

How have plants adapted to bushfires?

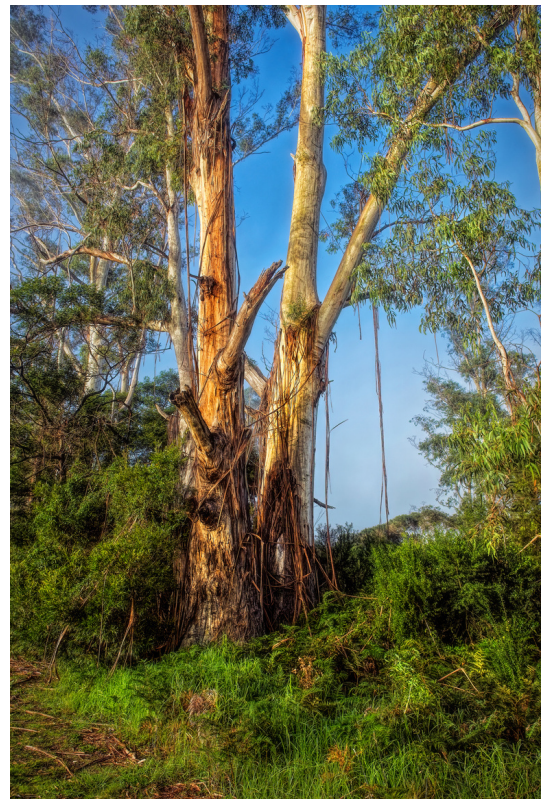
Bushfires have been a part of the Australian landscape for many thousands of years. Because of this, many Australian plants have developed strategies to help them live with fire. Some plants now need fire to help them germinate their seeds.

Eucalyptus trees (gum trees)

There are around 700 species of eucalypts in Australia. Some of these have seeds whose release is triggered by fire. When a fire burns through an area containing these trees, the tough, woody seed pods release their seeds into the nutrient-rich ash left on the ground that is left behind after a fire. Because there are fewer animals in the area following a fire and because all the smaller plants have been burnt and removed, the eucalyptus seeds have time to germinate without competition.

Many eucalyptus species have bark that is also believed to be adapted to bushfires. For example, the brown stringy-bark has a thick, fibrous bark, insulating the tree against a moderate fire. It is also thought that some eucalypts even try to promote fire. They produce very flammable bark that falls off the trunk in strips, along with leaves laden with flammable oil. Why would they want a fire? So that they can germinate their seeds and so that more trees like them survive.

Eucalypts can usually survive a moderate bushfire quite well. They often have tall crowns (the leafiest bits of the tree), which means the leaves can avoid the worst of the fire below. In addition, many species will regenerate from lignotubers (a swollen growth) at the base of the tree, while other species regenerate from epicormic shoots under the bark (the new shoots you see emerging on fire-blackened trees). This explains the sudden appearance of leaves along their trunks after fires.



Eucalyptus tree with a tall crown and peeling bark



Epicormic shoots on a eucalyptus tree after a bushfire

Banksia

Banksia - a genus of around 170 shrubs and trees - have seed cones or fruits that are completely sealed with resin. These cones/fruit stay on the tree for a long time and can only open to release their seeds after the heat of a fire has physically melted the resin.



Banksia flower



Banksia flower seed pods burst open during a bushfire

Orchids

Australia has around 1700 native orchid species. There are some that grow on the branches and twigs of other plants. These species are unlikely to survive a bushfire. However, other orchids grow on the ground and can survive bushfires because their main reproductive organs remain underground.

Grass tree

Some plants - like the grass tree (Xanthorrhoea) - will flower prolifically after a fire. These plants are believed to take advantage of the ash-fertilised soil and use these extra nutrients to turn on a flower show!

Just finally, it is important to note that all the adaptations discussed in this factsheet apply to bushfire events that are relatively infrequent and moderate (i.e. not too hot and not too often). The bushfires that we saw over the summer of 2019/2020 were large in scale and extremely hot, and many plants - even those that are adapted to fire - were unable to survive those fires.



Grass trees flowering after a bushfire