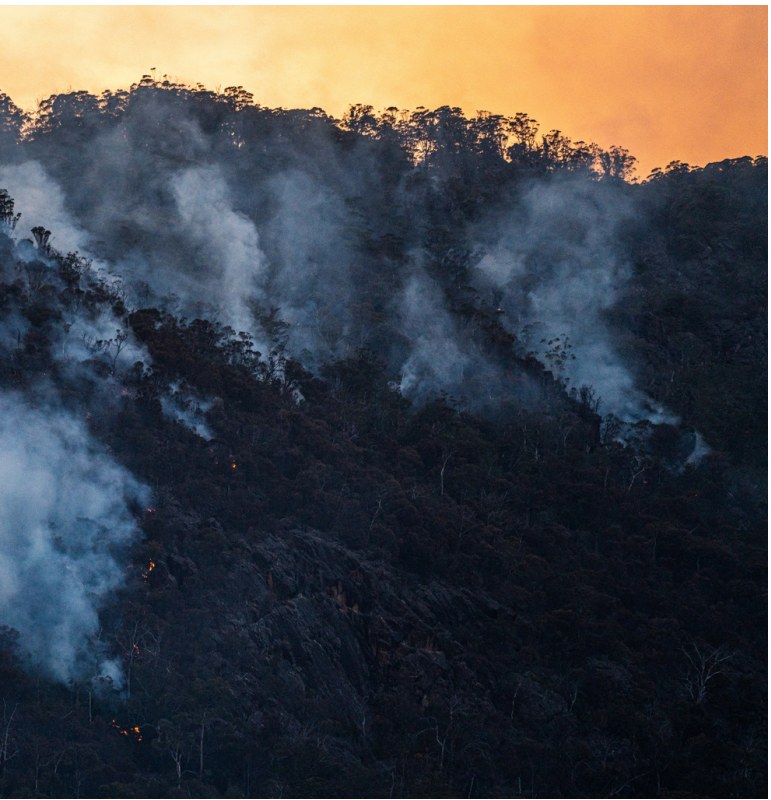
Helping the bush recover from fire

Background

Within the Australian landscape, the threat of intense bushfires is an ever-present risk. This was most recently experienced during the 2019-20 Black Summer bushfires. These fires had a devastating impact on our natural ecosystem with millions of hectares burnt and many millions of native wildlife either destroyed or displaced. The wide-reaching impacts of this natural disaster were felt across the Australian community.

In Victoria, 46 properties with Trust for Nature conservation covenants were directly impacted (with some being completely burnt). The impact of these fires has been felt by local landholders, families and their communities. Join our covenantors discussing their recovery experience with the 2019/2020 bushfires here.



Vegetation

As our natural environment continues to alter, it is important that we, as land managers, understand the way that the Australian landscape recovers following bushfire events.

Within Australia, large bodies of work have been completed to aid us in understanding the recovery of a landscape following a fire event. One such study has been the Victorian government conservation agency's work in defining tolerable fire intervals for vegetation communities to assist in determining appropriate fire regimes for different vegetation types.[1]

This work looks at our natural landscape overall and assigns it into broad categories based on similar habitat growth stages and ecological characteristics. These categories are termed Ecological Vegetation Divisions (EVD). Across the Victorian landscape there are 32 accepted EVDs ranging from dense rainforests through to open grasslands. These EVDs can be used as a comparison when assessing recovery stages.

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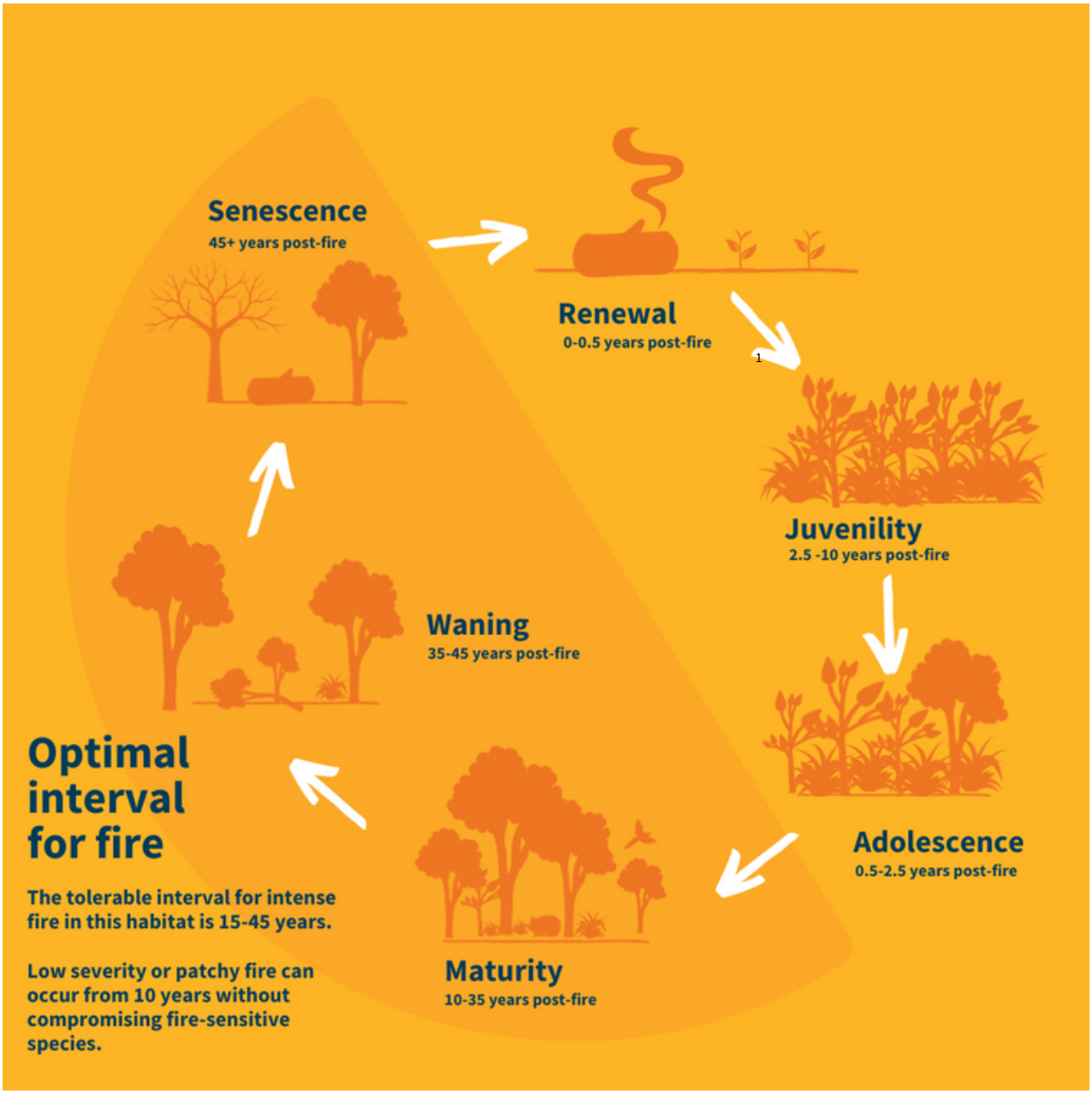
Each of these EVDs have principal ecological features which can be used to aid in the determination of which EVD or EVDs you have within your local area. More specific information can be found in the technical report.

Each EVD is outlined with its recommended maximum period without fire presence and also the minimum response period (depending on whether the upcoming fire is low or high severity). The research then outlines 10 stages of recovery for the vegetation: Renewal, Founding, Juvenility, Adolescence, Maturity, Vigorous Maturity, Statis, Waning, Senescence and Established. Not all stages are applicable for all EVDs. At each of the stages, the recovery is outlined in terms of what can be expected within the landscape. The timing for each of these stages varies greatly between the different vegetation categories. See the below diagram as a stage response for one EVD, Grassy/Heathy Dry Forest.



Why timing is important

To help the bush recover from fire, we need to understand how habitat recovers naturally. In the early growth stages post fire in forests are characterized by a high density of fire ephemeral plants, these are short lived plants that germinate after fire and generally live from 1 year to 10 years, depending on the species. The presence of these plants is essential in the early stages of recovery. Once the vegetation community reaches later stages of recovery, these plants mature, produce seed and either die or substantially thin out. The roles of these ephemeral species include covering bare soils to prevent erosion and soil run off; provide shelter and food for animals; provide a niche for longer lived plants to germinate and grow and provide better conditions for the soil biomes such as fungi to recover in.

Native fire ephemerals include the Incense Plant (Calomeria amaranthoides), Dusky Coral Pea (Kennedia rubicunda), Kangaroo Apple (Solanum aviculare) and more commonly known plants such as Silver Wattle (Acacia dealbata) and Black Wattle (Acacia mearnsii), Dog Wood (Cassina aculeata) and Hop Goodenia (Goodenia ovata). Some ephemeral seed can lay dormant in the soil seed bank for many years and may not have been identified on the property before. The forest may look very different, and, in some instances, the ephemeral growth may be impenetrable, but this stage is an essential part of ecosystem recovery. If the system is allowed to reach maturity and later growth stages without further fire or disturbance events, it will resemble more closely to its previous structure, for instance, a more open forest environment.

If the frequency of fires is too often or not frequent enough, this can alter the composition of vegetation communities and their structure. As outlined in David Cheal's work "The ideal interval between fires for any given vegetation community is determined by the time taken by the constituent species to reach maturity and set seed, and the time to extinction in the absence of fire".[1]

When fire events occur too frequently, species that haven't been able to set seed and reproduce are lost from the community. An example of this can be seen in Alpine Ash (Eucalyptus delegatensis) dominated forests. This species requires up to 15 years before the trees reach reproductive maturity which will allow the ability to set seed. If a fire passes through the area during this important period of recovery, there is the chance for local extinction with no viable seed available for recruitment.[1] The same can also be seen within some Banksia populations.

Conversely, if fire intervals are too long, some fire dependant species may die out from an ecosystem. Fire dependant species rely on fire events to trigger seed set and hence, recruitment of new individuals.

It is important to note that not all vegetation types require fire as a disturbance and fire may actually destroy some communities such as rainforest and wet forest. These fire sensitive EVD's require a different pathway of recovery.

1. Cheal, D (2010) Growth stages and tolerable fire intervals for Victoria's native vegetation data sets, FFM, accessed 10 October 2023

How to help

There are numerous ways to aid the recovery of our natural environment. The need for intervention/assistance will be dependent on the vegetation's recovery pathway and the type of assistance.

Ways that we can assist the recovery of our natural landscape may include, among others:

- Establishment of permanent monitoring points such as photo points. Monitoring over time will assist in determining if the habitat/EVD is progressing through each recovery state or if it has become stalled and stuck in one stage. Actions to remove a threat that is preventing progression can then be undertaken.
- Weed control
- Installation of nest boxes
- Revegetation of any missing keystone species that have failed to regenerate post fire
- Pest animal control
- Erosion management
- Stock removal through fencing.
- Covenanting can provide permanent protection. Through the Stewardship program on covenanted properties, Trust for Nature will be monitoring these successional changes over time to assess if the process is halted or altered and if any intervention is required to assist this regeneration process.

There are a number of organisations that offer advice and assistance in relation to recovery assistance. These include:

- Trust for Nature
- Forest Fire Management (FFM)
- Parks Victoria
- Landcare
- EnVite
- Nest Box Tales
- Agriculture Victoria

List of Ecological Vegetation Divisions

EVD 1: Coastal	EVD 9: Forby Forest	EVD 17: Granitic Hillslopes	EVD 25: Riverine Woodland/Forest
EVD 2: Heathland (sands)	EVD 10: Moist Forest	EVD 18: Rocky Knoll	EVD 26: Freshwater Wetland (ephemeral)
EVD 3: Grassy/Heathy Dry Forest	EVD 11: Riparian (higher rainfall)	EVD 19: Western Plains Woodland	EVD 27: Saline Wetland
EVD 4: Damp Scrub	EVD 12: Tall Mist Forest	EVD 20: Basalt Grassland	EVD 28: Chenopod Scrubland
EVD 5: Freshwater Wetland (permanent)	EVD 13: Closed-forest	EVD 21: Alluvial Plains Grassland	EVD 29: Saltbush Mallee
EVD 6: Treed Swampy Wetland	EVD 14: High Altitude Shrubland/Woodland	EVD 22: Dry Woodland (non-eucalypt)	EVD 30: Hummock-grass Mallee
EVD 7: Tall Mixed Forest	EVD 15: High Altitude Wetland	EVD 23: Inland Plains Woodland	EVD 31: Lowan Mallee
EVD 8: Foothills Forest	EVD 16: Alpine Treeless	EVD 24: Ironbark/Box	EVD 32: Broombrush Whipstick