GWCT response to Environmental Audit Committee's inquiry into Climate change and security.

The GWCT[1] welcomes the opportunity to contribute to this inquiry its knowledge on the increased threat of wildfire posed by climate change and resulting policy initiatives in pursuit of net zero that are affecting land management, and the impacts that wildfire could have on human health (including loss of life), natural resources and critical infrastructure. Our focus is on the domestic situation.

The GWCT ran a Wildfire Workshop in January 2023 chaired by Lord Deben, then chair of the UK Climate Change Committee. The workshop was attended by key stakeholders including members of the Climate Change Committee, Defra, Natural England, NatureScot, Natural Resources Wales, the Cabinet Office, Scottish and Welsh Governments, the UK Health Security Agency, Fire & Rescue Services (FRS) and scientists involved in wildfire research. The conclusions of the workshop can be read here - **Report and Proceedings of the Wildfire impact, Risk & Mitigation Workshop.**

For the purposes of this inquiry, we would like to highlight five of the conclusions:

i. The need for urgency in addressing the risk to the UK that wildfires now pose.
ii. With hot and dry weather increasing as a result of climate change, the wildfire risk has become far more severe and is now widespread across all fine fuel[2] vegetation.
iii. Need to decouple wildfire risk management from the tensions surrounding traditional land management practices and to focus on prescribing action on the basis of its efficacy in the mitigation of significant unacceptable risks including loss of life.
iv. The need to understand the environmental, economic and social impacts of wildfire.
v. The need for active management to mitigate its impacts.

1. Understanding the challenge of wildfire

Frequency: climate change predictions indicate that long periods of wildfire supportive weather will become increasingly frequent (from 2-3x p.a. currently to 6x pa by 2100[3]).

Severity: This is mainly determined by available fuel. For semi-natural habitats that is the type, structure, continuity and moisture content of the constituent vegetation. Climate change will also indirectly affect wildfire risk through changes in vegetation (such as lowland heath habitat being replaced by species-poor acid grassland), the increased production of vegetation, more of the existing vegetation becoming available to burn and the drying out of peatlands.

Although peatlands and heathlands are 'fire-adapted' and their vegetation regularly managed by controlled low-severity fires, the increased frequency and severity of wildfire will affect their natural function resulting in biodiversity and ecosystem service losses including water supply and quality.

As is widely acknowledged, in the UK the majority of wildfires are caused by human action. Consequently, increased populations and associated pressures on semi-natural habitats by

[1] The Game & Wildlife Conservation Trust is a leading UK charity conducting conservation science to enhance the British countryside for public benefit. We use our research to provide training and advice on how best to improve the biodiversity of the countryside. www.gwct.org.uk

[2] Vegetation such as moorland, heathland, crops and grasslands as well as the understory and litter layer of woodlands provide a continuous fine fuel supply. These are fuels with a 0.6cm or less diameter that dry out within an hour and require less exposure to heat for them to be raised to their ignition point and consequently are more receptive to fire.

[3] Zhang, R. et al., 2020. Increased European heat waves in recent decades in response to shrinking Arctic sea ice and Eurasian snow cover. Climate and Atmospheric Science, Volume 3

recreational access, particularly in areas of close proximity to urban conurbations such as the Peak District National Park, compounds the potential for a severe wildfire event – as already witnessed at Saddleworth/Stalybridge in 2018 and more widely during the summer of 2022.

Wildfire risk and mitigation: a recent assessment by international wildfire experts in a study of fuel availability for the Peak District National Park (Home (peakdistrictwildfire.co.uk)) suggests that there is a significant risk of another large scale wildfire given the continuity of fuel across the landscape. It also highlights the importance of mitigation through fuel management and building resilience into the landscape through, for example, raising water tables and managing fuel in strategic locations in order to limit fire spread.

Risk to life and infrastructure: wildfire events in close proximity to urban conurbations risk human health and critical infrastructure such as power lines, onshore wind, solar energy, power plants, roads, telecoms masts (Winter Hill fire of 2018) and airports (smoke) as well as environmental goods and services. This was demonstrated by the Saddleworth/Stalybridge wildfire of 2018 where over 4.5 million people were exposed to the effects of PM2.5 (with an estimated 4 deaths)[4], 50 homes were evacuated, a 4-mile stretch of the A365 closed and reservoirs drained to avoid contamination. This wildfire affected the upland terrain that supplies the greater Manchester area with drinking water requiring investment in repairs to the catchment land[5].

Economic implications: aggregating the immediate costs of the Saddleworth/Stalybridge 2018 wildfire amounts to c.£26.5 million (see table). Legacy costs such as peatland degradation (loss of sequestration capacity) and impacts on water quality could amount to a further £6-6.5 million.

Cost/loss	**Value £m**
Costs of suppression	£ 1,200,000
Landowner costs (United Utilities)	£ 700,000
Carbon emissions	£ 1,680,000
Health costs	£21,000,000
Lost restoration investment	£ 2,000,000
Legacy costs – loss of sequestration capacity, costs of habitat restoration	£ 6,100,000
Recreation/tourism impacts	£205,000
Total	**c£32.9m**

Sources: Belcher et al., (2021) UK wildfires and their climate challenges. Expert Led Report Prepared for the third Climate Change Risk Assessment; Reducing the risk of wildfire | Moors for the Future; Graham, A.M. et al (2021) Impact of the June 2018 Saddleworth Moor wildfires on air quality in northen England. Environmental Research Communications, 2, 031001; Private Lands Portfolio: Saddleworth Moor | Moors for the Future

Consideration should also be given to the potential for loss of ecosystem services as a result of wildfire including impacts on water supplies and water quality. It is estimated that semi-natural habitats provide water supplies to the value of £3.4bn to the UK[6] and that woodland alone provides flood mitigation benefits to the tune of £218.5 million[7].

[4] Graham, A.M. et al (2021) Impact of the June 2018 Saddleworth Moor wildfires on air quality in northern England. Env Res Comms 2, 031001

[5] Belcher et al., (2021) UK wildfires and their climate challenges. Expert Led Report Prepared for the third Climate Change Risk Assessment

[6] ONS UK Natural Capital Accounts: Semi-natural habitats (2021)

[7] Valuing flood regulation services for natural capital accounts - Forest Research

2. How well prepared is the UK to respond to extreme weather events, such as wildfires?

Since we disseminated the results of our workshop widely amongst the relevant departments, Government agencies and Fire & Rescue Services (FRS) that are stakeholders in the Wildfire Framework for England (December 2021)[8], the Climate Change Committee's Progress in adapting to climate change report (March 2023) has acknowledged the need for wildfire mitigation, risk mapping and the management of vegetation and fuels. It also called for a national coordinated wildfire strategy and formulation of local wildfire response plans. In addition in the Third National Adaptation Plan (NAP) wildfire was given cross-sectoral significance in the natural environment and there were specific actions on Defra, its agencies and protected landscape partnerships (national parks and AONBs) relating to wildfire risk and mitigation including supporting the Home Office in scoping out a wildfire strategy and action plan by mid-2024. The requirement to produce up-to-date wildfire management plans covering 20,000 hectares of habitat (including forestry and peatland) by 2025 will be a step forward but, given that the Peak District National Park is c144,000ha alone, this is only a small sample of the area of habitat potentially at risk.

Whilst we welcome these developments, the urgency identified at GWCT's wildfire workshop in January 2023 seems to be lacking and the call for more research into risk reduction measures and the cause and motives of wildfire ignitions alongside a wildfire risk programme between 2023 and 2027 to adapt land management for this risk is ignoring the evidence and insight from other similar fire-prone ecosystems such as Portugal. Whilst some may argue that the UK is different from these countries, in terms of fire behaviour the type of vegetation is less relevant than its structure and its continuity. Whether the fuel is eucalyptus detritus or heather is less relevant than if fuels have a high surface area to volume as they dry more quickly and are therefore more receptive to fire resulting in the potential for extreme fire behaviour. In addition, research has demonstrated that wildfire severity can be worse in mesic (wetter) areas[9].

We reiterate our call on Government to heed the experiences of those fighting the wildfires in the UK and overseas and to fully integrate the need for appropriate vegetation management into a national coordinated wildfire strategy with immediate effect and to facilitate action now where risk assessments already show an unacceptable threat.

The current policy based on suppression (relying on the FRS to put wildfires out) and public education to reduce ignition sources alone is insufficient in the face of climate change. Understanding how the fuel load, type and arrangement across the landscape affects wildfire behaviour and severity is a major gap that needs immediate attention. This would enable land management regimes to be designed to slow fire spread and enable suppression by the FRS. Currently a fire spreading faster than 50m per minute with a flame length greater than 3.5m is considered difficult for the FRS to suppress[10] - as experienced during the fire supportive weather patterns of 2018 and 2022.

We are therefore concerned about delays to the adoption of the methodology proposed by the Peak District National Park Wildfire Risk Assessment. Natural England's peer review[11] has dismissed it entirely which we feel is unhelpful and undermines the laudable effort of the national park and land

[8] Wildfire Framework for England – December 2021 (fireengland.uk)
[9] ARKLE, R.S., PILLIOD, D.S. & WELTY, J.L. 2012. Pattern and process of prescribed fires influence effectiveness at reducing wildfire severity in dry coniferous forests. Forest Ecology and Management, 276, 174–184
[10] https://www.peakdistrictwildfire.co.uk/_files/ugd/9c9ad7_a594c151525a4878a241bac12e93d409.pdf
[11] NECR495 Edition 1 Review of Peak District Wildfire Risk Assessment 2022.pdf

managers to progress an understanding of fuel load, type and arrangement across the landscape at a local or regional level.

3. Potential solutions

We have largely addressed the answer to this section in part 2. We remain concerned that the tensions surrounding traditional land management practices continue to impact the efficacy of approaches to wildfire mitigation, a conclusion from last year's workshop. Given the risks to security through impacts on our economy, critical infrastructures, natural resources and human health including loss of life we feel that this is something that Government needs to address as a matter of priority. They should heed the calls from the Fire & Rescue Services that the combination of an increased vegetative fuel load and climate change means that the risk of wildfire being beyond the suppression capacity of the FRS becomes increasingly likely.

The solution is ready and available; the hurdle to its delivery is the current policy focus on suppression alone.

Game & Wildlife Conservation Trust

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