Lesson Plan

Pollinators

DISCUSSION -- Questions to ask students before, during and/or after the any of the pollinator activities.

WHAT IS A POLLINATOR?

- **Anything that carries pollen from one flower to another. This causes fertilization and allows the plants to reproduce.**

WHAT ARE EXAMPLES OF POLLINATORS?

- **Bees, butterflies, birds, bats, moths, flies and beetles**

WHY ARE THEY IMPORTANT?

- **One out of every 3 bites of food we eat is made possible by pollinators.**
- **If they don't have the right habitats, they can't live to support the food we need to live.**

WHAT IS POLLEN?

- **It is a fine yellow powder that is in the flower of the plant that causes the plants to form seeds. It is what plants need to reproduce and make more plants.**

WHAT IS POLLINATION?

- **It is the process that some plants need to reproduce. A pollinator is usually needed to help carry pollen from one flower to another.**

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DISCUSSION -- Questions to ask students before, during and/or after the any of the pollinator activities.

WHAT AFFECTS POLLINATORS?

- **Bees and other pollinators are disappearing in large numbers because of pesticide exposure, parasites/pests (varroa mites), lack of bee-friendly flowers, and pollution.**

HOW DO POLLINATORS AFFECT ME?

- **One out of every 3 bites of food we eat is made possible by pollinators.**
- **If they don't have the right habitats, they can't live to support the food we need to live.**
- **FUN FACT – 80% of the crop plants grown around the world, i.e., those that produce all of our food and plant-based industrial products require pollinators**

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ACTIVITY 1 - PIPE CLEANER POLLINATORS

What you need:

- **Food Flower cut outs.**
- **Ground, colored chalk**
- **Pipe cleaners**
- **Made into little pollinators.**

Instructions:

1. **Create your pollinator using pipe cleaners.**
2. **Bee**
3. **Bird**
4. **Butterfly**
5. **Bat**
6. **Discuss the roles the pollinators have in the ecosystem and the food supply.**
7. **POLLINATE**
8. **Fly your pollinators around to visit different flowers.**
9. **The pollinator will pick up different colored chalk (pollen) from the different flowers and bring them to other flowers**
10. **DISCUSS**
11. **What if a few of them weren't there?**
12. **What if they all weren't there?**

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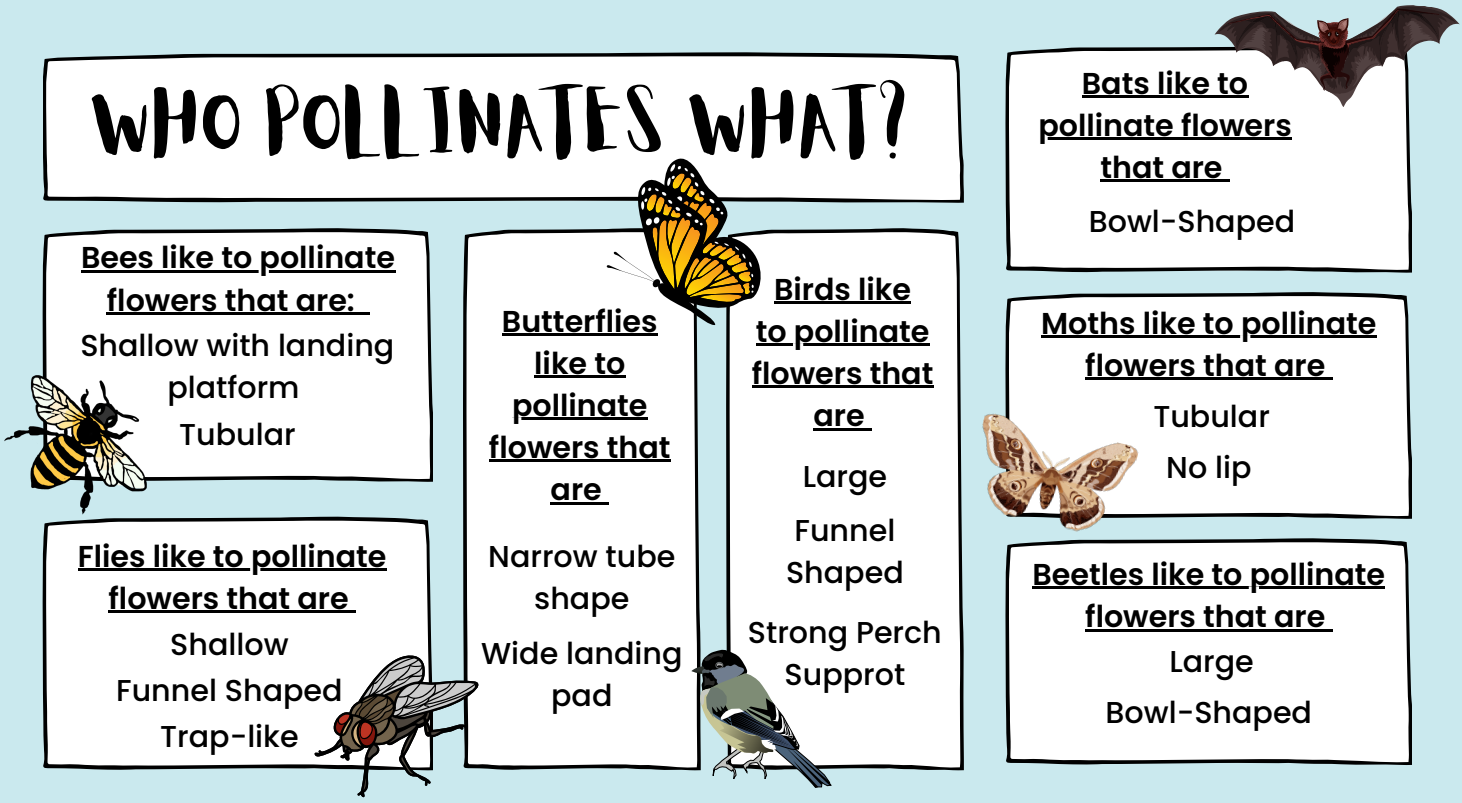

- **Use full page graphic attached**
- **Graphic can be used throughout all activities**
- **Could cover up answers and have students guess as a small activity**

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ACTIVITY 2 – SEED BOMBS

Supplies

- **6 pieces of colored construction paper**
- **3-5 packages of flower seeds**
- **Food Processor/ Blender**
- **Scissors**
- **Water**

You can also use recycled scraps from other projects in the classroom and recycle scraps from this activity.

Instructions

- **Cut each piece of paper into about 1-inch squares and put them into a small dish. Keep each paper color in its own dish.**
- **Fill each dish with water just until the paper is covered. Soak the paper for about 20 minutes.**
- **Take one of the bowls of paper and wring it out about halfway. Put it in the food processor and pulse the paper into a pulp.**
- **Repeat this with all the paper colors and put the pulp back into each bowls.**
- **Sprinkle some seeds into each bowl of paper, mix them in a little, and press the pulp and seeds into balls. If the pulp is a little dry, put a few sprinkles of water on the pulp. It will help it to hold its shape better.**
- **Set the seed balls on a sheet pan to dry overnight.**

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ACTIVITY 3 – GROCERY SHOPPING WITHOUT POLLINATORS

DISCUSSION

**** for older students – switch it up and have them work backwards and figure out why we wouldn't have these foods and what pollinator was needed**

**** the direction of this activity can change based on the level of the students and how the teacher would like to run the activity**

What you need:

- **1 Paper grocery bag/plastic bag for each student/group (any bag/basket will do)**
- **1 of each item for each student/each group**
- **can be plastic items or empty boxes or real items (up to the educator)**

Instructions:

1. **Students can be on their own or in groups. (Depending on how much supplies you have)**
2. **Start with all the grocery food items in the bag. (Some grocery items are listed below)**
3. ***Explain what the items are: all items in the bag need pollinators to be produced/made in one way or another***
4. **Pull one item out of the bag at a time.**
5. ***Ask the students: What pollinator(s) help produce this item?***
6. ***Ask the students: Why wouldn't we have this item without pollinators?***
7. ***** Some items are more complex and may have more steps to explain (i.e. Monster cookie, chocolate milk, cheese pizza, pumpkin pie, etc.)***
8. **After explaining the item, take it and place it aside.**
9. **Repeat the process until all food items are gone.**
10. ***Explain: Without our pollinators, we wouldn't have any of our favorite foods. Our diets would be very different without pollinators.***
11. ***Realize there is nothing left in our grocery bag***
12. **BRAINSTORM: Are there any items you can think of that don't need pollinators?**
13. ***List of some foods that don't need pollinators is below.***

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Grocery list:

Monster Cookie

- **Chocolate chips & M&Ms - Cocoa Plants - Pollinated by *flies***
- **Vanilla – vanilla bean - Pollinated by *bees***
- **Sugar – sugarcane - Pollinated by *flies/wind***
- **Eggs - Chickens eat soybeans which need pollinated. Soybeans are pollinated by *honey bees***

Chocolate Milk

- **Milk from cows – Cows eat alfalfa which need pollinated. - *Leafcutter and honey bees***
- **Cocoa plants (Chocolate Syrup/powder) - pollinated by *flies***

Cheese Pizza

- **Tomatoes – Pollinated by *Honey Bees***
- **Mozzarella Cheese – Milk – Cows – cows eat alfalfa which need pollinated by *leafcutter and honey bees***

Coffee – *for the teachers*

- **Creamer – milk – cows – alfalfa – pollinated by *leafcutter and honey bees***

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Grocery list:

Eggs

- **Chickens eat fruits, veggies, soybeans and other plants which need pollinated**
- **Soybeans are pollinated by *honey bees***
- ***FUN FACT* - Chickens are the number one livestock consumer of soybeans.**

Peppermint

- **A food you don't realize needs pollinated**
- **Pollinated by *bees***

Orange Juice

- **Pollinate Orange Trees by *bees and wasps***

Apple Sauce

- **Apples**
- **Pollinated by *bees***
- **Cinnamon**
- **Pollinated by *Flies/other insects***

Tequila (agave) – for the teachers

- ***Pollinated by bats/wind***

Broccoli

- ***Pollinated by Bumble Bees and Honey Bees***

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Grocery list:

Strawberries

- **Pollinated by *bees/other insects***

Pumpkin Pie

- **Pumpkins**
- **Pollinated by *honey bees, bumble bees, squash bees***
- **Sugar**
- **Pollinated by *bees/thrips***
- **Whipped Cream**
- **Comes from milk – cows eat hay – pollinated by *bees***
- **Cinnamon**
- **Pollinated by *flies/other insects***
- **Nutmeg**
- **Pollinated by *thrips***

Non-pollinator foods (self-pollinating)

- **Bread – Wheat**
- **All leafy greens – lettuces etc.**
- **Onions**
- **Peas & beans**
- **Carrots**
- **Potatoes**
- **Celery**
- **Broccoli**
- **Cauliflower**

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Kid-Friendly Pollinator Facts

- **100+ crops in the US rely on pollinators**
- **75% of flowering plants rely on pollinators for fertilization**
- **Pollinators are responsible for 1/3 of all foods we eat.**
- **There are over 200,000 species of pollinators**
- **Honeybees do a dance to let its hive know how far away the food is and in which direction**
- **½ the world's oils, fibers and raw materials rely on pollinators**
- **Honeybees must visit 5 million flowers to make one pint of honey**
- **To produce 150 pounds of honey, honeybees cover a distance equal to 13 trips to the moon and back.**

Pollinator List

- **Bees**
- **Butterflies**
- **Hummingbirds**
- **Beetles**
- **Moths**
- **Bats**
- **Small mammals like squirrels, mice and monkeys**

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Learning Targets Met:

RL.K.1 With prompting and support, ask and answer questions about key details in a text.

RL.K.3 With prompting and support, identify characters, settings, and major events in a story.

RL.1.3 Describe characters, settings, and major events in a story, using key details.

RL.1.7 Use illustrations and details in a story to describe its characters, setting, or events.

RL.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

RL.2.3 Describe how characters in a story respond to major events and challenges.

L.3.3a. Choose words and phrases for effect.

RL.3.7 Explain how specific aspects of a text's illustrations contribute to what is conveyed by the words in a story (e.g., emphasize aspects of a character or setting).

L.4.3a. Choose words and phrases to convey ideas precisely.

L.4.3b. Choose punctuation for effect

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Other Resources
http://www.wholekidsfoundation.org/bee-activities

https://www.playfactile.com/keu2573x7r/choice

https://www.sites.si.edu/s/topic/0TO1Q000000kmlZWAQ/pollination-investigation
Posters with pollinator profiles on common pollinators

https://www.pollinator.org/pollinated-food