

Lesson plan 2:

Bushfires and the natural environment

Background

Bushfires occur naturally in the landscape and have occurred naturally throughout time. Although very severe fires (unusual/infrequent) can kill many plants and animals, they can often survive less severe bushfires. Much of Australia's native vegetation has actually adapted to bushfires – indeed, some vegetation needs fire to reproduce and remain healthy. This is particularly significant in Victorian forests.

When we build our farms, houses and towns in the bush, we are living in an environment where fire occurs naturally. Fire management tools, such as fuel reduction burning, help to protect communities and environments.

Ensure that **Support material 1: Letter to parent/guardian** is circulated prior to your visit and that any sensitivity is considered.

This lesson could be jointly presented with the Department of Environment and Primary Industries (DEPI) or Parks Victoria.

Suggested teaching time

45 minutes

Objectives

- To develop an understanding of the natural role of fire in the Australian environment and its importance to plants and animals.
- To understand the importance of how and why certain fire management tools are used to reduce bushfire risk, especially planned burning.

Materials needed

- **Poster: Fire triangle**
- **Worksheet 37: Causes of bushfires in Victoria**
- **Film: Basic bushfire science**
- **Poster: Bush before fire**
- **Poster: Bush after fire**
- **Poster: Regeneration after fire (trees)**
- **Poster: Regeneration after fire (seed pods and new growth)**
- **Poster: Regeneration after fire (bush)**
- **Poster: Planned burns**
- Seeds/pods, including pods affected by fire/smoke (optional)
- Piece of burnt tree (inside unburnt), burnt leaves, or twigs or branches (optional)

Lesson outline

1. Fire causes

15 minutes

- Ask students how fires can start in the bush. Summarise ideas on the board. Ask students to group ideas (for example, accidents, work, recreation, deliberate, natural).
- Show/hand out **Worksheet 37: Causes of Bushfires in Victoria**. Discuss numbers listed in the table (recommend students complete worksheet later with teacher; it will take at least 30 minutes).
- Talk about main causes of fires. Play the **Film: Basic bushfire science** and discuss the impact of wind, topography and excess fuels. Discuss natural fires, link to lightning. Can we prevent natural fires starting? No: lightning fires have always occurred in the bush. But plants and animals have ways to cope if fires are not too frequent and not too severe.

2. Fire cycle: plants and animals surviving fire

15 minutes

- How do ANIMALS survive a fire? Some animals will die, but many cope with fire – escape (fly, run) or hide (inside logs and under bark or underground; fish in rivers). Survivors and escapers breed and return to burnt areas.
- How do TREES survive fire? Discuss **Poster: Regeneration after fire (trees)** – black tree trunk with green (epicormic) shoots – tree trunks in background dead; base of tree has new shoots (coppicing).
- Show **Poster: Bush before fire** and **Poster: Bush after fire** (optional: show samples of burnt leaves, unburnt wood inside burnt tree, seed pod).
- Students discuss in groups of three: How does fire affect trees? Think about a severe fire and a less severe fire (keep it brief – 5 minute activity).
- Ask each group for one new suggestion, different from the previous group (for example, tree burns, falls or dies; part/s of tree burns – leaves, bark, leaves, pods).
- How do SEEDS survive fire? Discuss their survival methods using **Poster: Regeneration (seed pods and new growth)**. Show **Poster: Regeneration after fire (bush)**; lots of young plants sprouted from seeds. Seeds were safe under soil; didn't burn during the fire.
- Show students **Poster: Regeneration after fire (seed pods and new growth)** that highlights the hakea seed pods (optional: also show samples of banksias pods, gumnuts, hakea pods – before and after fire). Pods protect seeds during fire. Smoke and heat open pods. After fire seeds fall from pods to ground and sprout.
- Summary: Australian plants and animals have adapted to fire. A fire starts and many plants burn; some plants and animals die. Plants regrow and animals breed again. With the next fire the cycle repeats. Concept of fire cycle.

3. How can we make bushfires less severe?

15 minutes

- Show **Poster: Fire triangle** – removing some of the fuels before fire season starts can make bushfires less severe. (You may need to recap or explain the fire triangle, depending on the students' familiarity. Explain the role of heat, oxygen (air) and fuel such as wood, etc., in fire triangle. Fire needs all three).
- Ask for students' ideas on:
 - removing fuel (for example, mowing, raking, slashing, grazing)
 - problems (raking: how to use this over very large areas of parks and forests; grazing: can reduce grass but most animals don't eat shrubs or fuel on the ground such as twigs, leaves and bark).
- Discuss fuel reduction method for large areas – using fire in a forest or National Park, for example, will mimic natural fire in the environment. Refer to **Poster: Planned burns**.
- Types of burning: ecological (manages the needs of plants and animals – already discussed); link to natural fires in the environment in the past (removes fuels to protect communities). Regeneration (often used after logging to create an ash bed for seeds to grow in). An example of this is Mountain Ash forests.
- Discuss when burns usually happen (spring, autumn) and why (best time for plants to recover quickly, right weather conditions so burns can be controlled and are not too severe, safety of firefighters controlling the burn, safety of nearby communities).
- Discuss why we don't burn during hot months (fuel too dry, fire too severe; windy, fire burns too quickly and can spread too far) or during wet months (fuels too wet; not the right time for many plants and animals).

Extension activities

- **Worksheet 38: Fire management**
- **Fire Safe Kids e-learning game** on CD-ROM and at www.cfa.vic.gov.au
- DEPI Film: Forests and Fire (if available). Show part or all as a summary of the natural role of fire in the environment. Set students the task of finding out where and how tool in their community fire is used as a management.
- CFA brigade captain/DEPI talking or showing information on proactive use of planned burns in community.
- Field trip to pre- and post-planned burns (NOT active burns).
- **Worksheet 39: Mapping the wind**

Captain Koala and friends say...
Work together to prepare for
summer

