Fire, Interdisciplinary Research and Ecosystem Services: Some reflections on the FIRES series

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Origins of Fire

Fire has a long history in UK moorlands and heaths

Fire is an integral part of moorland management
Agriculture, sport, tradition, …

Management priorities are changing
Economic landuse, biodiversity, recreation, carbon storage, water quality
Differing Attitudes to Fire

Land owner, forester, conservationist, park ranger, water authority, fire & rescue service, politician, scientist, social scientist

Way of life
– potential catastrophe must be extinguished

“All fire is bad”
– a lot of fire is good
Ecosystem Services

Importance of Fire Regime

Limited data:
– Biodiversity
– Carbon
– Water quality
Ecosystem Services & Climate Change

Things will change
– everything else is uncertain

Complex interactions between fire and:
climate
land use
human behaviour
Managing Fire in Changing Climate

Zero-tolerance of fire (at risk of rare severe fire events)?
– or use fire to manage fuel?

What is best fire regime for new ecosystem management objectives?

Small climate impacts can trigger major shifts in whole system
Technological Developments

Practitioners need simple tools

Understanding of fire behaviour

Evaluate performance of forecast models
  – extend MOFSI
  – assess thresholds for access closure
People are major cause; correlation to access points
∴ need to know more about **public attitudes to fire** risk

To improve effectiveness of public education on WF risk without encouraging arson.

**How do climate change, people and wildfire (WF) risk interact?**

Will climate change increase visitor pressure as assumed?
Would this increase the incidence of fire (more ignition sources), or more pairs of eyes for early detection?
Relative priority of WF

Resource-intensive and challenge FRS resilience, yet lower priority than structural fires
 UK wildfires cause environmental damage, but ‘mildfires’ in terms of loss of life and buildings

Importance of redefining moorland and heathland ecosystem services (ES) as ‘property’ with a costed asset values
 Higher priority for FRS suppression and forensic investigation (little relative to Europe)
 Easier to prosecute arson cases
 Appropriate valuation tools needed to judge costs of prevention & suppression against benefits of ES saved.
Livelihoods

Sustainability must be social, cultural and economic as well as environmental

Who should pay for managing ecosystem function?
Land use factor

Importance of **land abandonment** in increasing wildfire risk

In Spain, this poses a greater long term threat of WF than climate change via effect on fuel load.

Parallels in UK; grazing intensity?

**Fuel load management** is critical but raises many issues:

In Spain and Italy, importance of fuel load management in wildfire is poorly understood. Who should pay for this once land is abandoned?

Conflicting evidence in UK for effects on regulating and supporting ecosystem services

Importance of fire regime.
Indirect effects of climate change

Climate change and socio-economic change may interact to increase wildfire risk;
  e.g. What happens if a warmer climate makes moorland less viable for grouse shooting and there is no longer an incentive to actively manage upland vegetation?

Policy response to climate change may inadvertently increase wildfire risk
  e.g. What happens if low carbon economy encourages more UK-based holidays, will this then increase WF risk?
Potential policy conflicts

Trade-offs between ES e.g., biodiversity, carbon, clean water, grouse production & livelihoods, recreation, etc., or is it possible to manage them synergistically?

Likely to be trade-offs between ES and WF

e.g. Policies which result in changed fuel load, species composition or public access are likely to change WF risk

Silo policy-making is unwise. Complex interactions require joined-up thinking
National needs for WF

Improve reporting of vegetation fires
Incident Reporting System is the opportunity
Make GPS location of fire ground and other critical data fields mandatory in IRS.
Access to other databases

Training/knowledge exchange
E.g. on completing IRS forms; GPS, fire behaviour
Holistic approach, exchanging skills between land managers, FRS, academics and other stakeholders
Maintaining continuity; high turnover of WF officers

Local best practice, but evident need for a UK national policy towards wildfires. Lessons to be learnt from Europe.
Conclusion

Diversity of opinions
Uncertainties
Complex interactions
Need for joined-up thinking
Where next?