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# Prescribed burning, atmospheric pollution and grazing effects on peatland vegetation composition

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Peatlands are valued for ecosystem services including carbon storage, water provision and biodiversity. However, there are concerns about human impacts on peatland vegetation and function. We investigated how prescribed vegetation burning, atmospheric pollution and grazing are related to vegetation communities and cover of four key taxa (*Sphagnum spp.*, *Calluna vulgaris*, *Eriophorum vaginatum* and *Campylopus introflexus*) using two datasets from a total of 2,013 plots across 95 peatland sites in the UK.

Our results show differences in vegetation community composition between burned and unburned plots at regional and national scales. Burned sites had less *Sphagnum* and greater *C. vulgaris* cover on a national scale. On a regional scale, plots burned between 2 and 10 years ago had greater cover of invasive moss *C. introflexus* and less *E. vaginatum* than unburned sites. Livestock presence was associated with less *Sphagnum* and *C. vulgaris*, while atmospheric pollution was associated with less *Sphagnum*, but greater *C. introflexus* cover, and appeared to have more impact on burned sites.

These results have implications for current peatland management. We suggest that, to promote cover of peat-forming *Sphagnum* and *E. vaginatum*, peatlands should not be routinely burned or heavily grazed. Current or historical atmospheric pollution may hinder peat-forming species, particularly on burned sites.