Balancing ecosystem health and pollution risk in contrasting water supply catchments

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Prescribed fires are an important tool in many regions of the world for (i) minimising fuel loads to reduce the risk of severe wildfire occurrence, and (ii) for maintaining ecosystem services, biological diversity and ecological health.

Despite the continued application of prescribed burning as a management technique in a number of regions across the world, its usage has declined in recent decades in some areas of the UK. A new project has been launched to provide an environmental impact assessment that accompanies the reintroduction of more regular management burning practices into the Brecon Beacons National Park (Wales), which aims to address the effects of the reduction in upland grazing. Its outputs will inform management practices within the region in relation to the trade-offs between burning, ecosystem services and the specific water supply catchment needs, whilst also providing a comparable British context to the growing body of international literature.

In order to supplement this broad research area into the impacts of management burning, spacial-temporal changes in the risks to off-site water quality will be monitored as an impact of varying burn use-intensity. This topic has received little research in comparison to work on the effects on vegetation and soil hydrological processes. The wider implications of burn use-intensity on Welsh upland areas will also be evaluated, including an assessment of biological diversity and ecological health both on and off-site within the study catchments.

This contribution will provide a brief summary of the current state of knowledge in this field, along with a research design that will be adopted to deliver the anticipated research outputs