

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 1, Session 1: Fighting UK Wildfires

Rapporteurs: Vasilsios Tsitsopoulus and Julia McMorro (University of Manchester)

Chair: Sean Prendergast (Peak District National Park Authority)
Speakers: Cath Reynolds (Department for Communities and Local Government)
Andy Elliott (Dorset County Council)
Chris Ruddy (Pennine Helicopters)

Previous FIRES seminars had stressed the need for a better wildfire data recording system; *Cath Reynolds* of the Department for Communities and Local Government addressed central government's response to the issue. She introduced the new Incident Recording System (IRS), which was rolled out nationally on 1st April 2009. Limitations of recording wildfires under the old two-tier system were acknowledged. The level of recording varied with reporting category; primary 'FRD1' fires (those causing harm or damage or attended by five or more appliances) were reported individually, while secondary 'FDR3 fires' were reported only as monthly totals. IRS would bring an improved level of reporting to all incidents attended, including vegetation fires. Data would be more timely and of better quality. It would be joined up with the evolving UK Vegetation Fire Standard (UKVFS) which is designed to apply across all fires, including those in non-FRS databases.

Cost-benefit analysis drives public policy decisions, so it is important to demonstrate the economic costs of wildfire and costs saved by intervention. Response time and losses are statistically related¹. It was important to demonstrate cost effectiveness in each of the four categories recognised in Integrated Risk Management Planning (IRMP) – prevention, protection, response and recovery². For instance, the effectiveness of fire

¹ Home Office *Further Development of Risk Assessment Toolkits for the UK Fire Service. Technical Note – Risk Rating System for Vegetation, Large Heathland and Woodland Fires*, March 2000. Entec UK Limited. www.communities.gov.uk/documents/fire/pdf/143768.pdf

² Department for Communities and Local Government, IRMP Steering Group *Integrated Risk Management Planning: Policy Guidance - Wildfire* August 2008

alarms as a mitigation measure had been demonstrated for structural fires. It would be valuable to know the current UK spending for wildfire in each of the four categories, and the optimum distribution between them. Improved data and knowledge would be achieved by combining inputs from IRS review, Chief Fire Officers' Association work on climate change, partnership working and data sharing protocols. Universities and other interested parties were invited to feed into the review process.

Lively discussion covered issues such as, wildfire prevention, geocoding of incidents and data accuracy. First, a representative of the land management community made the point that prescribed burning could be seen as an effective preventative measure. Second, IRS would improve the recording of spatial location because coordinates of the incident can be changed interactively via a map interface. This is an improvement over the old system which recorded the vehicle rendezvous point, so will improve the value of FRS databases for risk mapping. However, it is important to be consistent in the point to be recorded; for instance, inferred ignition point, approximate centre of fire ground on arrival, centre of fire ground at close of incident, etc. It was recognised that recording the fire scar boundary would improve the system further for spatial analysis as it allows burned area to be calculated. It would also allow many data fields to be automatically populated from linked databases which would reduce the work load in data entry. Third, there was related concern about accuracy of data, especially for compulsory data fields where officers may be forced to guess (the system is being locally implemented and customized, but with core compulsory elements). 'Train the trainers' courses were being provided to help improve the accuracy of the data entered. Some data fields such as ethnic origin were a statutory requirement.

Andy Elliot of Dorset County Council spoke about wildfire experience in Dorset from a firefighter's and GIS data developer's perspective. There had already been 40 heath fires in Dorset this year (2009) and ten this month (May). Heath fires are responsible for more FRS injuries than any other type of incident, although fortunately most are minor. Firefighters want four things: training in wildfire tactics; appropriate personal kit ('PPE'); suitable equipment, especially all-terrain vehicles; and risk reduction so that there are fewer heathland fires to fight. Currently training and PPE are geared to structural fires.

Great progress had been made in the ten years up to 2006, with a 62% reduction in the number of incidents set against a national increase of 46%. This can be traced to the formation of the highly successful EU-LIFE Urban Heathlands Partnership (UHP) in the late 90s, which brought together fourteen partner organisations and the local community to manage Natura heaths. It introduced new ways of working and better equipment.

The focus is on fire prevention, response, recovery and enforcement. Mutual understanding is fostered through partnerships on many levels. Fire-fighters are trained to appreciate the environmental significance of heathland. Land managers are trained in the FRS incident command system. A Premise Risk Profiles (PRP) is jointly prepared in

advance by fire fighters and UHP rangers, identifying high risk areas and carrying out risk mitigation. UHP staff attend the fire to offer specialist advice. After a fire, UHP wardens fill in the gaps in IRS and improve accuracy by recording the fire scar with GPS and logging environmental damage. Dorset uses its own geographic information system (GIS), which has the advantage of a common interface familiar to Dorset's other emergency services. When rangers restore a burnt site, FRS input allows improved access for future fire-fighting. Public awareness is raised using leaflets, media campaigns, school education packages and annual visits, and rangers interact with the public on site.

Police attend all deliberate incidents. The managed status of the heathland confers sufficient property ownership to prosecute under Arson legislation, rather than third party damage to a Site of Special Scientific Interest (SSSI) under the Countryside and Rights of Way Act (CROW), which is harder to prove. There have been over 120 arrests since 2002, mostly juveniles, and six successful prosecutions with sentences of up to two years in prison.

The close proximity of housing to Dorset heaths allows the planning process to be used for prevention and to fund mitigation. Applications to build within 400m of a Natura heathland are normally refused. Most heathland wildfire mitigation work is funded by interim planning framework (IPF) which raises £1,000,000 per annum under section 106 agreements.

Chris Ruddy of Pennine Helicopters provided a technical introduction on the capabilities of the helicopters and equipment used in aerial firefighting. One of the helicopter's roles is to investigate a reported fire by providing a more precise location and assessing the ground resources needed and whether the FRS should be called. A helicopter can fly FRS personnel over the fire to decide where to put a fire break and what resources and animals could be at risk. It can quickly deliver personnel and heavy equipment like fogging units to the fire ground, often saving a one hour trek on foot up steep slopes. Bambi buckets are used to fill small temporary dams to provide on-site water supply. The water is flown in from a reservoir, a fire tender or even the sea. Bambi buckets are less useful for fire fighting than the second type, Kestrel buckets, because the unbroken jet of water can cause embers to loft and start spot fires. A controlled velocity spray of water is dropped from the larger Kestrel buckets. This creates steam which is more efficient, especially for peat fires. Yet few Kestrel buckets are available in the UK. Early warning is essential to prepare equipment; otherwise response time is increased.

His aerial photographs of wildfire scars in the Peak District in July 2006 graphically demonstrated the strong inverse relationship between the size of area burnt and helicopter response time; that is, the time between the fire being reported and the helicopter being on site. For instance, a four-day delay at Colne in Lancashire resulted in 9 km² burnt (the fire jumped a dual carriageway), and a three day delay at Stalybridge burnt 4 km². In contrast, a 2 hour response time at Bleaklow resulted in only 0.02 km² being burnt, despite the fire being on mature heather and deep peat, and only 0.0015 km² at Crowden

with 15 minutes response time. The Crowden fire was on a slope so had the potential to spread very quickly upslope to the peat-covered plateau. This fire took a week to damp down on the ground, that is, to extinguish any hot spots which develop when peat ignites and smoulders underground.

Discussion included the actual costs of helicopter fire fighting and who should bear the cost. Landowners bear the cost of the helicopter, so unless they are covered by insurance, most are reluctant to bring in the helicopter at approximately £15 a minute and a £2500 minimum callout charge. Yet the message was clear; rapid helicopter response means smaller fires.