



Week #3 - Pollinators

What do you think is happening in the video?



What are pollinators?

Pollinators are animals that move pollen from the flower of one plant to the flower of another plant!

This allows the flowers to produce seeds and the fruit that surrounds the seeds.



More about some important pollinators!

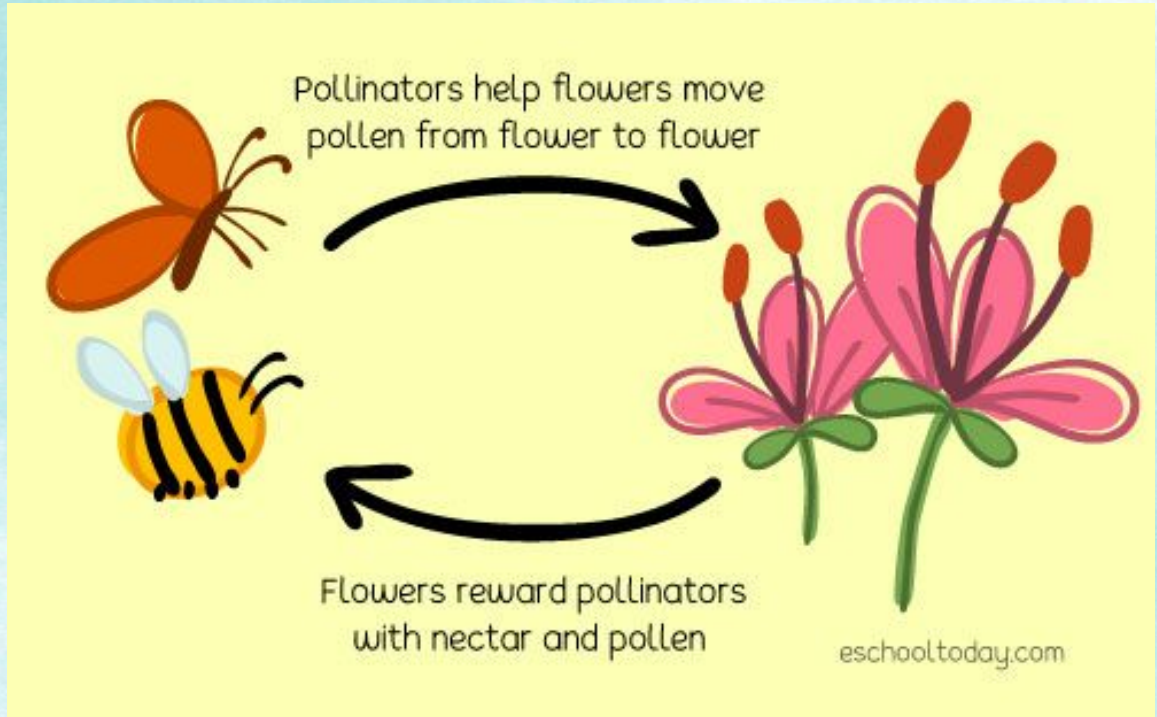
In this video, we explore some of the important pollinators, such as bees, butterflies, and moths.



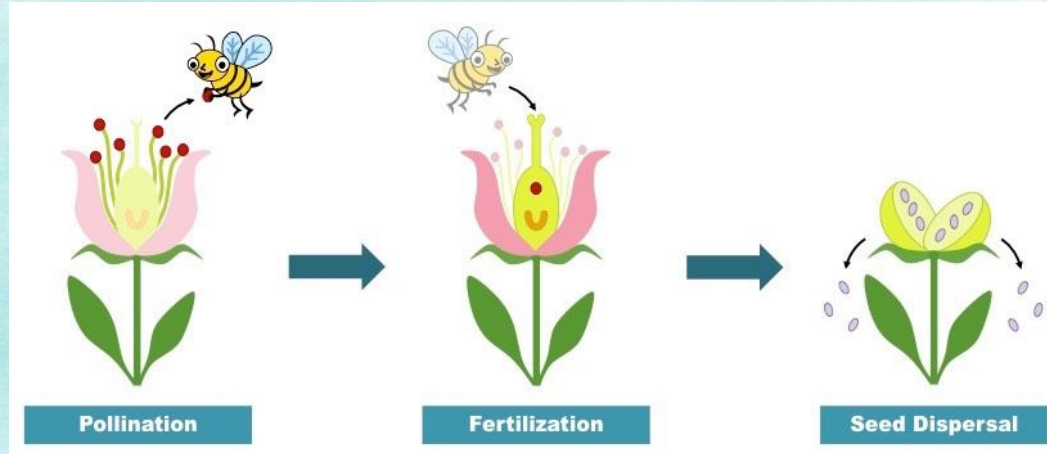
How do plants and pollinators help each other?

Plants get helped by having their pollen moved from flower to flower to make seeds.

Pollinators get to feed on the nectar and pollen from the plants flowers!



What happens when a flower is pollinated?



- (1) Bee collects nectar and pollen from the flower of a plant. Pollen sticks to the bees hairs during this process.
- (2) The bee then visits another flower and rubs some pollen onto it.
- (3) This causes the flower to grow fruits. Seeds are found inside the fruit to make new plants!.

The growing of a pear!

What is happening in the video? Is this an example of pollination?



Yes, the pear flower was pollinated since it grew a fruit with seeds! What would happen if the flowers were not pollinated by animals?

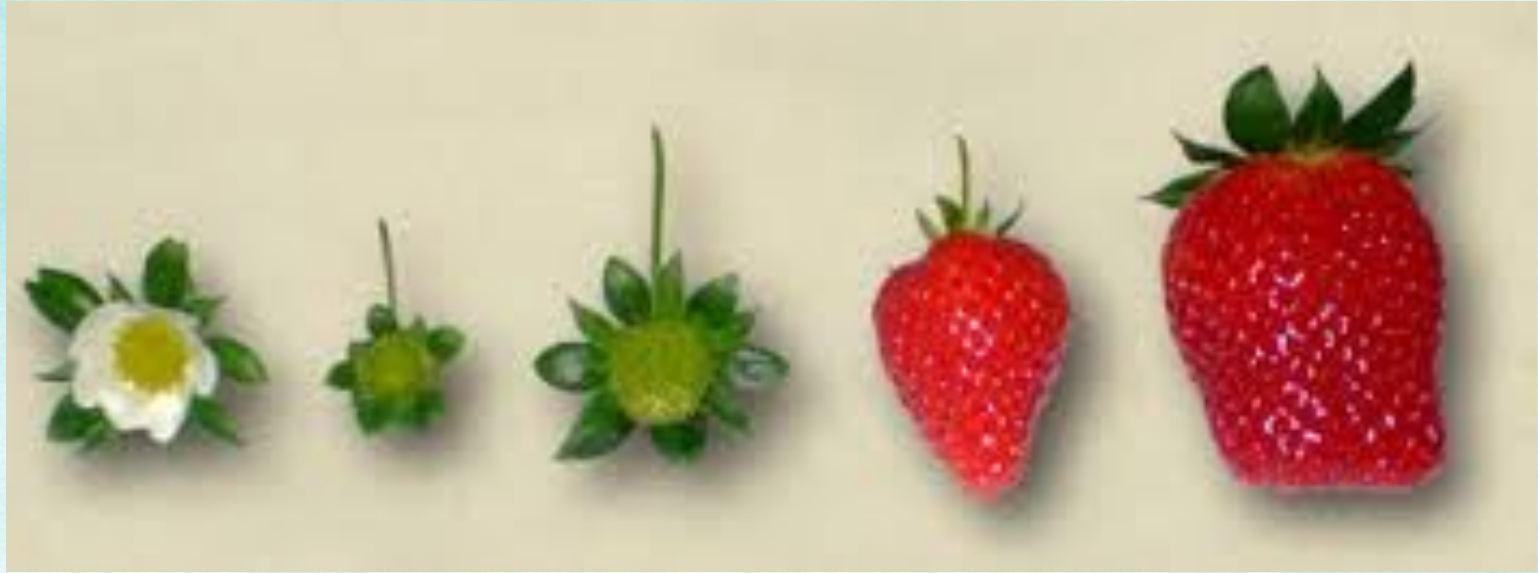


There would be no pears!

If the pollinators never came to feed on the flowers and bring pollen from flower to flower, there would be only flowers and no fruits!



Fun fact - Did you know all fruits start as flowers?



Did you know the population of pollinators are in decline?

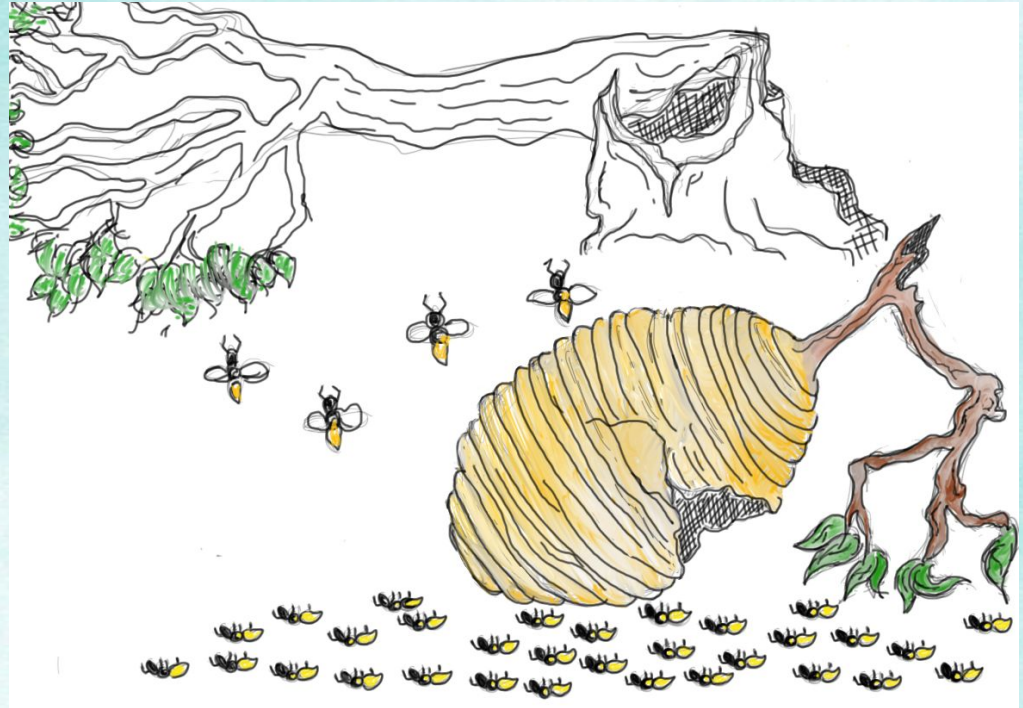


What do you think could be happening to the pollinators?



Why are pollinators at risk and in decline?

- Use of pesticides
- Pests and diseases
- Loss of habitats
- Air pollution
- Climate change



**Did you know that pollinators help bring us
1 out of every 3 bites ($\frac{1}{3}$) of all our food!**



Here are foods we have thanks to pollinators!

Honey, apples, peaches, apricots, plums, lemons, limes, cherries, bananas, melons, mangoes, papaya, strawberries, blueberries, elderberries, blackberries, raspberries, cranberries, onion, almonds, cashews and coconut, avocados, beans, coffee, tea plants, vanilla, sunflower, sesame oils, tomatoes, cucumbers, grapes, cauliflower, cabbage, broccoli, turnips, brussel sprouts, beetroot, pumpkin, chocolate, sugarcane, and agave!

Pollinators also pollinate flowers in nature that create food for animals!



Which one these images are bees?

(1)



(2)



(3)



(4)



All four are bees!

Many bees are not striped yellow and black like in the previous slide!

Some bees are bigger than your thumb, others are smaller than a grain of rice.

Very few bees live in hives.
Actually, 80% live in the ground, walls, or in cavities in debris.

Where do bees nest?

- Most are **ground nesters**: often in well drained, slightly sloped areas facing south or west
- Some are **cavity nesters**: mostly using existing holes in wood, hollow stems
- Distance travelled from nest to find food is proportional to body size



...their colours can be unexpected...

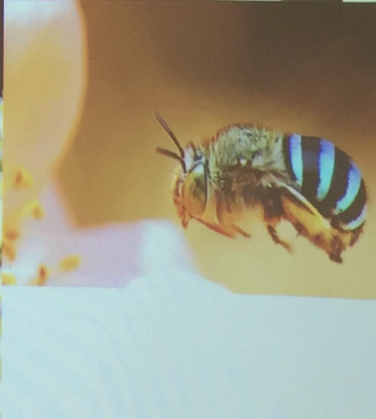
Sean McCann



Tamara Pokorny



Themisbehavingeconomid.com



Sweat bees (Halictidae):
defining characteristics

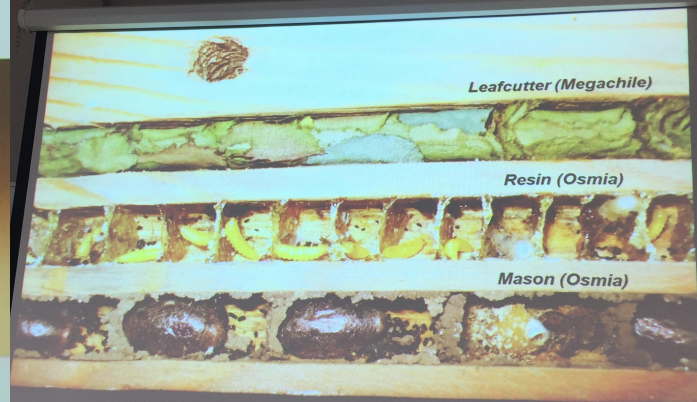
- No fovea on face



Andrena

0.5 mm

photos from www.



Leafcutter (Megachile)

Resin (Osmia)

Mason (Osmia)

Margriet Dogterom: www.beeediverse.com

Wild bees may look like wasps...



Cuckoo wasp

Mason Bee

...or flies can look like bees...



Hover flies

Cuckoo bee

...but bees are always vegetarians



How to recognize a bee

- Four wings (flies have two)
- Usually hairy (wasps less, and silvery, hair)
- Cute faces



wasps



flies



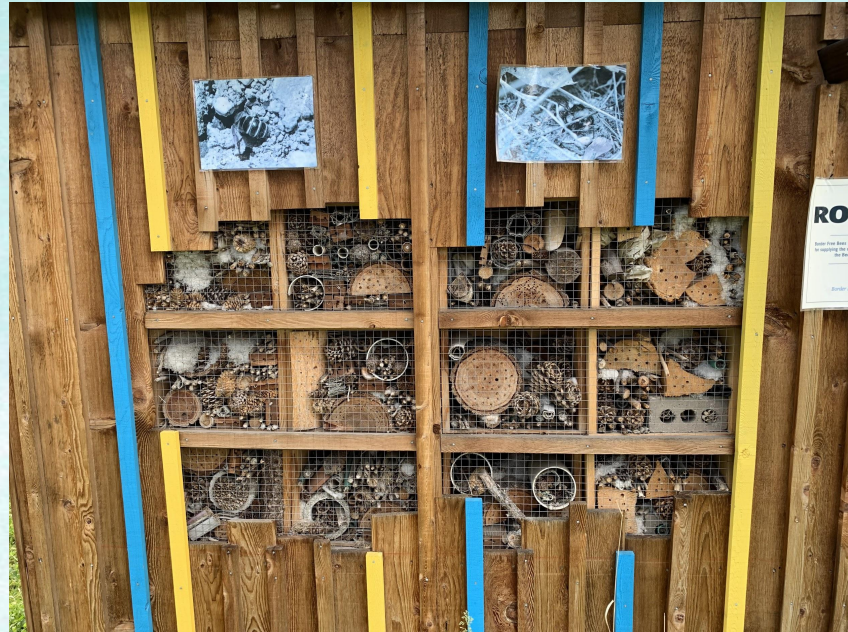
How can we help our pollinator friends?

There are many groups of people helping out pollinators. One group is Border Free Bees.

In Kelowna, they planted a pollinator pasture with help from the community to give pollinators more space to live!



Bee hotel for nesting and laying eggs



Want to learn more about Kelowna's Pollinator Pasture?

The link below is the location of the pollinator pasture in Kelowna.

<https://www.google.com/maps/place/Brent's+Grist+Mill/@49.8870228,-119.4417569,17z/data=!3m1!4b1!4m5!3m4!1s0x537d8ccc418a15af:0xdb4f9cd972592935!8m2!3d49.8870228!4d-119.4395682>

The link below has more information about Kelowna's Pollinator Pasture.

<http://borderfreebees.com/kelowna-public-art-pollinator-pasture/>



But wait, what can we do as individuals?

What do you think we could do to help pollinators?



For those who want to read more about how we can help pollinators, click the link below!

<https://davidsuzuki.org/queen-of-green/create-pollinator-friendly-garden-birds-bees-butterflies/>

Grow some pollinator flowers!

Grow flowers that pollinators love!
They love certain flowers because they produce a lot of nectar and pollen!

Below is a list of pollinator flowers that are best suited for British Columbia!

<https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/animals-and-crops/animal-production/bee-s/food-for-bees/bee-forage-plants>



Leave parts of your garden messy!

Taking twigs and bundling them together and leaving them in your yard can create habitats for bees!

Leave a patch of ground bare (without anything growing there) for bees that nest in the ground!

For more information, click the link below.

<https://davidsuzuki.org/queen-of-green/messy-yards-help-bees/>



Why encourage pollinators to visit our gardens?

We get to help increase the food and habitat of hardworking pollinators.

They will help make more fruits and vegetables for us to eat!

It will also help make more flowers for us to enjoy! So, why not invite some pollinators!



What region has the most types of native bees in Canada?



It's the Okanagan!

There are over 20,000 bee species in the world.

Over 800 are found in Canada.

About 450 are found in British Columbia.

And 350 bee species are native to the Okanagan. This makes it the most diverse area for bees in all of Canada!



Activity #1 - Find a pollinator and observe it!

Want to help contribute to pollination research that helps pollinators? Click on the link below to learn more about the mobile app Insight Citizen Science. Watch the video to learn more!

<http://www.insightcitizenscience.com>

Don't want to use the app, no problem! The site below gives you great information on how to identify the top pollinators!

<http://borderfreebees.com/wp-content/uploads/2017/11/Common-Pollinators-of-British-Columbia-2nd-Edition.pdf>



Activity #2 - Make a bee bath!

Bees like people need water. It's hard work pollinating the plants in our gardens, so why not help bees out by giving them a source of water!

Watch the video and make a quick and easy bee bath today for our helpful friends!

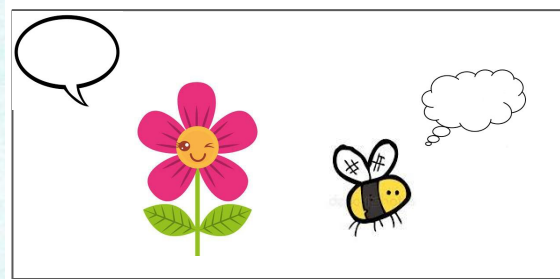


Activity #3 - Write a comic strip about pollination!

Click on an image to the right for a printable comic strip! Try to include some things you learned about plants and pollinators! Be as creative as you want!

Possible options:

- Explain each cartoon box with a sentence
- Make it funny
- Give pollinators/plants speech/thought bubbles



Activity #4 - Make a bee hotel

We can help pollinator by making a bee hotel. This is a big project!

We want to make sure that we are not harming the bees. Make sure to the research before taking this on! Use the videos and link below to learn more!

<https://entomologistlounge.wordpress.com/2017/09/18/insect-hotels-a-refuge-or-a-fad/>

