



STEM Project - Research Worksheet

Landscapes, Life & Fire

The Challenge

To create solutions to reduce the impacts of bushfires on landscapes and life

Bushfires have affected the Australian continent for millions of years. Some Australian native plants and animals have adapted to cope but others suffer, along with humans during the annual bushfire season.

Conversely, Australian Aboriginal people use fire to expertly manage the local landscape and to assist with sourcing food. Increasingly, the way Indigenous people use fire is being included in modern methods of landscape management to prevent bushfire catastrophes.

The effects of bushfires encompass both our natural and built environments. This STEM Project will focus on proposing solutions to reduce impacts of bushfires on landscapes and life.

Find Out More and Get Thinking

In this section of the project, you need to find out some background information about the issue of bushfires and how they affect Australian people, plants and animals (as well as people across the world). Your teacher will ask you some stimulus questions that you will need to do some research to answer.

Included on the next page is a worksheet that may help you to organise your research findings.





STEM Project - Research Worksheet

Some tips for researching on the internet:

- Make sure you fully understand what it is you are trying to find out before you start your research.
 - You need to understand what all of the words in a question or statement mean so look them up if you don't.
 - If you're still stuck ask your peers or your teacher.
- Try to use websites that are written by trusted sources.
 - Those ending in .gov, .org or .edu are usually reliable.
- Always find your information on more than one reliable website or source. If it only appears on one website, how do you know that the information can be trusted?
 - Wikipedia can be edited by anyone (even you!) so it may be a good starting point but cross check any information you get from there!

Background Information

Use the suggested websites to answer the following questions. If you use another website, record it next to the question numbers at the end of this section. Copy and paste the full URL and the date you used it.



[This Photo](#) by Unknown Author is licensed under [CC BY-SA](#)



Santos & ESWA supporting earth science education



STEM Project - Research Worksheet

1. What is a **bushfire**? What **causes** them?

Suggested site:

- <https://www.natgeokids.com/au/discover/geography/physical-geography/what-is-a-bushfire/>

2. What is the **fire triangle**? What are the **three things needed** for a fire to burn?

Suggested site:

- <https://www.coolaustralia.org/curious-kids-how-do-bushfires-start/>

3. How do fires **behave** in **hilly** or **mountainous** areas compared to **flat** areas?

Suggested site:

- <https://www.dpaw.wa.gov.au/management/fire/fire-and-the-environment/48-fire-behaviour>





STEM Project - Research Worksheet

4. What is **soil**? What are the **different layers** in soil?

Suggested sites:

- <https://youtu.be/ljW7jbCulGo> https://youtu.be/Q4UDqP3_AwY
- <https://www.youtube.com/watch?v=if29mjcd5bc>
- <https://easyscienceforkids.com/all-about-soil/>

5. What are the **living things** in soil **humus** and what is their '**job**'?

Suggested sites:

- <https://www.nationalgeographic.org/encyclopedia/humus/>
- <https://www.soils4teachers.org/biology-life-soil>
- <https://www.sciencelearn.org.nz/resources/890-what-is-in-soil>
- <https://education.abc.net.au/home#!/media/104056/soil-healthy-dirt-makes-healthy-plants>

6. What **effect** do **bushfires** have on soil? What **parts of the soil** can be affected?

Suggested sites:

- <https://www.abc.net.au/gardening/impact-of-fires-on-soil/11951568>
- http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/soilhealth_toolbox_farmers_fir_e
- <https://www.soilscienceaustralia.org.au/wp-content/uploads/2020/01/202003-FACT-SHEET-Soil-fire-impacts-and-management.pdf>





STEM Project - Research Worksheet

7. What is **erosion**? Why does this happen after a bushfire? What **other effects** can erosion cause?

Suggested sites:

- https://kids.kiddle.co/Soil_erosion
- <https://www.nationalgeographic.org/encyclopedia/erosion/>
- <https://blog.csiro.au/the-relief-of-rain-after-bushfires/>

8. What are **weeds**? Why are weeds a **problem** in areas recovering from bushfires?

Suggested sites:

- https://www.naturalresources.sa.gov.au/kangaroosland/land-and-water/fire-management/Bushfires_and_weeds
- <https://theconversation.com/pulling-out-weeds-is-the-best-thing-you-can-do-to-help-nature-recover-from-the-fires-130296>

9. How have some **banksia** plants adapted to recover from bushfires? What do their **seed pods** need to open?

Suggested sites:

- https://en.wikipedia.org/wiki/Ecology_of_Banksia
- <https://www.goldcoast.qld.gov.au/documents/bf/remarkable-world-plants.pdf>





STEM Project - Research Worksheet

10. What other ways have **Australian plants** adapted to cope with regular **bushfires**? E.g. Why is some tree bark so thick?

Suggested sites:

- <https://www.youtube.com/watch?v=Z4Ur8ky-Q2I&t=177s>
- <https://www.bgpa.wa.gov.au/about-us/information/research/seed-conservation/smoke-to-sow-and-grow>

11. How do **Aboriginal people** use **fire** to manage their local environment?

Suggested sites:

- <https://www.abc.net.au/news/2020-01-09/indigenous-cultural-fire-burning-method-has-benefits-experts-say/11853096>
- <https://www.youtube.com/watch?v=UJKdZpRbzMk>

12. What are the **health hazards** of bushfire **smoke**?

Suggested sites:

- https://healthywa.wa.gov.au/Articles/S_T/Smoke-hazard-from-bushfires



Santos & ESWA supporting earth science education



STEM Project - Research Worksheet

13. How are **firefighting trucks** designed to protect firefighters during bushfires?

Suggested sites:

- https://youtu.be/KxG1sUxR_6c
- https://www.youtube.com/watch?time_continue=1&v=4ONQSjkRWi8&feature=emb_logo
- <https://blog.csiro.au/fire-truck-burnovers/>

14. How can you make a **building fire resistant**? What should you think about in the **design** and the **materials** it is built from?

Suggested sites:

- <https://www.thefifthstate.com.au/innovation/residential-2/how-to-design-your-house-for-fire-resistance-and-sustainability/>
- <https://www.abc.net.au/news/2019-12-29/houses-need-to-be-built-to-withstand-bushfires/11809934>
- <https://www.architectureanddesign.com.au/projects/houses/addressing-a-national-problem-karri-fire-house-by#>
- https://www.dfes.wa.gov.au/safetyinformation/fire/bushfire/BushfireManualsandGuides/DFES_Bushfire-Homeowners_Survival_Manual.pdf





STEM Project - Research Worksheet

15. What special clothing do firefighters wear to protect them from fire?
What materials is the clothing made from?

Suggested sites:

- <https://www.fire.nsw.gov.au/page.php?id=164>
- <https://youtu.be/74wm6IO6BQA>
- <https://www.oakharbor.org/fire/page/what-does-firefighter-look>
- https://en.wikipedia.org/wiki/Bunker_gear
- <https://www.london-fire.gov.uk/museum/history-and-stories/firefighters-uniforms/>

16. What is a bushfire resistant garden? Which species of plants are best at resisting fire?

Suggested sites:

- <https://www.stateflora.sa.gov.au/the-australian-garden/why-choose-native-plants/bushfire-resistance>
- <https://apsvic.org.au/fire-resistant-and-retardant-plants/>
- <https://blog.csiro.au/five-tips-for-replanting-after-bushfires/>
- <https://sophiespatch.com.au/2020/01/03/bush-fire-garden-recovery/>





STEM Project - Research Worksheet

Other websites used

| Question | Website URL & date |
|----------|--------------------|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |
| 13 | |
| 14 | |
| 15 | |
| 16 | |



Santos & ESWA supporting earth science education