

# Weather and Fire in Peat Soils - A Fact Sheet

## Overview

- The weather plays a crucial role in determining fire behaviour within peat soils.
- This Fact Sheet provides advice and guidance on how weather and climate affects fire potential within peat fuel, and consequently how fire behaviour may differ as a result.

## Peat

- Peat soils are formed over many thousands of years by the decomposition of surface vegetation.
- Peat is potentially flammable, and peat fires can smoulder slowly underground for many weeks.
- Such underground fires can travel large distances undetected before they resurface elsewhere, potentially leading to secondary surface fires and damaging tree roots en-route.
- An exceptional peat fire can desiccate a large area and leave it unable to support vegetation for decades. Truly exceptional peat fires can reduce land back to the bare rock underneath.
- Peat land areas are usually managed for a variety of reasons, from grazing to conserving local wildlife. Such factors may determine how fire is used to help maintain these areas.
- It will also affect how the soil responds to changing weather conditions, and hence how fire is likely to behave in such areas.



## Peat Ignition

- Peat areas are usually covered by vegetation. Peat fires usually occur when this vegetation burns and transfers the flame front into the soil itself.
- Peat land areas with a flammable vegetation cover are more susceptible to ignition.
- Older heather and gorse is usually drier and more likely to increase the chances of ignition.
- Dry mosses over a peat area are also likely to help a flame-front travel across a peat soil and increase the likelihood of its ignition.
- Fires, in grass for example, which travel quickly are less likely to lead to peat ignition.
- Drained peat land areas will be drier than others and therefore more susceptible to the risk of fires, particularly in the springtime, even if there has been significant rainfall through the winter period.
- Very strong variations in soil moisture can occur over relatively small areas; this is particularly true in mountainous areas. This leads to a strong variation in fire behaviour across a relatively small area.
- Such differences may also occur due to variations in vegetation cover, or whether part of the area is drained.

## Protecting Peat

- Fire potential within peat land areas should be assessed frequently at susceptible times of the year.
- The weather forecast can help in the planning of burns over peat soils.
- Reducing the fuel load in susceptible peat land areas can help reduce the risk of ignition of the peat at critical times.
- This is particularly true in areas where accidental fires are more likely to occur – such as in the urban fringes, for example.
- Unmanaged land, and that land adjacent to it, is at greater risk of ignition.
- When the surface vegetation is burned over peat land areas it increases the likelihood of burning away the litter layer. Large areas of peat without litter cover are more susceptible to erosion.
- If controlled burning on peat soils is undertaken at the early stages of a dry spell of weather, the litter is more likely to be damp than further into a dry spell. This helps protect the peat from ignition together with protecting more of the litter layer.
- It is usually more beneficial to burn surface vegetation over susceptible peat soils sufficiently early on in fire season, rather than later as spring approaches.
- Leaving a controlled burn unattended increases the likelihood that it may get out of control. The wind and other weather conditions can sometimes change very quickly over short periods of time,

potentially carrying the flame-front to unintended areas.

## Seasonality of peat fires

- There is usually little risk of a significant peat fire over the winter period.
- Damaged peat loses some of its ability to retain moisture. Also peat in well drained areas can become dry even early on in the season, during springtime. In both circumstances, there is a higher risk of the peat being damaged by controlled burns during the springtime.
- Springtime is usually also a peak period for visitors in many peat land areas. This can also add substantially to the likelihood of ignition of the surface vegetation, and hence the peat itself.
- After a long dry summer, peat conditions can become exceptionally dry. In areas where the vegetation cover is able to ignite, this poses a significant risk to the underlying peat soil.
- These conditions can persist even into the early part of the prescribed burning season, increasing the potential damage a controlled burn may cause.
- Heather beetle attacks during the summer can lead to the heather on the surface of peat lands drying out significantly as winter approaches. This may add to the likelihood of peat fires in adverse conditions later on in the autumn.



## Further information

The Met Office have a continuing research programme to further tailor and improve the forecast system and will continue to keep abreast of research and development both within the UK and across the world.

About the Met Office [www.metoffice.gov.uk](http://www.metoffice.gov.uk)

Information for England [www.openaccess.gov.uk](http://www.openaccess.gov.uk)

Information for Wales <http://csaw.ccw.gov.uk/fireriskindex.html>