



STEM Project 1D - Feeding Station Design

Landscapes, Life & Fire

The Challenge

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



Write your
name on the
tree

Ways to Meet the Challenge

This project has many different parts to it, and you will be looking at one area in particular.

Design and build stations to provide food and water to native animals in bushfire affected areas.



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Find Out More and Get Thinking

Here are some points you might like to consider in your design process:

1. Will your station design provide water, food or both to animals in a bushfire affected area?
2. What materials could you build your food and water stations from?
3. Consider how you could ensure the water in your station remains as fresh as possible and does not evaporate too quickly. Once set up in the bush, it may not be possible for these stations to be checked more than once a week or so.
4. Likewise, consider how you can distribute small amounts of food automatically and at specific times. For example, if you put out a large, open container of food, it could get blown away, destroyed by rain, or contaminated by ash in the area.
5. How will you ensure your stations can't be blown over or tipped over by animals leaning on them?
6. What will you include in your design for a water station to assist small animals to drink from it? If your water is too deep, it may be dangerous for them but including a rock or something for them to stand on could prevent them falling in.
7. Will you need to include a ramp or steps for different sized animals to access the station?
8. Where will your station be located? Will it be on the ground or





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placed in a tree to offer protection from predators? Could you have sections at different heights?

9. How will you test your station? It may be best to trial it with your pets at home first.
10. What food will your station provide? You will need to research this carefully and make sure you check with people with knowledge of caring for wildlife (see note below).

PLEASE NOTE: You will need permission to place any water or feeding stations in areas of National Parks, so it is best to get in touch with the appropriate authority such as the local council in your area. Feeding native wildlife is generally discouraged. Any placement of feeding stations should be done in consultation with the appropriate authorities and in consultation with local wildlife carers. Further information and recommendations can be found here:

<https://kb.rspca.org.au/knowledge-base/should-i-be-feeding-wildlife-affected-by-bushfires/>





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In the space below, brainstorm all the ideas you have about how you could investigate the project area.

When you were brainstorming, were there some things that you found you need to know more about? Write those down here. You may like to use the [PALMS 4 STEM Research Guide - Digital](#) to find out more about these things.



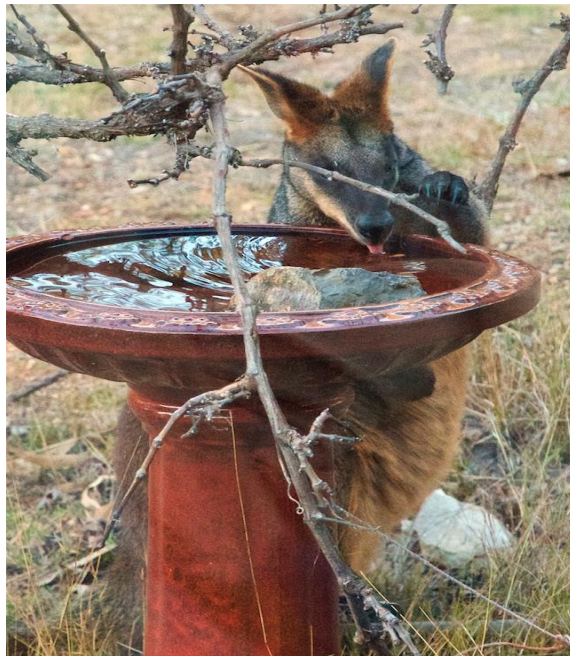


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Scientists all over the world organise the way they think about and carry out their work in the same way - we call this the *scientific method*. They also write quite formally in the 'third-person' style (not using phrases such as 'you', 'we' or 'I').

To try and solve your part of the STEM problem and meet the challenge, you will need to design and build a model. The [STEM Project Design Process Worksheet](#) on the following pages will help you with this process.

It is important that you include as much detail as possible so your design could be built by anyone who reads it. If you have trouble attaching pictures or need to submit your work in a different format, contact your teacher.



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STEM Project Design Process Worksheet

Do I have a clear understanding of the problem I need to solve? Write the problem in one or two sentences.

How will I test my solution? Remember that you may only be able to build a smaller model of your real-life design.

What materials will I need to work towards a solution and test it?

List any special tools you may need to use. e.g Brush, hammer, clamp





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What do I need to do or use to make sure I work safely?

Draw a first draft of a diagram to show your planned design and take a picture. Upload the picture by clicking on the icon here:

If that doesn't work, send the picture separately but write here what the name of the file is:





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How much will your planned model cost and are all the materials and tools available to you? Where will you get them from? You may need to check with adults at home.

Review your design and make any changes needed. Make sure it is well labelled! Take a picture. Upload the picture by clicking on the icon here:

If that doesn't work, send the picture separately but write here what the name of the file is (it should be different to your draft):





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How will you record your progress? (choose an option)

Check your design with your teacher before starting to build it.

Once your design is approved by your teacher, go ahead, and gather your equipment and build a prototype model!

Take pictures or a video if you can, to show your model.



Photo: Mats Lindh via Wikipedia Commons



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Could It Be Better?

Once you have carried out your built and tested your design, you need to review your ideas and work. In this section, you can identify any problems or difficulties you encountered and suggest ways you could improve your project if you were to start again.

These questions will help with your review process. Write or draw your ideas for improvement in the table below.

- Do you currently have access to enough of the materials you used to make a full-size model? Is there enough of it available in Australia? On Earth?
- Will current technology be useful, or do you need something more, something better?
- Estimate how much it would cost to put your plan in place.
- Estimate how long it would take to put your plan in place.
- Can you do all of this yourself or do you need to bring in some experts? Who might these experts be?
- Did your design give you enough information to start building water and food stations tomorrow? What further trials or tests might you need to do?





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Problem encountered	Possible Solution
Any other ways to improve your solution if you have unlimited resources, time and access to the best people!	





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Report Back To Base

To finish off your STEM Project, you need to let everyone know what you found out and what solution you came up with for your problem.

There are many ways you could present this, and your teacher may ask you to do it a particular way or have you come up with your own ideas. When writing or making your presentation, make sure you think carefully about who your audience is and how much detail you need to include. More visual presentations (colourful or with lots of pictures) are always more interesting.

Whatever kind of presentation you end up doing, you should cover the following things:

- What you found out or discovered that you didn't know before.
- What you designed, built, programmed or tested.
- What STEM skills you used (problem solving, creativity, critical analysis, teamwork, independent thinking, communication, digital literacy)
- How you could better investigate the challenge if you had no limit on resources or time.
- The most challenging aspect of the project.

Don't forget!

- Save this file as a PDF and submit it to your teacher. Don't forget to include your name!
- Check that any photos have uploaded or send them to your teacher separately (tell them the file name)
- Submit your Report Back To Base presentation to your teacher.

