

# Fire - Ed Up

IGNITE A PASSION FOR BUSHFIRE EDUCATION



Office of the  
Chief Scientist  
& Engineer



## Fire-Ed Up Challenge - Introduction

This Fire-Ed Up challenge is a 6-week design sprint, seeking innovative solutions to a range of bushfire-related challenges. Using the established iSTEM Engineering Design Process, each team will choose from three scenarios and design a solution presented in the form of either a detailed design poster or a 90-second video pitch aimed at potential investors.

## Scenario 3: Safeguarding Our Precious Fauna & Flora from Bushfires

### INTRODUCTION

Bushfires, while a natural part of some ecosystems, can have catastrophic impacts on our unique and diverse fauna and flora. Many species have specific habitats and can't simply move when their homes are threatened. Similarly, certain plants can't just regenerate after a fire. As stewards of our land, how can we innovate to protect these invaluable treasures?.

### OBJECTIVE

During the next six weeks, your challenge is to devise a strategy, tool, or system aimed at protecting our fauna and flora from the devastating effects of bushfires. This could range from early-warning systems for animals, creating safe havens, seed preservation strategies, or habitat restoration plans.

### RESOURCES & INSPIRATION

**Local Ecosystems:** Delve into understanding the local ecosystems and the species that inhabit them. What makes them unique?

**STEM Principles:** Harness the principles of science, engineering, math, and technology to devise impactful solutions for our natural world.

**Global Efforts:** Bushfires aren't exclusive to one region. Look into global conservation efforts during wildfires and discern if any strategies can be adapted locally.



## Mission Schedule

The Fire-Ed Up Challenge missions have been designed by subject matter experts and will provide relevant information for the team to complete the challenge in a systematic way using the [iSTEM Engineering Design Process](#) as a guide.

## Research

Begin by researching the specific challenges our fauna and flora face during bushfires. Which species are most at risk? Why?



## Mission Guide

Use the following information as a guide to completing the design sprint for this scenario. You can run these missions at your own pace, use as little or as much of the [Fire-Ed Up](#) resources as needed. Each heading is linked to the different tasks developed for the Fire-Ed Up program.

### 1. **Define:**

- Grasp the importance of biodiversity and the role of fauna and flora in ecosystems.
- Establish the main goal: conserving and protecting wildlife and habitats from bushfires.

### 2. **Identify:**

- Analyse which species or habitats are most at risk during bushfires.
- Determine the challenges they face during such events.

### 3. **Brainstorm:**

- Generate ideas that could offer protection to these species and habitats.
- Encourage solutions that both prevent harm and aid in post-bushfire recovery.

### 4. **Design:**

- Select the most impactful strategy from the brainstorming session.
- Plan out the logistics, requirements, and implementation of this strategy.

### 5. **Prototype:**

- Create a tangible representation or detailed plan of the chosen conservation solution.
- Ensure it can be realistically implemented in at-risk areas.

### 6. **Evaluate:**

- Test the solution in controlled environments or simulations.
- Gather feedback from conservationists, ecologists, and local communities.

### 7. **Iterate:**

- Fine-tune the solution based on evaluations and expert feedback.
- Ensure it addresses the primary conservation challenges identified.

### 8. **Communicate:**

- Develop a detailed presentation or report highlighting the conservation solution.
- Engage with conservation bodies, communities, and schools to promote and implement the solution.

## Science Goals and Objectives

Each team must seek to answer one or more of the 14 national goals of the [2014 National Bushfire Management Policy Statement](#).

Teams will then outline a science objective(s) for their mission. Teams must seek to answer one or more of the most important science objectives:

1. Maintain Appropriate Fire Regimes in Australia's Forests and Rangelands.
2. Balance the Environmental Impacts of Fire.
3. Promote Indigenous Australians' Use of Fire.
4. Community Engagement.
5. Public Awareness and Education.
6. Integrated and Coordinated Decision Making and Management.
7. Employment, Workforce Education and Training.
8. Bushfire Risk Mitigation.
9. Bushfire Response.
10. Safety in Fire Operations.
11. Bushfire Recovery.
12. International Responsibilities.
13. Risk Management.
14. Investing in and Managing Knowledge.

Example question: 13. What are some potential risks, positive and negative? And what contingency plans have we got in place if those risks arise?

## Suggested Resources

- Bushfire Factsheet for Wildlife: <https://www.wires.org.au/wildlife-information/bushfire-factsheet-for-wildlife>
- Fire Ecology: <https://www.communitybushfireconnection.com.au/wp-content/uploads/2021/04/AboutFireEco-A5-web-rev2.pdf>
- KangaZoo, Australian Wildlife Rescue game: <https://www.dfat.gov.au/news/news/kangazoo-australian-wildlife-rescue>
- Managing Landscapes: <https://www.science.org.au/curious/earth-environment/bushfires-managing-landscapes>
- Biodiversity response and recovery: <https://www.wildlife.vic.gov.au/home/biodiversity-bushfire-response-and-recovery>
- Classified Vegetation: <https://research.csiro.au/bushfire/assessing-bushfire-hazards/hazard-identification/vegetation/>