



# **Adventurer's Camp**

## **Grades 5 & 6**

July 6-10, 2020

Name:

Welcome to the Backyard Science  
adventurer's summer camp program  
for Grade 5-6



This booklet is your guide for the week. Read through each day of the booklet to discover activities and challenges to complete, games to play, and videos to watch.

This week we are focusing on a Bees and Bugs theme! We will be completing some fun bee and bug crafts, finding ways to care for bugs in our gardens, and taking on the role of citizen scientists as we investigate which bee species can be found in our gardens and neighbourhoods.

On Thursday you will have the chance to enter a competition! Remember to share your entries for a chance to win our fun prizes which have been generously donated by local companies!



If you have any questions throughout the week please email [education@greencalgary.org](mailto:education@greencalgary.org) or call Stephanie at 403.400.7975

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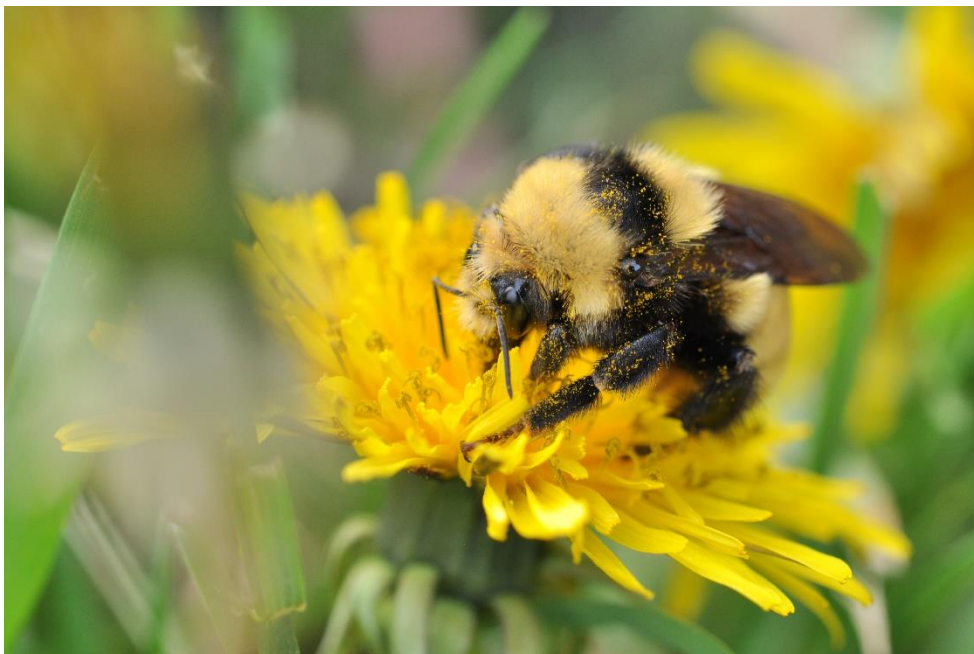


Welcome to the first day of the Adventurer's backyard summer camp! We hope you are looking forward to a week full of fun activities. Today we are focusing on bees. Bees are really amazing creatures! Please don't be scared of them, they only sting you if you step on them or if they feel scared, so just give them lots of space.

Work your way through the activities for today to learn about bees and complete some fun crafts. You can also watch our videos online to find out more.

## Bumble Bees

Bumble bees are fuzzy, are larger than most of our solitary bees, and are important pollinators. Bumble bee colonies survive just one season. At the end of the summer only the new queens remain. Queens hibernate underground and emerge in the spring to start new colonies!



*Bombus borealis* (Northern Amber Bumble Bee)

Photos courtesy of Sarah Johnson

### How do you know if it is a bee?

Bees have two pairs of wings that lie back when at rest. They are covered in hairs which help to collect and spread pollen. There are approximately 300 species of bee in Alberta! Some are solitary (meaning they live alone), and some live in colonies (groups).



## Activity 1: bee mobile

Create a beautiful bee mobile from materials found outside!

### Instructions

*What you will need checklist:*

- Pinecones
- String
- A large stick or embroidery hoop
- Tissue paper
- Yellow string or yarn



*Instructions:*

1. Tie a piece of yellow yarn or string onto a pinecone. Wrap the yarn around the pinecone to create stripes.



2. Cut out two bee wings from tissue paper. These can be tied onto your bee with a long piece of string. You could also use leaves! Repeat to create 5 bees on long pieces of string.



3. Tie your bees onto a large stick or embroidery hoop. Add a loop at the top to hang your bee mobile.

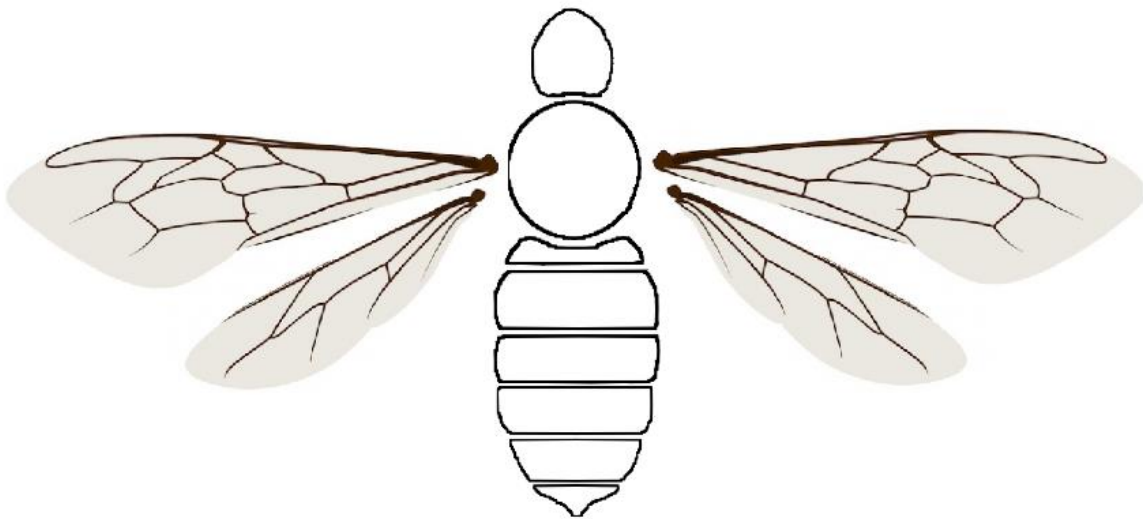
## Bumble Bee species

There are many species of bumble bee in Alberta.

Research one bumble bee species native to Alberta and colour in the markings on the bee below.

Research websites:

- [www.insectsofalberta.com](http://www.insectsofalberta.com)
- [www.foecanada.org](http://www.foecanada.org)



Name of bumble bee species:

Other notes about this bumble bee species:

## Activity 2: bee windsock

Make a windsock to fly in your garden with the bees! You can decorate your windsock to look like a bee or make it vibrant and colourful to attract pollinators into your garden!

### Instructions

*What you will need checklist:*

- Colourful paper (recycled if you have it!)
- Tape or staples
- String
- Hole punch
- Tissue paper for tassels (optional)



*Instructions:*

1. Choose a design for your windsock and decorate a piece of paper. You might choose to make your windsock look like a bee or make it colourful to attract pollinators.



2. Once you have finished your design, roll the paper and stick the long sides together. You can use tape or staples.



3. Punch 2 holes at the top and add string to hang your windsock
4. You could also add colourful tassels to the end



## Activity 3: homemade paper

We are going to start making our own recycled paper today. We will use this for another activity later in the week!

PLEASE ASK A PARENT TO HELP YOU WITH THIS ACTIVITY!

### Instructions

*What you will need checklist:*

- Lots of paper (use scrap paper from the recycling bin). You can also use egg cartons.
- Bowl
- Rolling pin
- Towel
- Parchment paper
- Food processor or hand blender (ask a parent to help you!)

*Instructions:*

1. Gather lots of paper and tear into small pieces (about 2cm squares)



2. Put the scraps of paper into a bowl and soak in water for at least 10 minutes



3. After 10 minutes, put the soaking paper into a food processor, or use a hand blender to blend the mix into mulch. **ASK A PARENT BEFORE USING A FOOD PROCESSOR OR BLENDER!**



4. Lay out a towel and cover this with a sheet of parchment paper
5. Put a blob of the paper mulch onto the parchment paper, cover with another piece of parchment paper and carefully roll out. The mixture should be rolled thin but be careful not to make any holes.



6. Remove the top layer of parchment paper and use a tissue to soak up some of the moisture from the flat paper mix.
7. Leave your paper to dry, uncovered, in a safe place for at least a day



Which bees live in  
graveyards?

Zom-bees!



We hope you enjoyed the first day of the Backyard Science summer  
camp!

See you tomorrow!



Welcome to the second day of the Backyard Science summer camp! Our activities today can be enjoyed mostly outdoors, but you can also complete them indoors if the weather is not great! Good luck on the scavenger hunt!

## Activity 4: seed starters

Let's attract some pollinators to our garden! How do we do that? Grow some beautiful flowers and the pollinators will be attracted to the vibrant colours. We are going to make some seed starters from toilet tubes.

### Instructions

*What you will need checklist:*

- Toilet tube
- Scissors
- Pen
- Soil/dirt
- Plant seeds

*Instructions:*

1. Mark 4 lines on your toilet tube – these should be about 2cm long and evenly spaced around the tube.



2. Cut along these lines and fold in the ends.



3. Fill with dirt and plant your seed. Remember to read the instructions on the seed packet. All seeds have different needs!



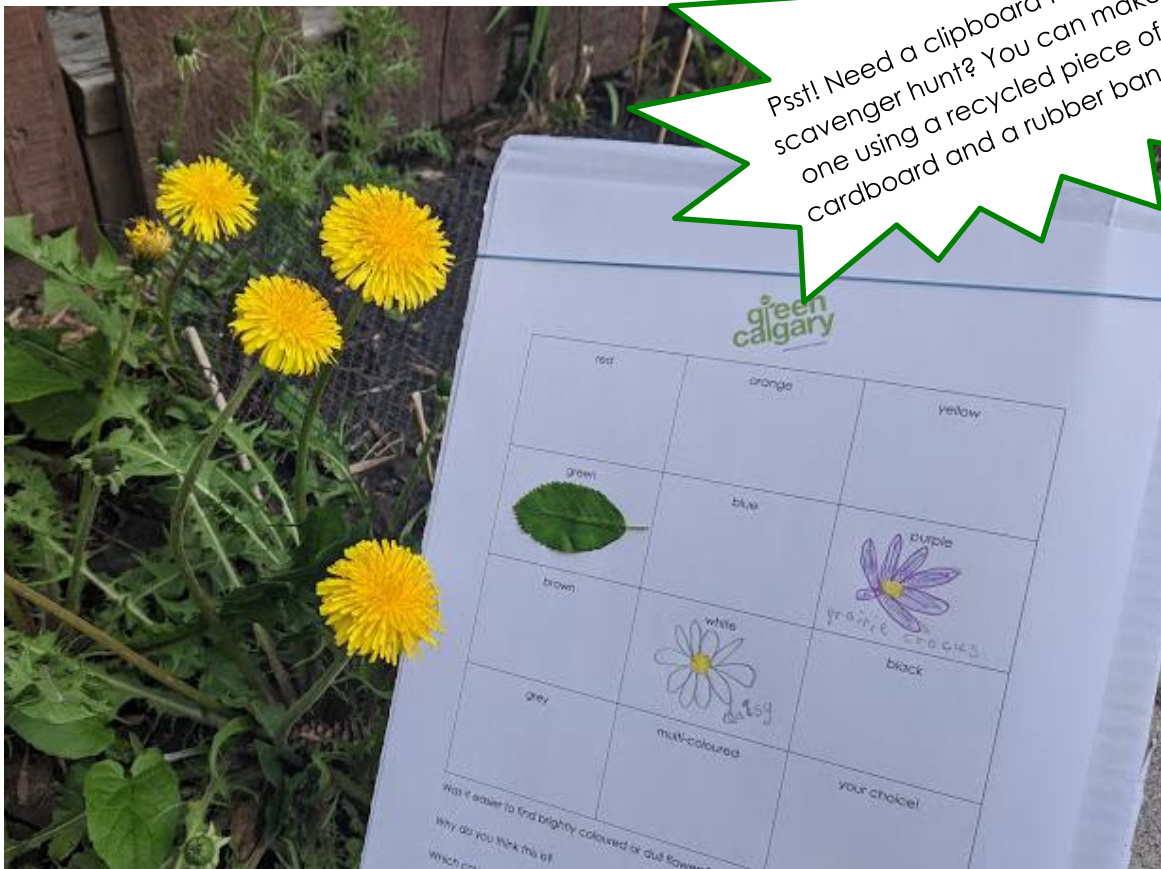


## Scavenger hunt!

Did you know that pollinators are attracted to bright colours? Different colours attract different pollinators. For example, bees and wasps particularly like yellow and white.

Go on a scavenger hunt in your garden or neighbourhood to see which colours you can find in nature. Look to see if you can find any pollinators too.

Once you have found each colour, draw the plant, or if it is already on the ground you can press it and stick it onto your scavenger hunt. Remember not to pick any plants or flowers!



red	orange	yellow
green	blue	purple
brown	white	black
grey	multi-coloured	your choice!

Was it easier to find brightly coloured or dull flowers?

Why do you think this is?

Which colour was easiest to find?

Did you see any pollinators while you were looking for plants?

## Activity 5: press flowers

We know that flowers attract pollinators! We are going to press some flowers to use for a craft later this week.

### Instructions

*What you will need checklist:*

- Selection of flowers
- Tissue paper or parchment paper
- Something heavy to squash your flowers – some books would work well!

*Instructions:*

1. Lay out your flowers on the tissue paper or parchment paper. Try to arrange them and spread out the petals



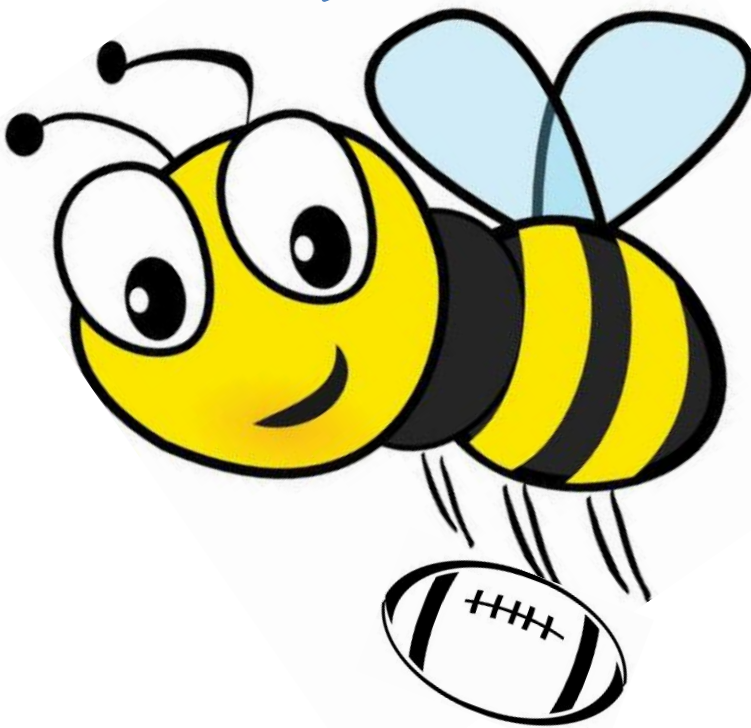
2. Cover with another piece of tissue
3. Place something heavy on top – a few books would work well



4. Leave for a few days – we will use these for a craft at the end of the week!

What sport do bees enjoy?

Rug-BEE!



See you on Wednesday!



Welcome to the third day of summer camp, Adventurers! Today you are going to become scientists and will be collecting data about bees. Remember to join our live video session at 12 noon today, we will meet each other and learn more about today's citizen science activity.

To join the live session, visit [www.zoom.us](https://www.zoom.us) and click on 'Join a Meeting'. Please enter the **Meeting ID: 721 2266 9889** and the **Meeting Password: summer** or follow this link:

<https://us04web.zoom.us/j/72122669889?pwd=c0FKd0tvczhiUWVBSzB4bjN5RnVsZz09>



## Bees – body parts!

Match the body part to the function. Can you label these parts on the bee?

<b>Head</b>	A straw-like tongue. This is used for drinking liquid and for tasting.
<b>Thorax</b>	Sharp organ at the end of a bee's abdomen used to inject venom. Only female bees have these!
<b>Abdomen</b>	Used for flight. There are two sets on a bees body.
<b>Antennae</b>	Used for walking and also for brushing off pollen.
<b>3 pairs of legs</b>	The lower portion of the body. This contains the digestive and reproductive organs.
<b>2 pairs of wings</b>	The upper section of the body, hosting two compound eyes.
<b>Proboscis</b>	The midsection of a bee. The 6 legs and 2 sets of wings attach to this section. The muscles in this part of the body control the wings.
<b>Stinger</b>	These contain thousands of sensors which detect smell and touch.

Did you know bees (like all insects) have an exoskeleton? This is a skeleton on the outside of their body!



## ANSWERS

<b>Head</b>	The upper section of the body, hosting two compound eyes.
<b>Thorax</b>	The midsection of a bee. The 6 legs and 2 sets of wings attach to this section. The muscles in this part of the body control the wings.
<b>Abdomen</b>	The lower portion of the body. This contains the digestive and reproductive organs.
<b>Antennae</b>	These contain thousands of sensors which detect smell and touch.
<b>3 pairs of legs</b>	Used for walking and also for brushing off pollen.
<b>2 pairs of wings</b>	Used for flight. There are two sets on a bees body.
<b>Proboscis</b>	A straw-like tongue. This is used for drinking liquid and for tasting.
<b>Stinger</b>	Sharp organ at the end of a bee's abdomen used to inject venom. Only female bees have these!



## Citizen Science

### **What is citizen science?**

Citizen science is a way for everyone to contribute towards science! Anyone can collect data and submit this to an online portal. This allows scientists to use a huge variety of data that they would not have been able to collect without you. As a citizen scientist, you are contributing to scientific data which is used in research all over the world!

### **What are we going to do?**

We are going to learn how to collect scientific data. Today we will focus on bumble bees! An estimated 1/3 of bee species populations in North America are in decline. Collecting data helps scientists to understand bee populations and how we can protect them.

### **How can I join in?**

Step 1: Go for a walk in your garden, or in your community. You are going to be searching for bees! Take along your field notes sheet.

Step 2: Walk slowly and take time to look carefully for bees. Where do you think you are most likely to see a bee?

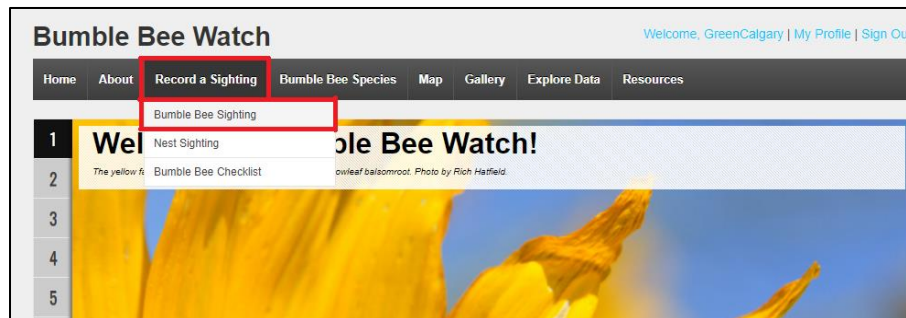
Step 3: Have you spotted a bee?! Take a photo or video of your bee. Be careful not to get too close and remember to give the bee lots of space. Try to take a photo from different angles – from the side, top and the face.

Step 4: Make a note of where you are. Write down where you saw the bee, and note what flower or plant it was on (if you know what it is called!)

Step 5: Now that you have collected lots of data, you can add this to the online portal. Follow the instructions below to learn how to do this.

## How to use the online bumble bee watch portal

1. Go to [www.bumblebeewatch.org](http://www.bumblebeewatch.org)
2. Sign in to the website:
  - Username: GreenCalgary
  - Password: summercamp
3. Click on 'record a sighting' then 'bumble bee sighting'



4. Complete the form. You will need:
  - Photos (you can add up to 3 photos of each bee)
  - Location – where did you see the bee? You can click on the map to show where you found the bee.
  - Date – when did you see the bee?
  - Floral host – do you know the name of the flower the bee was on? If not, leave this empty.
  - Observation notes – anything else you think the scientists should know? E.g. Were there lots of bees?
  - Project – select 'bumble bee watch'

### Bumble Bee Sighting

This form is for submitting a bumble bee sighting

\*Required fields

#### Add Photos

Drop photos here to upload

Choose Files
No file chosen

\*\*\*You must submit at least 1 photo, and may include up to 3.  
-PNG, GIF, JPG images only, maximum size is 5MB for each photo

Name
Progress
Status

Queue progress:

#### Location

To pinpoint your sighting location, use the map, or search for an address below. You can place a pin, or change its location by clicking on the map. Coordinates will appear automatically.

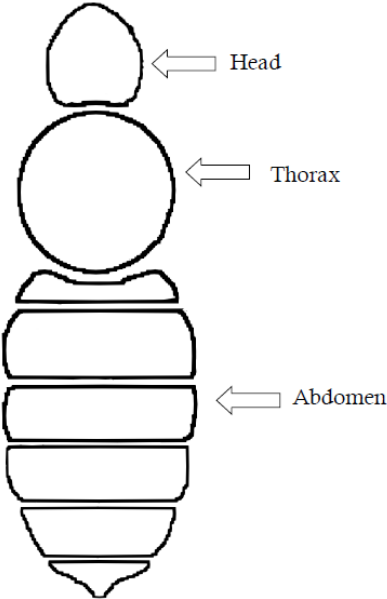
Select a Previous Location

Your Locations

-OR-

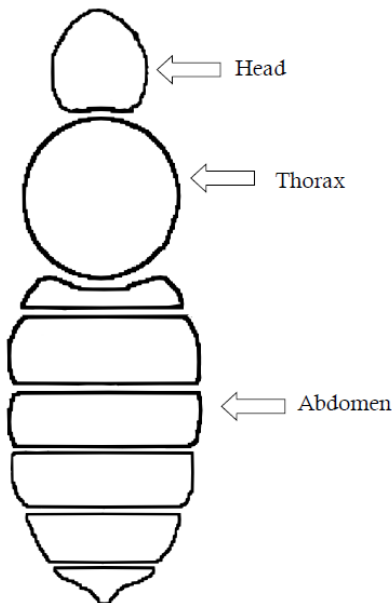
Search for Previous Location

## Field notes – bumble bee citizen science

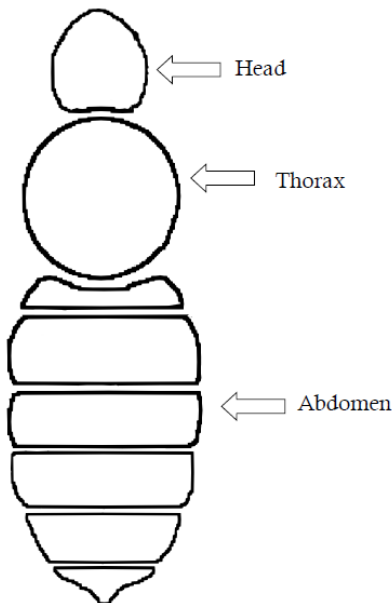
<p>Bee markings:</p> 	<p>Drawing of bee:</p>
<p>Location:</p>	<p>Date:</p>
<p>Flower (if known):</p>	<p>Name of bee species (if known):</p>
<p>Observation notes:</p>	<p>Upload your bee sighting to  <a href="http://www.bumblebeewatch.org">www.bumblebeewatch.org</a> </p>



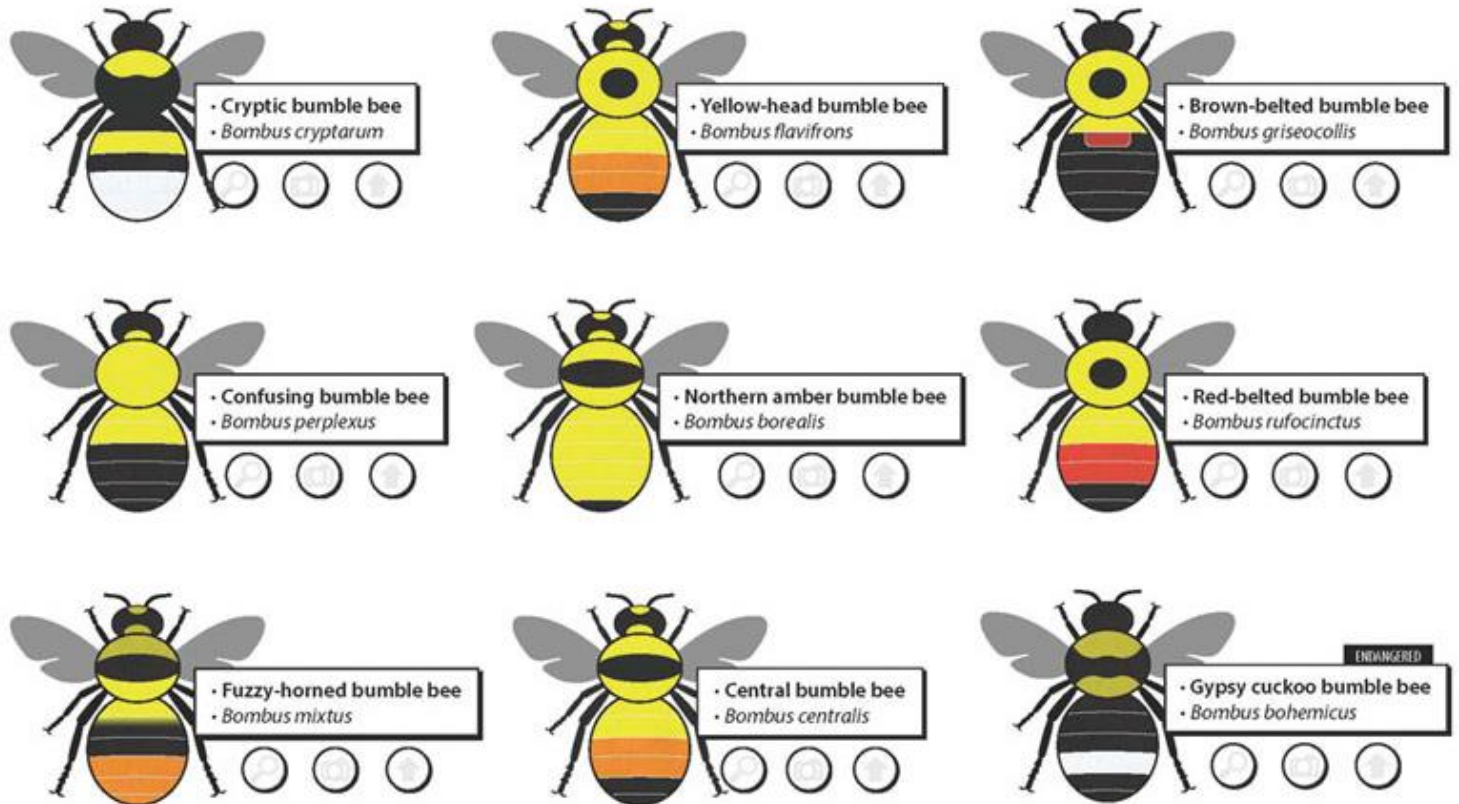
## Field notes – bumble bee citizen science

<p>Bee markings:</p>  <p>The diagram shows a top-down view of a bumblebee. The head is at the top, followed by the thorax, and then the segmented abdomen. Arrows point from the labels 'Head', 'Thorax', and 'Abdomen' to their respective parts of the bee.</p>	<p>Drawing of bee:</p>
<p>Location:</p>	<p>Date:</p>
<p>Flower (if known):</p>	<p>Name of bee species (if known):</p>
<p>Observation notes:</p>	<p>Upload your bee sighting to  <a href="http://www.bumblebeewatch.org">www.bumblebeewatch.org</a></p>

## Field notes – bumble bee citizen science

<p>Bee markings:</p> 	<p>Drawing of bee:</p>
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<p>Flower (if known):</p>	<p>Name of bee species (if known):</p>
<p>Observation notes:</p>	<p>Upload your bee sighting to  <a href="http://www.bumblebeewatch.org">www.bumblebeewatch.org</a> </p>

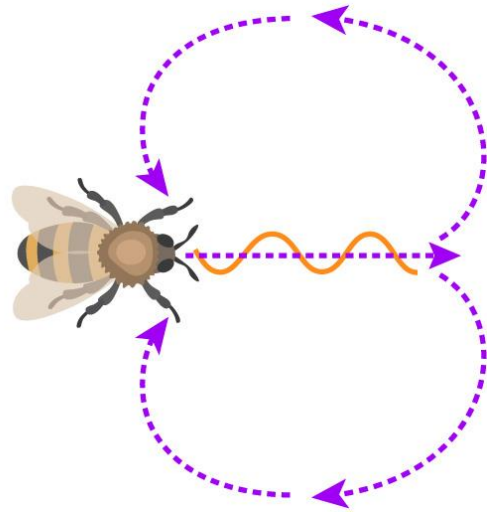
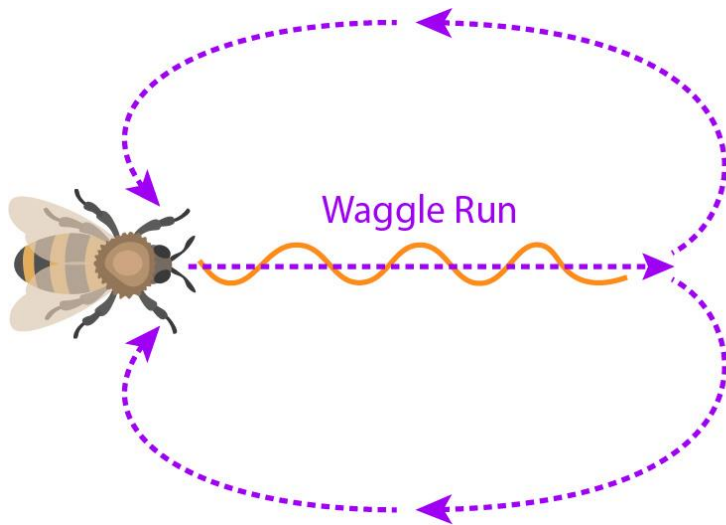
Common bee species found in Western Canada (there are many more!)



-Image from 'Friends of the Earth – the Bee Cause'.

## Do the waggle dance!

Bees communicate through dance!  
The waggle dance can communicate  
information about the direction and  
distance to flowers!



The length of the 'waggle' shows the distance to the nectar source.  
The direction of the dance shows the direction of the flower in relation to the sun.  
This helps bees to locate nectar up to 6 kilometres away!

Try the waggle dance with a friend – can you lead them to the correct flower?



Welcome to the fourth day of summer camp, we hope you are enjoying the week! Today is an exciting day as we have a competition to enter! In one of our activities today you will learn how to make a pollinator hotel. Share your photos with us via email ([education@greencalgary.org](mailto:education@greencalgary.org)) or share on Instagram and use #GreenCalgary to enter. You can win a prize generously donated by a local company.





## Activity 6: decorating pot plants

On Monday we planted seeds in our biodegradable seed starters. Soon these plants will need to be replanted into a bigger pot. Today we are going to decorate plant pots so we have a new home ready for our plants!

### Instructions

*What you will need checklist:*

- Plant pot
- Pens or paints to decorate your pot

*Instructions:*

1. Wipe your plant pot so it is clean
2. You might choose to draw your design on paper first
3. Draw your design onto your pot
4. When your plant is ready in your seed starter, carefully plant the whole seed starter into your new pot!

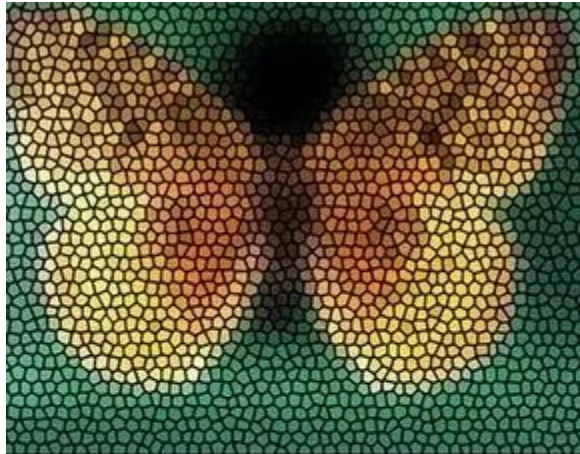


## Compound eyes

Did you know that bugs do not have eyes like ours? They have compound eyes, meaning there are lots and lots of visual units, each of which contributes to one image. They see things a bit differently than we do!



This is how we think bugs see compared to us:

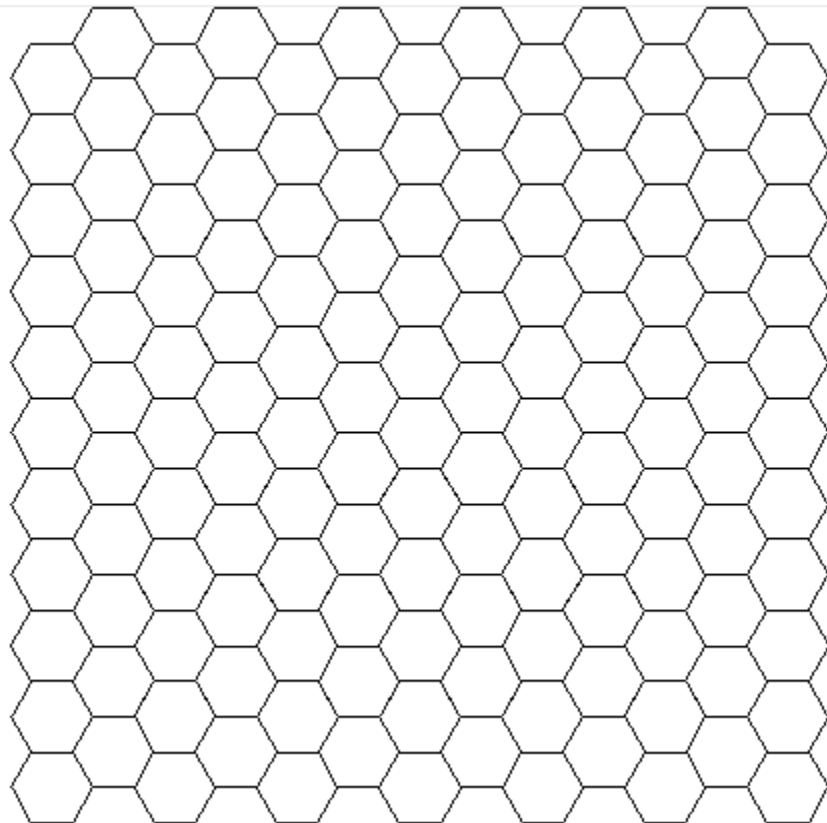


Try to copy the pictures as a bug would see them:

Single vision:



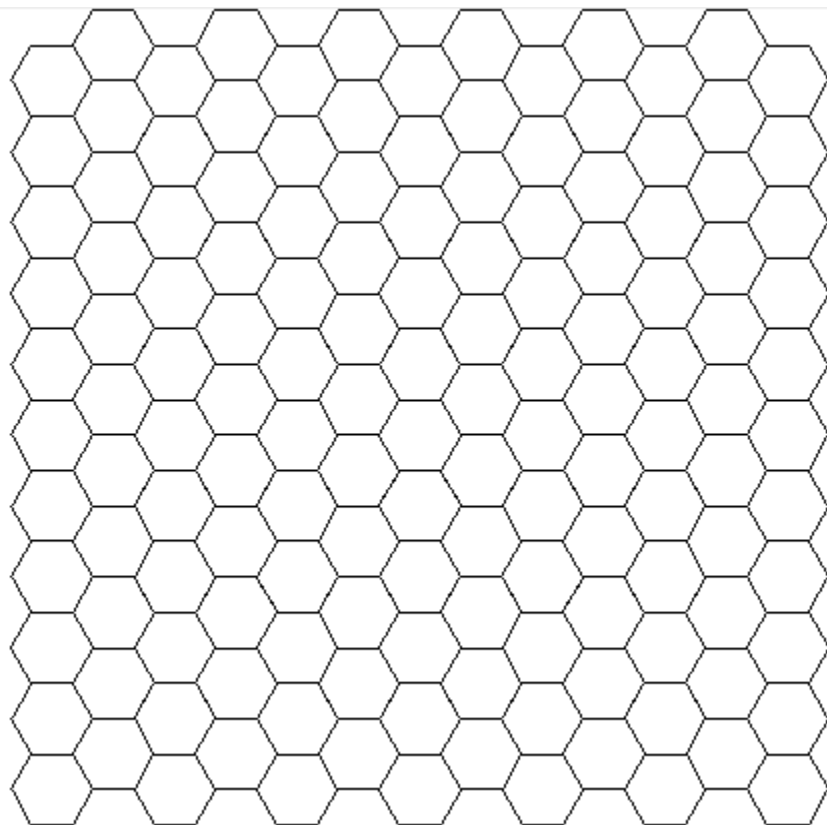
Compound vision:



Single vision:



Compound vision:





## Activity 7: pollinator hotel

In this activity we will make a safe hotel for our garden pollinators. Our bees and bugs can be disturbed when we mow the lawn or cut back flowers, trees, and bushes. This pollinator hotel will provide a safe home for our bugs. Find a safe, quiet location for your hotel.

### Instructions

*What you will need checklist:*

- A container for your pollinator hotel – a tin can (be careful of sharp edges), or plant pot will work well. It needs to be weather-proof!
- A collection of sticks
- Paper (try to reuse some scrap paper)
- Tape
- Pencil or pen
- String

*Instructions:*

1. Make sure your container is clean. Add some string if you are going to hang your pollinator hotel.
2. Prepare rolls of recycled paper. You can wrap the paper around a pen and use tape to secure in place. You will need to wrap the paper several times to ensure the paper is sturdy. Some pollinators like to live in the tunnels, while some will prefer to nestle amongst sticks. You could also use hollow bamboo sticks as tunnels.



3. Prepare your rolls of paper and sticks so they are all the correct length
4. Fill your container with the sticks and paper

5. Place your pollinator hotel in a quiet, safe space outdoors



## **Competition time!**

Email us a photo of your bug hotel to [education@greencalgary.org](mailto:education@greencalgary.org) OR upload a photo to Instagram and use #GreenCalgary.

We will select a winner and you could win prizes from some amazing local companies!

**We will share a winner on Friday!**





Did you know that a honey bee can flap  
it's wings 230 times every second?!

Try to see how many times you can flap  
your arms in a second!



Welcome to Friday, and it is the last day of our Backyard Science summer camp! We have lots of fun activities to complete today. We are going to use some of the craft materials we made earlier in the week: our homemade paper and pressed flowers. We hope you enjoy the last day of summer camp!

Don't forget to join our live video at 12 noon today!

To join the live session, visit [www.zoom.us](https://www.zoom.us) and click on 'Join a Meeting'. Please enter the **Meeting ID: 778 6276 1474** and the **Meeting Password: summer** or follow this link:

<https://us04web.zoom.us/j/77862761474?pwd=T1gvL0pQOEUwL2F6Tzg0NHlQYUV3QT09>

## Activity 8: suncatcher

Earlier in the week we pressed some flowers. Now we are going to use those flowers to make a beautiful sun catcher to hang in your window!

### Instructions

*What you will need checklist:*

- Pressed flowers
- Cardboard
- Round items to draw around (bowls and plates work well!)
- Pen
- Scissors
- White tissue paper
- Glue
- hole punch
- string



*Instructions:*

1. Draw around a round object so you have a large circle on the cardboard. Draw a smaller circle inside.
2. Cut out the hoop. You may need to ask an adult to help with this step!
3. Repeat so you have 2 hoops



4. Cut 2 circles of white tissue paper and stick onto the hoops

5. Arrange your dried flowers on one sheet of tissue paper and carefully glue in place. The flowers might be a bit delicate!

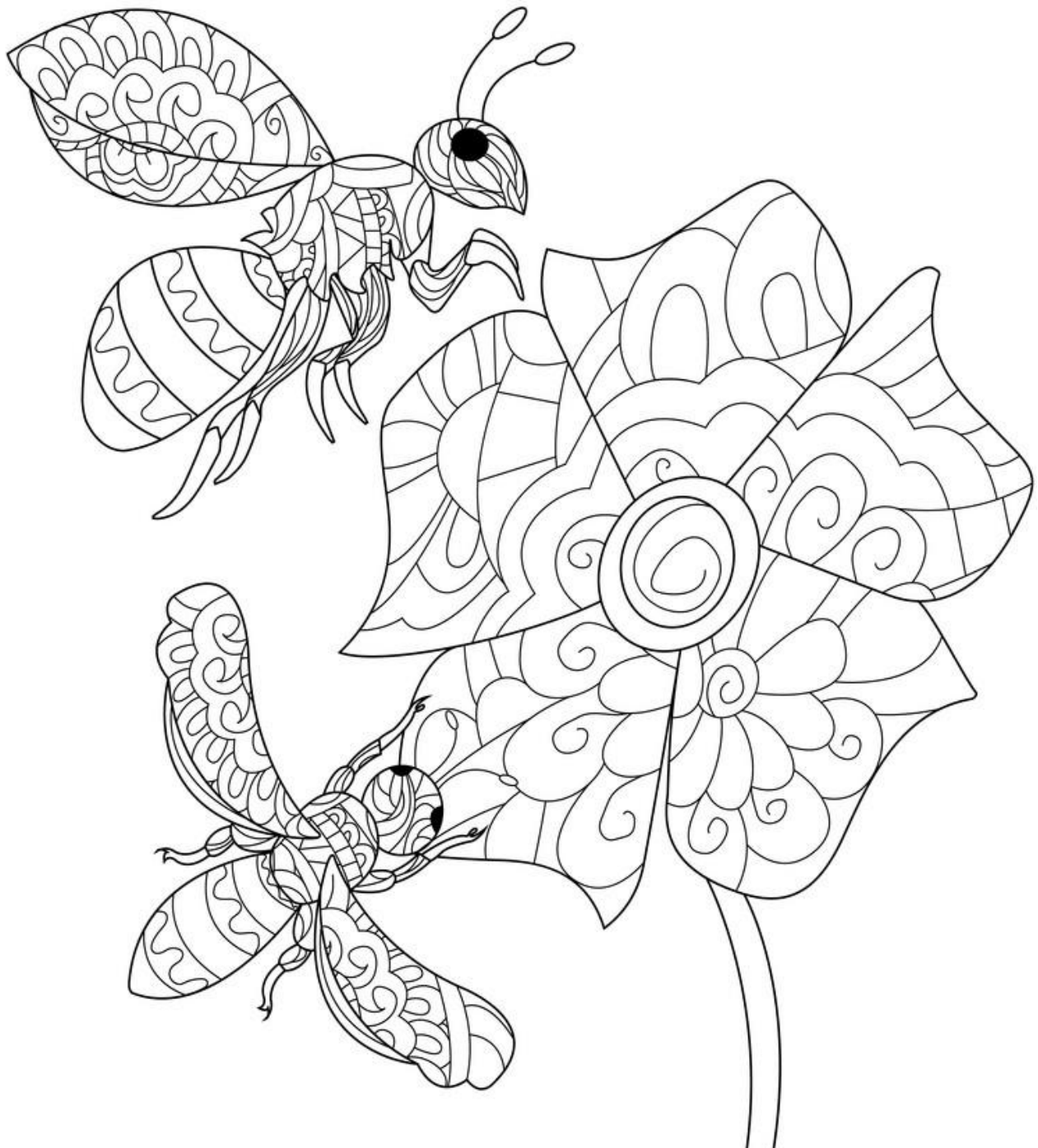


6. Place the second hoop of top of the other and glue in place
7. Punch a hole at the top of the hoop and attach some string to hang your suncatcher
8. Hang your suncatcher in a window and enjoy your beautiful pressed flowers!

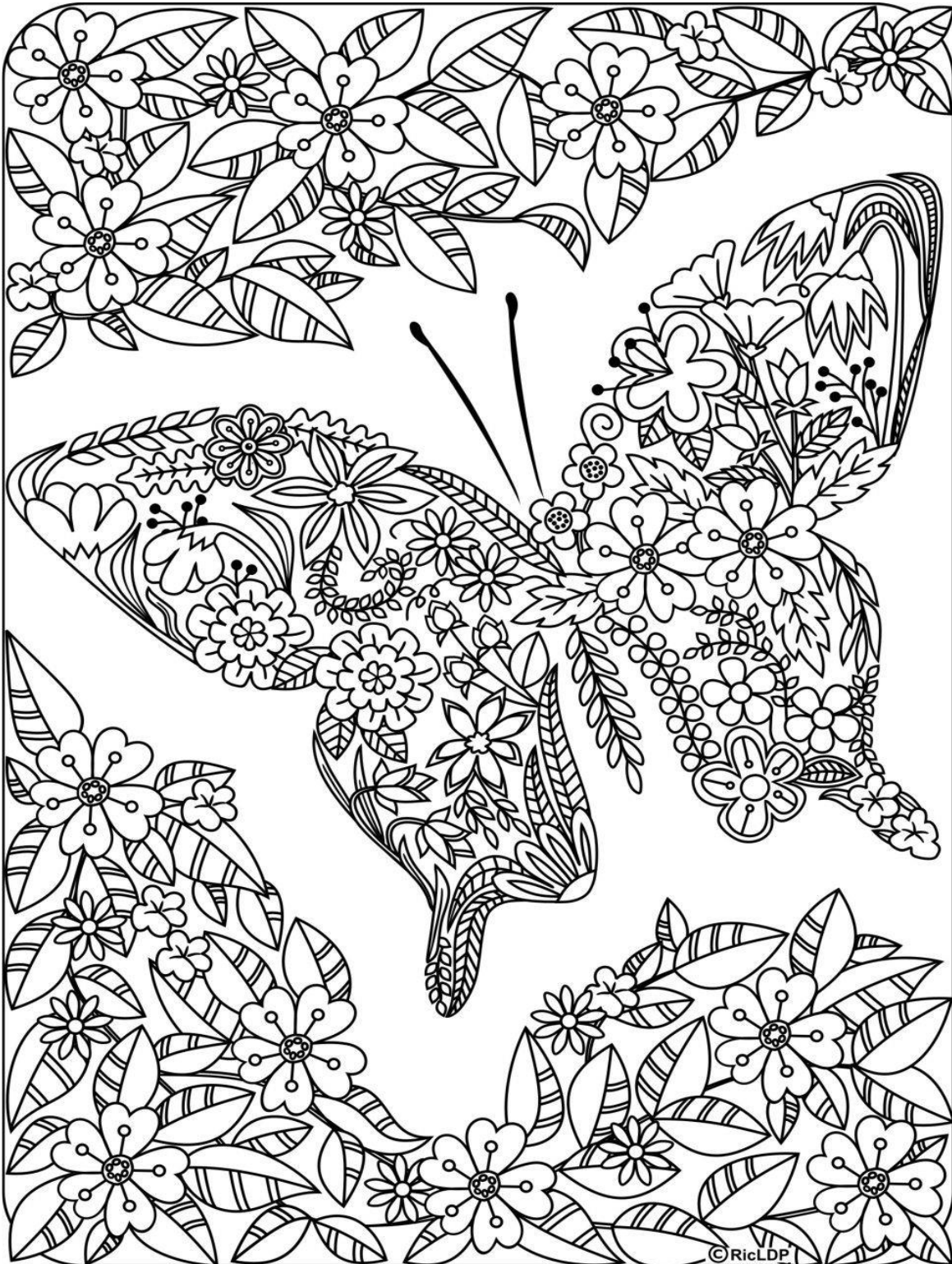
## Pollinator Colouring Sheets











## Activity 9: honey cake

After learning so much about bees this week I fancy eating some honey, so let's make a honey cake! Ask an adult to make this with you.

### Instructions

*What you will need checklist:*

- 250g clear honey
- 225g unsalted butter
- 100g dark muscovado or brown/golden sugar
- 3 eggs
- 300g self-raising/cake flour

*Instructions:*

1. Preheat the oven to 325°F
2. Grease and line a 20cm round cake tin
3. In a pan, slowly melt the butter, sugar and honey. Boil for 1 minute, then leave to cool for 20 minutes
4. Beat the eggs into the cool honey liquid
5. Sift in the flour
6. Pour mix into the cake tin and bake for 50-60 minutes

Why did the bee have sticky hair?

He used a honey comb!



## Activity 10: bee cards made from homemade paper

Earlier in the week we started to make homemade paper. Today we will use our finished paper to make bumble bee cards! By now your homemade paper should be dry, if not, leave it for a few more days.



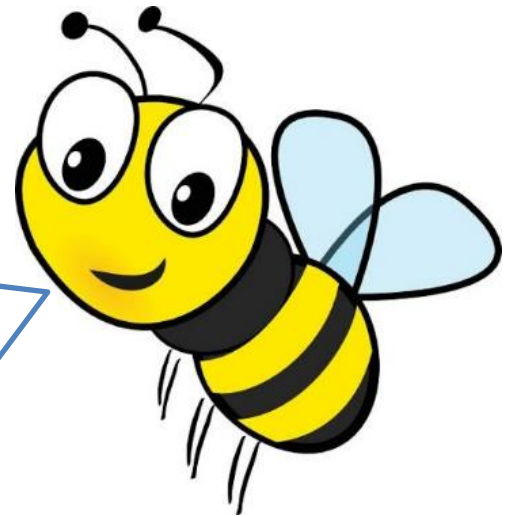
### Instructions

*What you will need checklist:*

- Your homemade paper
- Tissue paper
- Card
- Colour pens

*Instructions:*

1. Draw a bee shape on your homemade paper
2. Carefully cut out the bee shape – be careful, the homemade paper may be hard to cut. Do not worry if there are a few holes
3. Stick the bee shape onto your card. Colour so it looks like the body of a bee
4. Draw on legs and antennae
5. Carefully cut 2 sets of bee wings out of the tissue paper and stick onto the bee



What kind of bee cannot make up it's mind?

A maybe!

Thank you for joining Green Calgary's Backyard Science summer camp! We really hope you enjoyed your week and all of the activities!

There are lots of other resources available on our website at [www.greencalgary.org](http://www.greencalgary.org)

### Share with us!

We would love to see photos of your summer camp crafts and activities. Please tag us @GreenCalgary or hashtag #GreenCalgary in your social media posts!