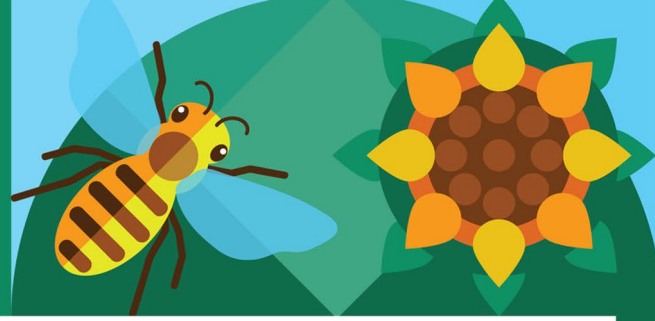


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**Bees with Backpacks  
Design Challenge**



# Bees with Backpacks Design Challenge

## Learning Module

*Join the global project to save bees from extinction with  
this local initiative.*

Honeybees maintain biodiversity across the world, providing pollination for about 75 per cent of the fruits, vegetables and nuts we eat and one-third of all food. However, bee populations have declined dramatically over the past five decades.

This learning module will help you to gain knowledge and develop your understanding about the science of bees and bee colonies, environmental factors that affect hive health and discover how CSIRO uses smart hive technologies.

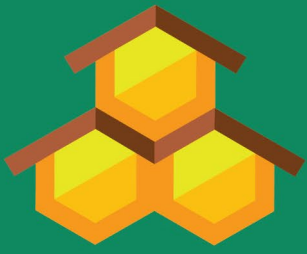
The Design Challenge will suggest for you to follow a Design Thinking process to develop your campaign, prototype your bee friendly environment and pitch your idea. Use critical thinking and creativity to design a campaign that supports biosecurity and will secure bee survival. Gather your information and allow that to inform your campaign. Prototype a bee friendly environment to illustrate your knowledge about bees and bee behaviour, then create your pitch!!



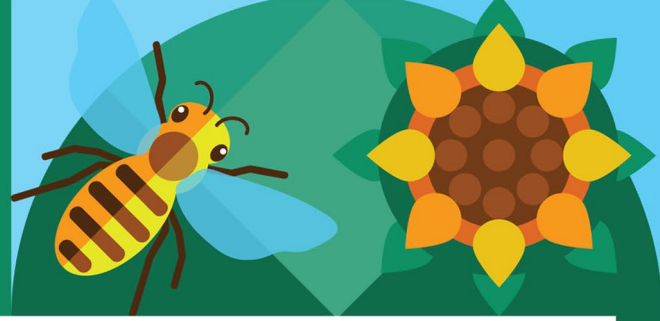
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## Bee anatomy

1. Watch the Bee Bits video and list the following anatomies with each of their key functions.

[Bee Bits - YouTube](#)

"Bee Bits" by crcdoc2

[https://youtu.be/fOoCtHIF\\_4g](https://youtu.be/fOoCtHIF_4g)

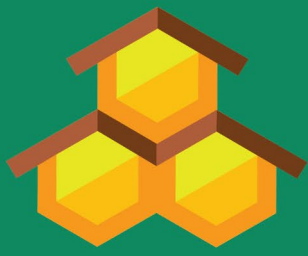
Anatomical Structure	Key Functions
Head/Eyes	
Antenna	
Brain	
Tongue & Crop	
Wings	
Spiracles	
Abdomen	
Legs- Pollen Basket	
Sting System	



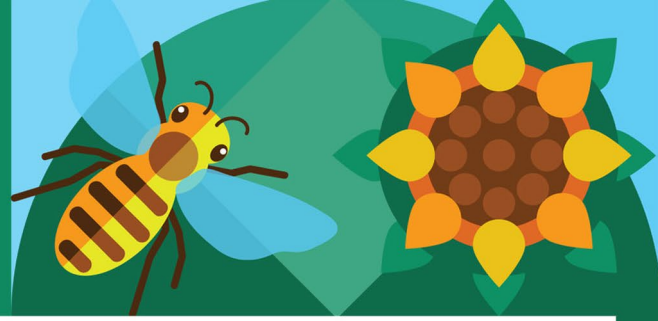
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2. Draw a diagram of a bee and label its features.

## Investigate

3. Why are bees declining globally?

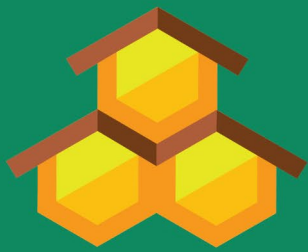
4. Why are bees so important to mankind and the environment?



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5. Identify **3 global** factors leading to the decline of bee populations.

## Identifying **global** factors for declining bees numbers

Factor 1	Factor 2	Factor 3

## Your local area

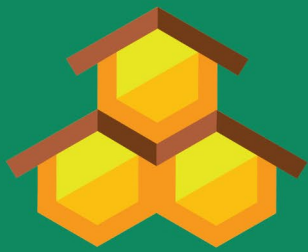
6. Is the Geelong CBD bee friendly? Why or why not.



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7. Identify some **local** causes or key factors as to why bees might be leaving the Geelong CBD?

## About bee behaviour

8. Fill in the table identifying the 3 types of bees found in the hive and the very specific role they play.

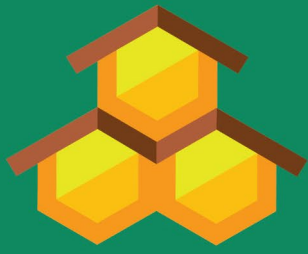
3 types of bees	The roles they play



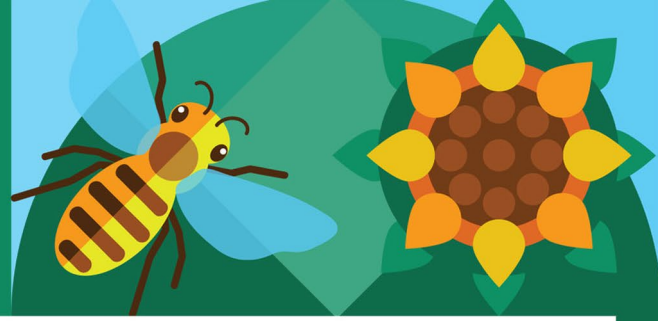
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9. Draw what a waggle looks like and explain why it is important.

10. Explain why climate plays an important role in a bee's life.

11. What impact does climate and temperature have on the hive?

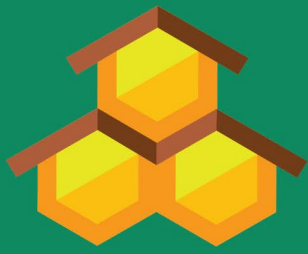
12. How do bees regulate the temperature within the hive?



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13. Research how CSIRO is using technology to record bee behaviour and describe how the technology works.



14. Explain in your own words the following:

- What is data analysis?
- Who is it for? Who uses it?

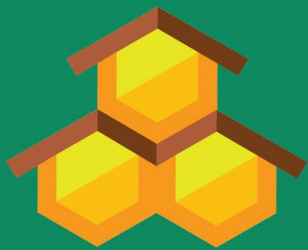
15. What is a UTC time format? And why would scientists use this format?



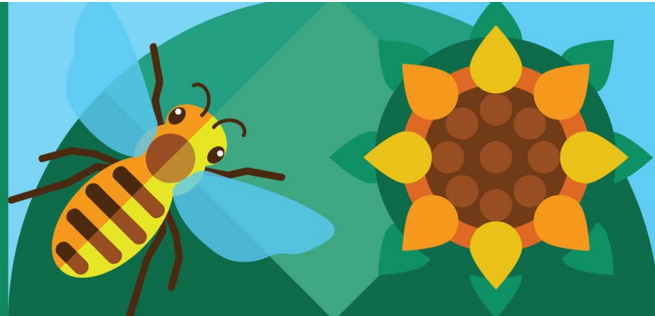
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16. What can the CSIRO scientists determine from the data they collect?

17. Why is bee survival essential to global food security?

18. Describe 5 important elements that make an environment 'bee friendly'?

Element	Why this element is important



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## Data visualisations

What is the buzz about bees!



[BEE Awesome | Tableau Public](#)

## Resources

Years 7-8

[Bee Bits - YouTube](#)

[Cutest 2 year old beekeeper! | Beekeeping Australia | Cute Beekeeper Kids - YouTube](#)

[Learn About Bees for Kids | Pollination for Kids | Beekeeping for Kids - YouTube](#)

[Bees and Beekeeping for Kids - YouTube](#)

[Pollinators For Kids | Educational Show For Kids - YouTube](#)

[A World Without Bees | History - YouTube](#)

Year 9-10 and VCAL

[Keep the Hives Alive \(Full Documentary\) - YouTube](#)

[Urban Beekeeping for Beginners: Backyard Beekeeping using a Flow Hive Set Up | The Bush Bee Man - YouTube](#)

[Why Honey Bees Need Water - Seedles \(growtherainbow.com\)](#)

CSIRO Resources

[How does the Technology Work? - YouTube](#)

[Bee Backpack Technology - YouTube](#)

[Tagging Bees Video 2 - YouTube](#)



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