

Fire Interdisciplinary Research on Ecosystem Services: Fire and Climate Change in UK Moorlands and Heaths

SEMINAR 4

Economic impacts of wildfires and adaptive land management to reduce wildfire risk and impact

Losehill Hall, Peak District National Park, 13th May – 14th May 2009

Day 2: Feedback from Workshops and Discussion

Rapporteur: Gareth Clay (Durham University) and Julia McMorrow (University of Manchester)

Following an introduction by Aletta Bonn (presentation available to download), the participants were split into three groups. Groups were tasked with applying one of three wildfire management strategies – fuel management, risk reduction, and improving ecosystem resilience – to a case study area. They were also asked to assess its impact on ecosystem services and fit to existing environmental policy.

The case study area was approximately 7 km² and adapted from a real upland area of blanket bog. All groups worked on the same case study. Each group was provided with a map of the area to annotate (see Figures in reports from each group on the FIRES4 webpage). The area had multiple land uses including, grazing, grouse shooting, forestry, transport, recreation, and heritage (an archaeological feature). Participants were informed that there was a reservoir for water catchment and a large urban area just off the off the map which should also be taken into account. A small area of the deep peat had been gripped (drained). Areas of pasture around the moorland fringe were mapped as improved. There were recent burn scars and exposed peat.

Each group was asked to report on:

- a management plan to carry out the allocated strategy in the case study area;
- the likely impact of the strategy on ecosystem services using an adapted version of the Defra ecosystem services (ES) grid¹;

¹ Defra, 2007, An introductory guide to valuing ecosystem services. Table 3.1 Initial checklist of ecosystem services for consideration, p24. <http://www.defra.gov.uk/wildlife-countryside/pdf/natural-environ/eco-valuing.pdf> (23 July 2009)

- how its effectiveness would be monitored given scenarios such as climate change, and what adaptive management may be required;
- how the strategy might fit or conflict with existing policies and economics.

Before group work began, each person was asked to individually complete the impact grid for their allocated scenario and the 'do nothing', or 'business as usual scenario of existing wildfire management. This led to questions about the practicalities of applying the Defra grid to assess impacts on ES. How far into the future should impacts be assessed, and over what spatial scale? A time scale of ten years was used, and the area of influence was taken to be the map but to extend to significant land uses surrounding it (water catchment reservoir and urban area). It was acknowledged that outputs would be scale and site-specific.

A précis of the three oral reports is presented here with a summary of the plenary discussion. Fuller reports from each group can be downloaded from FIRES4 page.

Fuel management group

Management plan: Management to reduce fuel load would be prescribed burning or mowing. Both would incur costs. The map was useful to identify assets, risks and monitoring needs. Natural fire breaks such as gullies and paths could be utilised. Deciding how to intervene to manage fuel loads requires an assessment of the probability of a catastrophic fire. It is fire severity not fire frequency which is most important.

Impact on ecosystem services: The group identified that 'business as usual' could have two possible outcomes: either a fuel load build up but with no fires; or a fuel load build up with a catastrophic fire. The former would probably have no impact on ES however the latter would have definite negative effects on ES. The group decided that there would be mainly positive effects on ES but with a cost for carrying out the managed burns.

Monitoring: the importance of baseline data was emphasised, with the possibility of using control areas so that rigorous scientific investigation could be carried out. GIS should be used to map all data.

Policy and economics: current policies towards managed burning were highlighted as barriers to what can currently be done in terms of fuel load management to reduce wildfire risk. There are restrictions such as the Heather and Grass Burning Code on where and when burning can take place to protect regulating and supporting ES, especially on designated land and sensitive areas. Gullies are natural fire breaks which with proactive burning could be suitable fire-defensible lines, but areas within 5m of a water course are also sensitive for soil erosion so there is a strong presumption against burning. Trends such as land abandonment, reducing sheep numbers and mild winters can reinforce the need for fuel load management to prevent severe fires. Do we have to wait for a severe fire before acting? The need to monitor and revise policy frequently as adaptive management suggests was stressed, and the need for long term visions through partnership working.

Risk reduction group

Management plan: ‘Risk reduction’ was taken to mean two things: first, fire prevention by reducing the risk of ignition e.g. carefully timed public education, restriction of public access at times of high risk; and second, fire suppression by making fire fighting more efficient e.g. improved training, risk maps, fire plans and better equipment. The importance of first mapping historical fires to understand where fires had occurred was discussed as a way of targeting action; it may not be possible to reduce number of fires, but with knowledge of where they have occurred in the past, resources can be targeted to reduce the risk. Maps were useful in the planning phase as well as a tool to use on the fire ground during a fire.

Impact on ecosystem services: the group decided that risk reduction on its own would be problematic. It could harm core businesses if people are excluded from the land. Fuel loading may also increase if fires are constantly suppressed without any fuel load management, increasing the risk of a severe fire. It was decided that a more practical approach was to combine risk reduction and fuel reduction.

Monitoring: Baseline data was again mentioned as a key data need, especially the fire history of the area. A partnership approach where all parties are consulted was discussed, especially in formulating fire plans. One idea suggested was the importance of a forensic investigation on wildfires to help determine the cause. From this, targeted action could be applied to reduce the likelihood of future events

Policy and economics: The two aspects of risk reduction conflicted with current policies; for instance with increased public access. The group also discussed the question of who pays and who benefits, highlighting that the people who actually pay are often not those who should pay. One solution to this problem is utilising partnerships as way of encouraging resource flow as well as an information sharing exercise.

Ecosystem Resilience

Management plan: The group defined ecosystem resilience as the ecosystem’s ability to cope with wildfires when they do occur. This may include rewetting of vegetation and creating a mosaic of vegetation types. Further suggestions for a management plan included: reintroduction of cattle to reduce targeted vegetation such as *Molinia*; encouraging fire-retardant vegetation, especially on slopes, and where arsonists are most likely to operate; reducing woody vegetation; rewetting through introduction of *Sphagnum* species. The use of map to identify hotspots was also discussed.

Impact on ecosystem services: the group decided that through the adoption of this scenario there would probably be little change for provisioning services e.g. timber but there would be benefits for regulating services, although the effect of rewetting on water colour and carbon budget is disputed.

Monitoring: Baseline data was also mentioned with the importance of understanding peat moisture and the fire history. Also highlighted was that we need to know how sites’ bounce back’ following fires.

Policy and economics: The group decided that this scenario would probably fit with most current policies as this scenario has important biodiversity impacts. However the group posed the question whether moorland will be here in the future under the increasing pressure from climate change – should we plant birch to cope with future climate change and forget about moors?

The group decided that this scenario would financially benefit moor owners through increased shooting value. It would also reduce restoration costs. The economic impact on water quality is not yet understood. Ideas for how and who should pay for this scenario included: end users of water; using the “polluters pay” idea; using current agri-environmental schemes; charging for site visits or local hotel levies.

Group discussion

The discussion following the group reports highlighted crossover and many similarities between groups:

- The need for baseline data on the ES and fire regime. For management to be adaptive, control areas and long-term monitoring and needed and policy needs to be revised more frequently.
- Problems of spatial scale; how far do the beneficial or negative impacts of wildfire management on ES extend beyond spatially?
- Problems of temporal scale; over what time period should we consider the impacts?
- The importance of fire severity, not just fire frequency. The need to know more about current and predicted UK wildfire regime.
- Related to this, a combination of wildfire management strategies is needed. A single strategy such as more efficient (over?) suppression could increase fuel load and the risk of a catastrophic wildfire.
- Plans should be drawn up at the local level, as environmental conditions, land management and responsibilities differ across the UK. Each moor and heath is different.
- Who would devise and carry out the management plans, and would any resources be provided? This raises the issue of whose responsibility it is to manage wildfire risk, or ultimately, who bears the costs of management, and the costs of damage to ES. One suggestion was whether management to reduce wildfire risk could be incorporated into Higher Stewardship Schemes.
- There are likely to be conflicts between management for wildfire and management for certain ES. The partnership approach was stressed as a way of bringing together different views and expertise, and to reduce conflicts