



Wildfires

The term wildfire is used to describe unplanned fires in countryside areas including forest fires, grassland fires, bushfires, brushfires, and any other vegetation fire. Wildfires happen across the globe except Antarctica (98% of the continent is permanently covered with snow and ice and the other 2% is largely bare exposed rock, so there is little fuel and freezing temperatures).

How do wildfires start?

Wildfires have happened throughout history and can occur naturally by:

- lightning strikes
- volcanic activity
- sparks from colliding rocks
- spontaneous combustion
- high temperatures and dry vegetation

Most wildfires are caused by humans, either accidentally or carelessly, or deliberately with an intention to cause harm. Find out more in our [Information note - Investigating the causes of wildfire](#).

The impacts of wildfire

Wildfires are extremely dangerous to wildlife, plants, property, and human life.

As well as the danger of burning, smoke from wildfires contains pollutants that can cause significant health problems for animals and people. Worldwide, wildfire smoke is thought to kill approximately 339,000 people a year.

Wildfires also increase the potential for flooding and landslides that are also a danger to life.

Many animals have some ability to escape the heat. Birds can fly away, mammals can run, and small creatures might be able to burrow into the ground or take cover under rocks. Other animals will try to take refuge in streams and lakes. However, some animal instincts may work against them in this situation, such as a squirrel whose instinct is to climb a tree to escape which may result in it becoming trapped. Many creatures lose their homes, are hurt, or perish.

Wildfires can also have positive effects on the natural environment and can benefit some animals. Predators have been known to hunt other creatures who are fleeing from fire.

Some plant species have adapted to survive wildfires, and some depend on the effects of fire to reproduce and grow. These are known as pyrophytic plants. Certain trees, including larches and giant sequoias survive due to a layer of thermal insulation provided by their bark, dead leaves, or moist tissues. Eucalyptus have specialised buds protected under their bark. When the trees are burned, these buds emerge to produce new leaves and branches. Some plants require fire for their seeds to sprout, such as the Lodgepole Pine.

However, uncontrolled and large wildfires may lead to serious damage of the natural environment.

Types of wildfire

Fires are often classified according to the fuels they burn and include:

- **Ground fire** – these are usually slow burning and fed by organic material in the soil.
- **Surface fires** – these fires are also known as crawling fires and spread very quickly. They burn low-lying vegetation including leaves, grass, branches and bracken.
- **Canopy fire** – these fires are also known as aerial fires. This type of fire moves through the tops or crowns of trees or shrubs, producing large flames.



- **Spotting fire** – these fires are also known as firebrands and occur when winds blow fireballs from canopy fires into previously unaffected areas. When firebrands are blown to new areas, the fire spreads more quickly.
- **Contained fire** – a line is dug all the way around the perimeter of the fire to stop the spread, but the fire itself could continue to burn within the boundary for weeks or months.
- **Burn over** – when a fire moves too quickly for a firefighting crew to retreat or to a safe location. When this happens firefighters take shelter in a safety zone or a fire shelter.
- **Backing fire** – When fire spreads into the wind or down a slope.
- **Conflagration** – this term is used to describe an extremely vast wildfire that destroys a large area of vegetation.

Factors effecting wildfire

There are a range of factors that can contribute to the spread of a wildfire. These include weather, terrain, fuel, flammability, and source of ignition.

A wildfire is more likely to spread quickly when there are strong winds, the area of vegetation is dry, the temperature is high, and the climate of the area is hot. A fire can grow more intense during the daytime as it is often warmer and drier.

The characteristics of the terrain contribute to how quickly and widely a wildfire might spread. For example, the steep slopes of a mountainside may speed up the spread of a fire. Fire usually travels uphill faster than downhill. The steeper the slope, the faster the fire will move. Fire travels in the direction of the wind, which usually flows uphill. The fire is also able to preheat the fuel further up the hill as the heat is rising in that direction.

The amount of fuel present (vegetation) in the wildfire area will contribute to the longevity and intensity of the wildfire, as without it the wildfire would fizzle out.

Find out more in our [Information note – Investigating the causes of wildfire](#).

Controlling and managing wildfires

Wildfire has been officially recognised as a major UK hazard, with its inclusion in the National Risk Register of Civil Emergencies. The annual cost of fighting wildfires in the UK is around £55 million.

Wildfires can destroy an entire area or habitat, affecting the species of plants and other organisms living in that area including humans. Therefore, it's important to prevent or control wildfires.

Humans have tried many ways to detect and prevent wildfires. Land managers and firefighters use various methods to prevent, manage and smother wildfires.

These include:

- **Vegetation control** – landowners limit the accumulation of vegetation in areas susceptible to wildfire by chemical or manual means, limiting the accumulation of fuel.
- **Controlled burning** – a land management technique where landowners light small fires to reduce the amount of flammable material available for a potential wildfire, such as a managed bracken burn on the side of a hill. A bracken burn is usually undertaken to control its cover and density, clearing space to allow grass and other plant species to grow. The reduction of the amount of fuel for a wildfire can be a secondary benefit for a land manager such as a farmer, who might primarily want more grass for livestock. Controlled burns can only take place during the burning season. The 'burning season' runs from the 1st October to the 15th April in upland areas (severely disadvantaged areas), and the 1st November to 31st March in other areas.
- **Direct attack** – any treatment of burning fuel, such as by wetting, smothering, or chemically quenching the fire or by physically separating burning fuel from unburnt fuel.



- **Firebreak** – to stop a fire or reduce its intensity, the best way to stop a wildfire is to remove the fuel that keeps the fire burning. A fire break is a ditch dug ahead of where the fire is moving towards, removing the fire's access to fuel.
- **Air drop** – a form of direct attack using airplanes, helicopters or other aircraft to drop water or firefighting liquids from the air.

Legal consequences of deliberately starting a wildfire

Deliberately starting wildfires is illegal and irresponsible. It is against the law and can result in life imprisonment. This criminal act is known as Arson. Section 4 Criminal Damage Act 1971 sets out a maximum penalty of life imprisonment for aggravated arson.

Tackling wildfires takes up vital resources, is very costly and endangers human health and lives.

What can you do?

You can help to prevent wildfires by:

1. Always being careful with fire – one tree can make a million matchsticks, but it only takes one match to burn a million trees.
2. Never playing with matches or lighters.
3. Always follow the **Countryside Code** and take precautions when having a campfire or BBQ, such as ensuring you have water on standby to extinguish it when you have finished or in case things get out of hand.
4. Making sure your campfire or BBQ is completely out before leaving it.
5. Report suspicious behaviour by others to the police.

If you see a wildfire

- Get yourself and others to safety by leaving any area **immediately** if you suspect a wildfire is present.
- Ring 999 and ask for the fire service if you see a wildfire. Give them the location of the wildfire and any other relevant information.

Learning in, learning about, and learning for the natural environment.

Looking for more learning resources, information and data?

Please contact: education@naturalresourceswales.gov.uk or go to <https://naturalresources.wales/learning>

Alternative format; large print or another language, please contact: enquiries@naturalresourceswales.gov.uk 0300 065 3000

