governing muirburn in Wales have shortened the period under which burning can take place. But no such changes were made when the new English heather burning regulations were put in place in October 2007.

We are concerned that changes to these regulations in Scotland could have a significant impact on muirburn activities because:

- It has been hypothesized that the most relevant way in which climate change adaptation could occur by manipulating muirburn dates is by enhancing peat accumulation and thus carbon storage
- As some research suggests best practice muirburn can support high levels of carbon sequestration we do not believe that adaptation ability can be significantly improved by constraining muirburn
- Furthermore we understand retaining and extending the ability to conduct good muirburn will be essential in protecting Scotland's peat carbon stores and heather moors from wildfire
- We support land managers being given flexible support and tools that will improve muirburn activities for biodiversity and ecosystem services.

We therefore make the following responses to the consultation on behalf of our members:

1. Do you agree that in order to adapt to the possible effects of climate change on moorland, it is necessary for the Scottish Ministers to be given powers vary the permissible dates for muirburn in the future?

1. We do not believe there is sufficient evidence to suggest that Scottish Minister's would be able to significantly improve Scotland's ability to adapt to climate change by having the power to vary muirburn dates for the following reasons:
    a. The suggested mechanism by which climate change adaptation could be undertaken by varying muirburn dates is primarily through protecting the ability of peat soils to accumulate and store carbon rather than release carbon.
    b. Research into the rates of accumulation of carbon or loss through dissolved carbon or gaseous carbon (carbon dioxide and or methane) in peat soils is at too early a stage from which to draw firm conclusions. Reviews of the current literature suggest that actual evidence as to the effects of muirburn on the management of soil carbon could be contradictory to that expected.
    c. For example, low intensity or low temperature muirburn typical of rotational muirburn associated with grouse moor management has been shown to: promote in the long term the growth of mosses and plants that are central to carbon storage; to result in minimal loss of carbon dissolved in soil water and encourage the 'locking-up' of potentially significant quantities of carbon as 'char' or burnt plant material.
    d. Thus while the immediate effects of many muirburn operations are emissions of carbon dioxide and methane and the death of plants that store carbon, the longer term effects of muirburn are the promotion of direct and indirect sequestering of carbon.
    e. We therefore suggest that there is little evidence that the time and effort spent in amending primary legislation would result in powers that, if used, could result in increased carbon storage.
2. We cannot support the open-ended nature of having 'powers to vary muirburn' as these would result in Minister's having the ability to shorten the muirburn season. This

would be undesirable because it may lead to increased carbon loss for the following reasons:

a. Climate change models and climate patterns observed to date suggest wetter winter/spring weather in the future. Climate change may therefore provide a natural constraint on the ability to burn within the current season and further legislative restriction would compound this issue.
b. This concern is supported by Scotland's Moorland Forum which considered the timing of muirburn in Scotland. It established that in some years there are already only limited opportunities for muirburn in spring, and the first two week period in April is viewed by many moorland managers as an important 'window' for muirburn.
c. Constraining burning by legislative restriction may result in greater pressure on crofters, shepherds and gamekeepers to burn in unsuitable weather conditions or in unsuitable habitats, increasing the risk of fires changing from low intensity muirburn to high impact wildfire.
d. Wildfire (as distinct from managed muirburn) can result in the total destruction of peat forming plant and moss species and significant damage to peat rich soils leading to losses of gaseous carbon, dissolved carbon and loss through solid erosion.
e. While most wildfire is not caused by rotational moorland fires, managed muirburn is central to preventing wildfire. It is used to reduce fuel loads in many habitats and these provide firebreaks which limit the spread of fire.
f. Shortening the muirburn season could therefore increase the risk of inappropriate burning and decrease the opportunities of controlling damaging wildfire and thus promote carbon loss.

3. We could support powers to extend the muirburn season into September or powers to allow for license applications for muirburn season extensions because:
    a. Possible constraints on muirburn in the spring means the ability to conduct muirburn in September may provide valuable opportunities to protect against wildfires that could otherwise have a damaging effect on carbon stores and heather moorland ecosystems.
    b. Some areas in Scotland, notably Southern, Central and Western moors report improved plant regeneration from muirburn set in autumn which may promote carbon storage and which may be valuable for improving livestock productivity and thus food security.
    c. However, we note that the extension of the ability to burn into September could not be conditional on reduction in spring as many moors are either climatically unable to take advantage of September burning, or may be harvesting either grouse or red deer in September.

2. Do you consider that there are any other amendments required to the muirburn provisions within the Hill Farming Act 1946 to adapt to climate change?

1. Consideration should be given to improving the ability of land managers to conduct muirburn in order to reduce fuel loads and the risk of wildfire (targeted fuel management) in alternative ways (eg burning on steeper than normal slopes or close to rocky areas) to those suggested in the Muirburn Code and on designated sites through the use of muirburn plans agreed with the statutory agencies.

2. Regulation of when burning is permissible in relation to preceding and prevailing weather conditions (rather than in relation to arbitrary dates) may be useful in order to prevent damaging wildfires.
    a. Understanding the relationship between fire and carbon storage is in its infancy but it is clear that very hot fires in very dry conditions can lead to damage to peat soils and a loss of previously stored carbon. The conditions which such fires occur under are rare but may increase under some climate models.
    b. When suitable research has been conducted, which it is agreed is better than the management community at accurately predicting climatic, habitat and soil conditions which would pre-dispose towards damaging wildfire, we would support an amendment to the Act which would allow temporary local suspension of burning rights for environmental protection.
3. Amendments to the Act could provide an administrative and financial framework for setting-up or managing local Fire Protection Groups and improving training opportunities for land managers.

3. Do you consider that there are other climate change related impacts that affect how you carry out muirburn?

1. The nesting date of many birds is governed by both daylength and climate factors; if overwhelming evidence became available that climate change was resulting in the earlier nesting of birds the GWCT would offer advice on how to mitigate against this risk.
    a. However, the issue of amending the dates within which muirburn could take place on these grounds has recently been considered and rejected by Scotland's Moorland Forum in 2006.
    b. Reviewing a report by BTO Scotland, the Forum found that quantifying the risk to nesting birds from the current muirburn regime was very difficult, suggesting that there is little actual impact. The report went on to note that muirburn, where well practised, is beneficial to upland habitat and wildlife interests. Muirburn gives rise to habitat variability in the uplands, and for some species has a significant impact on nesting density.
    c. Mitigation of the risk of nest loss is inherent in grouse moor management as early nesting in grouse results in suspension of burning for game conservation reasons when an appropriate balance has been found between short term risk of damage to nests and long term management of the heather stock.
    d. We note that a wider consideration of other species of conservation concern, other than just game, may be required in the future and that further research may be needed.
2. Climate change may be implicated in the observed changing and increasing prevalence of heather beetle outbreaks and subsequent impacts on heather and the spread of *Phytopthora* diseases.
    a. Large extents of dead or dying heather as a result of pest attack may represent a loss of carbon storage potential and, when dry, represent a significant fuel loading and thus increased risk of wildfire.
    b. Burning when damage is first noticed, often in September, could reduce these potential impacts.

3. The cost of petrol and diesel fuel is increasingly high as a result of taxation to reduce carbon emissions and this may affect the ability or likelihood of managers using water pumps, ATVs or flails mounted on tractors which provide safe burning capabilities.
    a. We would recommend support for fuel costs associated with muirburn which brings wildfire protection capability.
4. Climate change scenarios suggest warmer drier summers and this may interfere with the ability to use fire control equipment if natural water supplies dry out.
    a. We would support the funding of work to establish reliable water supplies for firefighting activities on moorland and particularly hill woodland areas.

AAS
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