

# Organic (peat soil) fires

## Background

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The Tasmanian Wilderness World Heritage Area (TWWHA) is a particularly difficult location for firefighting due to the remoteness and inaccessibility of much of the region, but also due to the extensive areas of organic soils – commonly but mistakenly referred to as peat soils – that occur in the area.

Organic soils are made up of decaying and decayed plant material. These soils build up only under wet and cool climatic conditions. Anyone familiar with western Tasmania would therefore know that the climate of the TWWHA has been conducive to the development of organic soils! For this reason, organic soils are widespread across the TWWHA and make up just over 6000 square kilometres, or about 40 per cent of the land area. Organic soils can be up to two metres deep in the broad valley floors but are commonly shallower across much of the rest of the TWWHA. Organic soils are recognised as a unique feature of the TWWHA and are acknowledged as contributing to its Outstanding Universal Value.

Many of the difficulties associated with fires in the TWWHA are due to fires burning underground in organic soils.



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Organic soil smoldering,  
during the Celtic Hill fire,  
2019

## Challenges

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Fires in organic soil are extremely difficult to put out due to the very high moisture levels under which they are capable of burning – some organic soils can still burn when they are so wet that water makes up well over half the weight of the soil! This means that fires can burn even when the soil appears very wet. Additionally, once heated, organic soils can become water-repellent, meaning that water applied to a soil fire will run off the surface, leaving the organic soil underneath still dry enough to burn. This means that simply using water to extinguish soil fires is often ineffective.

Organic soil fires can also be difficult to detect as they are capable of burning underground. It is common for lightning to ignite a fire in organic soil and for that fire to not appear above the surface for days, even sometimes weeks. This is one reason why lightning-ignited fires in the TWWHA can be missed despite regular spotter flights that take place after lightning activity.

These factors contribute to the difficulty of fighting fires in the TWWHA. Extinguishing soil fires is slow and difficult work. Dropping water from aircraft will not put out fires in organic soils and a good example of why the use of water-bombing aircraft alone is ineffective. Techniques employed by remote-area firefighters include digging up the soils on fire and applying water, and setting up sprinkler lines or soaker hoses along the fire edge to keep the fire from coming to the surface. All these techniques are labour intensive and often ineffective when there are hundreds of metres of fire edge. Extinguishing organic soil fires is not always possible and sometimes they are only extinguished after the winter rain, which saturates the soils over many months.

There is a risk that if winter rains are insufficient, organic soil fires could continue burning over winter, resulting in bushfires when the weather warms up.



## The way forward

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The Parks and Wildlife Service strategy is to respond quickly to all new ignitions and prevent fires spreading. This maximises the chance of extinguishing soil fires.

Work on mapping the extent of organic soils in the TWWHA and identifying the moisture content at which organic soils burn will assist in prioritising fires when there is a mass ignition event, such as the 2019 lightning storms. This work is ongoing.

The Parks and Wildlife Service will continue to research new techniques to detect and suppress soil fires, however, there are limitations to the possibility of extinguishing fires once there is a significant amount of fire edge burning in organic soils, and these need to be recognised.

Firefighting efforts will focus on the protection of highly sensitive vegetation from bushfires, once it is impracticable to extinguish fire burning underground.

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### OTHER ISSUES SHEETS THAT MAY BE OF INTEREST

**12** Fuel stove only areas

