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# Backyard Biodiversity

CHALLENGE

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Welcome to the Saskatchewan Wildlife Federation's Backyard Biodiversity program! Thank you so much for participating. If you are reading this you must now be the proud owner of a packet of native Saskatchewan Wildflower seeds. You are just steps away from helping pollinators all over the province! The following is a supplemental educational package that you and your children can follow along with to get the most out of your wildflowers.

# Introduction: Why pollinators are important

Why are pollinators important anyway? There are lots of initiatives to save the bees but why is that? Where are the bees going? What is their role in nature? Are there other insects that act as pollinators or is it just bees? Here are some cool facts about pollinators to get you started!

Pollinators are insects or animals that move pollen from one plant to another

1 in 3 bites of food we eat every day needs pollinators for farmers to produce

If a flower does not get pollinated if cannot produce fruit or seeds

Many pollinators evolve to pollinate specific flowers. For example, some bats have super long tongues to reach inside flowers for nectar

Bees have “pollen baskets” on their legs which hold pollen

Bees can see in the ultraviolent spectrum meaning they see completely different patterns on flowers than we do!

Lots of creatures are pollinators including bees, butterflies, moths, bats, birds, and lemurs!

Butterflies can’t fly if they are cold

# Stage 1: Planting your flowers

The first thing you will want to do is plant your seeds. Take a look at them in your hand. Are some larger than others? Are they different colours? Shapes? Why do you think these seeds look so different? Take a look at the package there should be a list of seeds that are in the package. Any guess as to what these seeds will turn into?

You can start a wildflower journal that you can fill out over the summer. Try doing a sketch of the seeds in your journal with your best guess as to what they will look like when they grow up. Scientists use sketches frequently to explain and describe species.

You can easily turn this project into a science experiment of your own! Split the package in 2, and plant seeds in two different parts of your yard to see if one place grows faster than the other. What sort of things do flowers need to grow? Are there areas of your yard that are better for your flowers than others? You can name both of your plots so that you can compare progress in your journal later. **Asking questions** is the very first part of the "scientific method" this method is used by scientists to do experiments all over the world! Do you have any questions you would like to answer with this experiment?

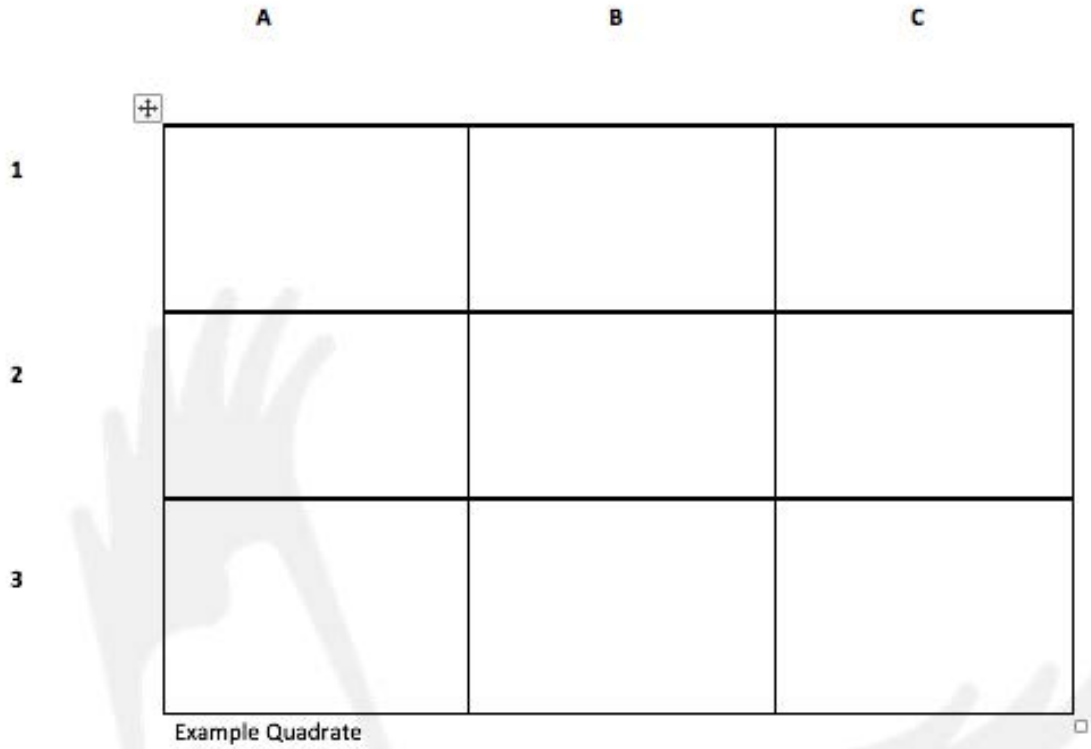
To plant the seeds spread them out in a weed free area and lightly cover the seeds in soil. Make sure they have some water and now you are ready to see them grow!

# Stage 2 Setting up your quadrat

An easy way to track progress of your flowers is to set up a quadrat. Researchers use quadrates frequently when you want to compare similar things, count insects, monitor plant growth, or to assess habitat lands to see if they are viable for wildlife.

Using string make a box around your plot of flowers. Using more string make a 3 by 3 grid with the string inside the box. Now you can easily draw your quadrat in your journal and keep track of how many flowers are growing in each little box, if some boxes are growing better than others, if the pollinators like one corner of your quadrat or not. A quadrat makes counting your flowers much easier! Count them up. Do you have many sprouting up yet? You can also compare the overall success of one plot to the other.

You have now successfully **gathered the supplies and information** you need to make your experiment successful. This is the second step in the scientific method. Congrats!



Example Quadrate

# Stage 3 Collect height data

How are your flowers doing? Do you see any of them growing yet? Do some of them look alike? Are there more of one type than others? Sketch out what they look like now in your notebook. Do you have any idea what each different plant might turn out to be? Are there any hints yet?

Having many different types of plants contributes to something call biodiversity. Biodiversity just means a variety of plants, animals, insects, or fish in a given area. Biodiversity is very important for wildlife because the more biodiverse an area is; the more creatures can live there. Everything in nature is connected and increasing biodiversity means more connections! By planting this garden, you are increasing the biodiversity in your own backyard!

How tall are your flowers? Using a ruler measure a few of the plants in different areas of your quadrat. Which one is the tallest? Which one is the smallest? Make a note in your journal next to your sketches. Feel free to create a table to help organize the height data that you are collecting.

**Heights for flowers in Quadrat 1 , square A1**

| Type of flower | Week 1 | Week 2 |
|---|---|---|
| Yellow flower | 3cm | 5cm |
| Blue flower | 1cm | 2cm |
| Purple flower | 5cm | 7cm |

# Stage 4 Comparing plots

Have your flowers grown any taller? Are there any signs of flowers yet? How are they changing? Feel free to sketch your different types of plants again and measure them. This time compare the growth of one plot to that of the other. Are they growing differently? Are some squares growing better than others? Is one quadrat growing than the other? Do some have buds? Do some not? If they are different, what factors do you think would make a difference? Write down potential differences down in your journal.

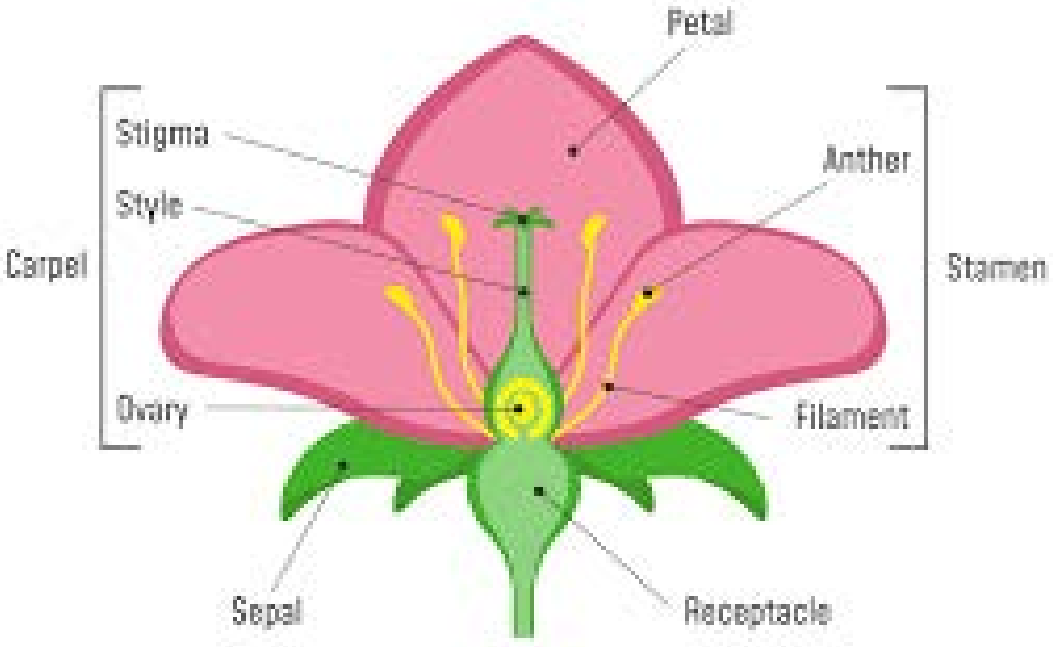
If you have extra time this week build a bee puddle. Bees and butterflies need water just like we do, unfortunately bird baths are usually too deep for them to get a drink from. This can easily be fixed with a bee puddle. Take a shallow dish or bowl and fill the bottom with pebbles or rocks or gems. Fill the dish with water making sure that the stones are just barely covered. Voila! Now your pollinators have a place to grab a drink. Place your puddle in your garden.

# Stage 5 Identifying your flowers

Are your flowers emerging? Are some of your flowers completely out of their buds? Make a new sketch of your plants this week. Has there been a big difference from last week? Feel free to measure how tall they have gotten.

This week when you make a sketch try identifying the flower you are drawing, plant identification books as well as the internet are great resources to do this. There is also an app called iNaturalist which is a citizen scientist initiative where people from all walks of life take pictures of plants, insects, animals and submit them. Once submitted experts from across the country will help identify them. This might be a very useful tool especially later when you are trying to identify insects.

Once you have your flower identified, try your hand at labelling the different parts of your sketch. Here is an example of different flower parts. Not all flowers will have all of these parts, but see how many you can find!



# Stage 6 observe for pollinators

Before we observe the creatures that are visiting our gardens make a **hypothesis** about what will happen. A **hypothesis** is a prediction of what will happen. They can be about anything in your experiment. For example, "I predict that the bees will enjoy the purple flowers better than the others", "I predict that there will be more bees than butterflies" "I predict the purple flowers will grow much taller than the yellow ones". Once you have a **hypothesis** write it down in your journal.

Now that your flowers are blooming, their most important job is just about to start. They will provide food for pollinators who will in turn spread their pollen and allow fruits to develop. To **test your hypothesis'**, see if any pollinators are visiting your flowers. Sit quietly next to one of your plots being careful not to move too quickly. See if there are any bees, butterflies, or hummingbirds enjoying your flowers. This might take some time because they get scared very easily. If you do see a bee or a wasp don't panic! Remember these little insects are much more scared of you than you are of them, they don't want to sting. In most cases, a sting is deadly to the insect, so they will only use it as a last resort. If you see insects visiting your flowers very quietly and slowly take a photo. Are there different types of insects visiting or are they all the same? What are they doing? Do they stay long?

Submit your photos to iNaturalist, if you are lucky someone will be able to identify what is in your photos and get back to you quickly. If you have an insect ID book feel free to try and identify them yourself!

Were any of your predictions right? Write down your results. Did the pollinators or plants act like you had guessed? If they did, congratulations! You have finished your experiment by following the **scientific method**. If they didn't, don't worry! That is exactly what science is all about, trying many different things to get an answer. Look back at your **hypothesis** and adjust them, test them again, see if you get a different result.

Northern Amber Bumblebee

Black- Tailed Bumblebee

Heath Bumblebee

## Stage 7: Finding wildflowers in the wild

With your garden well underway and providing much needed help to local pollinators, take a walk or hike in an area where there is open grass (so long as it is possible to do so safely). This could be a ditch by your house, on a piece of SWF habitat land, or a good hiking spot. Do you see any of the flowers that you planted? Take some photos! How many can you name?

We know that pollinators love these flowers but what about other animals? Do you see any herbivores (plant eaters) having a snack? These native prairie plants are very important for wildlife habitat from gophers to mule deer!

## Stage 8: Winding down

Over the summer continue to monitor the changes that your garden undergoes as it grows, flourishes and then quiets down.

Did some flowers hang around longer? Did some only live for a short time? Did others last all summer? At the end of the summer don't worry about removing the flowers from the garden, when they die and fall to the ground they actually create a place for bees to sleep over the winter. If you have any leaves laying around leave some out just for this purpose. In the spring when it warms and the insects come back out you can dispose of them but over winter it will provide a very important microhabitat for the pollinators.

Thank you for planting your flowers, helping pollinators of all shapes and sizes and contributing to better biodiversity right in your back yard! If you are looking for more fun activities check us out at swf.sk.ca!

TAKE PHOTOS, MAKE SKETCHES, AND LET US KNOW AT SWF HOW YOUR NATIVE WILDFLOWER POLLINATOR GARDEN TURNED OUT. PHOTOS OF YOUR PROJECT, SKETCHES, AND NOTES CAN BE MAILED TO US AT SASK.WILDIFE@SWF.SK.CA.

ALL PHOTOS WE RECEIVE WILL HAVE YOU ENTERED IN A DRAW TO WIN AN SWF PRIZE PACK!

# *Thanks for helping our pollinators!*

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SASK LOTTERIES