

Pollinator Super Heros!

Session Time:

OPTION 1: OLDER STUDENTS
three 50 minute periods

OPTION 2: YOUNGER STUDENTS
one 50 minute period

Number of Participants:

any

Materials Needed:

OPTION 1: OLDER STUDENTS

- access to internet or printed materials for background research
- poster board - one per student or pair of students
- markers or colored pencils

OPTION 2: YOUNGER STUDENTS

- copies of pollinator masks (bee, butterfly, ant) - at least one per student
- markers or crayons
- popsicle sticks - one per mask
- tape (preferably packing or masking tape)

Objectives:

Participants will:

1. Learn about several pollinators which help pollinate flowers and food.

Background:

Pollination is a process by which pollen from one plant is moved to another plant of the same kind. For example, pollen from a tomato flower is moved to another tomato flower on another plant. When this happens, the genetic material from the first tomato plant is moved to the second plant. The seeds produced by the second plant will be a combination of the two tomato plant's genetic material.

Although some plants rely on wind to transfer their pollen, many plants rely on animals for their pollination. Animals such as bees, butterflies, ants, beetles, wasps, bats and even some birds are all considered pollinators.

*NOTE: In Nebraska bats are insectivores meaning they eat only insects. Bats that eat nectar and are pollinators are found in more tropical ecosystems.

So, who are these pollinator superheroes?

Bees

There are over 20,000 different species of bees worldwide. In North America, we have about 4,000 different species of bees. Bees are one of the most efficient pollinators because their body is designed to carry pollen. They have hairy legs and pollen sacks on their legs to help carry pollen to their hive to eat (and spread it from flower to flower).

Types of bees include bumblebee, honey bee (not native to North America, imported centuries ago for agriculture), mason bees, carpenter bees, leafcutter bees, digger bees. Many species of bees do not have a large hive but rather live a solitary life. Solitary bees do not have a hive to protect so they are not aggressive.

Butterflies

Butterflies visit flowers mainly for the sweet nectar produced by the flowers to attract pollinators. Butterflies use their long mouth called a proboscis. It is shaped like a long straw and is great for lapping up the nectar. When butterflies visit flowers, they often inadvertently get pollen stuck to their legs, wings, and bodies. Then, when they move to another flower, the pollen is spread.

Butterflies taste with their feet. They have taste buds not on their proboscis, but rather on their feet so when they land on a flower they can taste it. They smell with their antennae.

Ants & Beetles

Ants and beetles are not incredibly efficient pollinators. They do not have sticky hairs on their bodies like bees. But there are millions (trillions!) of them. Because there are so many of them, they become important pollinators. Ants can't fly so they often pollinate flowers close to the ground such as strawberries.

Bats

Most bats in North America are insectivores meaning they eat insects (a really important service bats provide!). But, this means that most North American bats do not visit flowers and thus are not pollinators. In warmer climates bats are incredibly important pollinators. Many fruit bat species pollinate avocados, bananas, cashews, coconuts and agave (for making tequila).

Procedure:

Before the Activity

OPTION #1: OLDER STUDENTS

- plan for time online or in a library to facilitate pollinator research
- gather poster board (one per student or pair of students)
- gather markers, colored pencils and other art materials

OPTION #2: YOUNGER STUDENTS

- make copies of the ant, butterfly and bee masks - be sure to use card stock. You may want to make enough of each mask for each child so as to not run out of one specific mask.
- gather markers, crayons and scissors for children to color and cut-out their mask.
- gather popsicle sticks, one per mask.
- gather packing tape (not Scotch tape) to attach popsicle sticks to bottom of the masks.

Doing the Activity

1. Start a discussion with students about pollinators and pollination. Ask questions such as:

- “What is pollination?”

Pollination is the process by which pollen from one flower is moved to another flower of the same kind in order for the second flower to create seeds.

- “How does pollination work?”

Pollination can take place by wind moving the pollen from one flower to another or by the use of a pollinator. Pollinators visit flowers to get food (nectar) and in doing so, they pick up the sticky pollen on their legs. Then, when

they head to another flower for more nectar, the pollen falls off thus moving pollen from one flower to another.

- “What is a pollinator?”

A pollinator is an animal that visits flowers for food and in doing so, helps move pollen from one flower to another.

- “What are some examples of pollinators?”

Bees, butterflies, moths, ants, beetles, flies, and wasps are all pollinators in Nebraska. Worldwide, bats are also pollinators.

2. Explain to students that you are going to be learning about a few of the pollinator species that live in Nebraska. These pollinators are really super heroes because they help in the production of many of our favorite foods (chocolate, apples, bananas, cherries, tomatoes, pumpkins, and even milk!).

3. Depending on student's ages and abilities, choose one of the following options:

OPTION #1: FOR OLDER STUDENTS

Design a Pollinator Superhero!

Ask students to choose one native Nebraska pollinator species to research. Have students visit online sources or library books for information about their pollinator. Students should determine the following things:

- pollinator's name (common and scientific)
- pollinator's habitat (open grasslands, forests, urban, all)
- pollinator's main food sources
- effectiveness as a pollinator (some pollinators, like bees, are more efficient in collecting and spreading pollen than ants or beetles)
- pollinator's predators
- pollinator's favorite kind of flower to visit
- pollinator's population status (are populations declining, steady or increasing?)

4. Ask students to design a superhero figure using their pollinator species. Maybe they make The UnBEElievable Bee Man or Wicked Wasp Woman. Maybe their superhero is The Fantastic Fly Gal or the Marvelous Moth Man.

5. For each Pollinator Superhero created, students should draw their superhero, provide their superhero with a name and describe their pollinator superhero's power (the fastest pollinator in the world, the most precise pollinator, the only pollinator to pollinate a new super food, etc.).

6. Ask students to develop a poster with their superhero's

picture, name and description. Allow time for students to present their new pollinator superhero to the class.

OPTION #2: FOR YOUNGER STUDENTS

Create a Pollinator Superhero Mask

4. If possible, take students outside to look at several different flower species. Ask students to look closely at the flowers. Do they see any insects? What kind? What are the insects doing? (eating nectar or plant leaves, collecting pollen, looking for or building a home, etc.).
5. Ask children if they see the insects flying or crawling to another flower. Explain to children that many of the insect species we see on flowers are responsible for moving pollen from one plant to the next. When they do this, the plants are able to use the pollen to create seeds. This is the process of pollination.
6. Tell students that Nebraska has many pollinator super heroes. Bees, wasps, ants, butterflies, beetles, flies and even moths can help pollinate flowers. This makes each of them super heroes!
7. Explain to students that they are going to be able to become a pollinator super hero. They will get to choose one species - either a bee, butterfly or ant.
8. Allow students to choose one of the masks. Provide students plenty of time to color and cut-out their mask. Students may need help cutting out the mask's eye-holes.
9. Once students are done coloring and cutting out their mask, give each student a popsicle stick to tape to the back of their mask to create a handle. Using masking or packing tape, help students attach the popsicle stick to the bottom of their mask on the back side.
10. Once all students have a completed mask, invite students to go back outside to a flower garden. Ask students to pretend they are a pollinator. Which flower would they like to visit? Will they fly fast between flowers or flutter through the air? Will they stay at one flower for a long time, or quickly move between several flowers?

Extensions

1. Ask a bee keeper to come into class. Ask the visitor to explain how they keep their bees, why they choose to keep bees and what training they had to do it.
2. Take students on a field trip to several different garden areas to explore the different flowers and

pollinators. Be sure to bring a phone or tablet to help in identifying flowers and pollinators. Record your findings, compare and contrast the two sites.

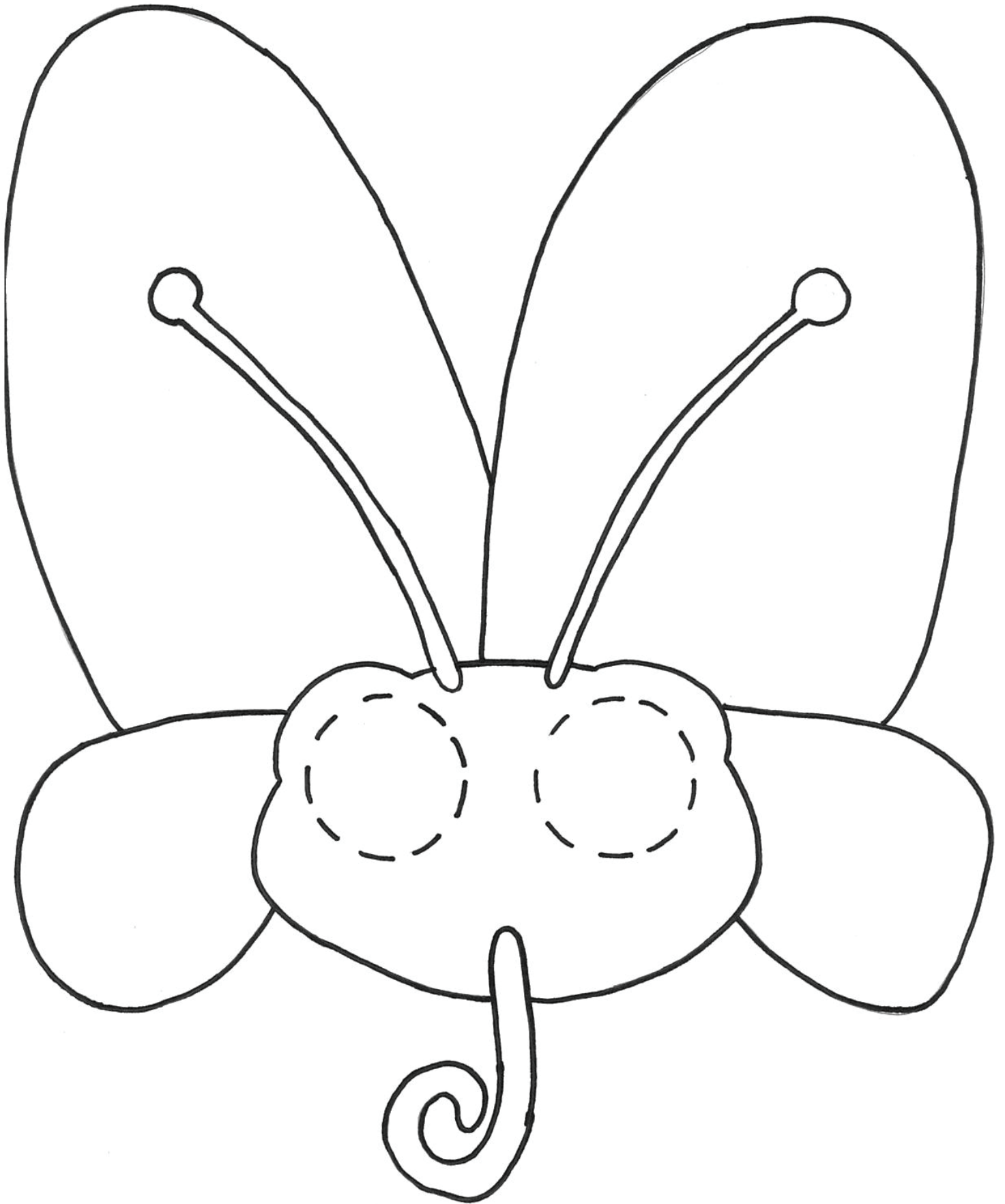
3. Have students keep track of all the foods they eat for one day (or, for younger children, explore one meal as a class). Ask students to determine which foods required a pollinator. Ask students to imagine a world without food pollinated by a pollinator.

Websites

Pollinator Partnership
www.pollinator.org

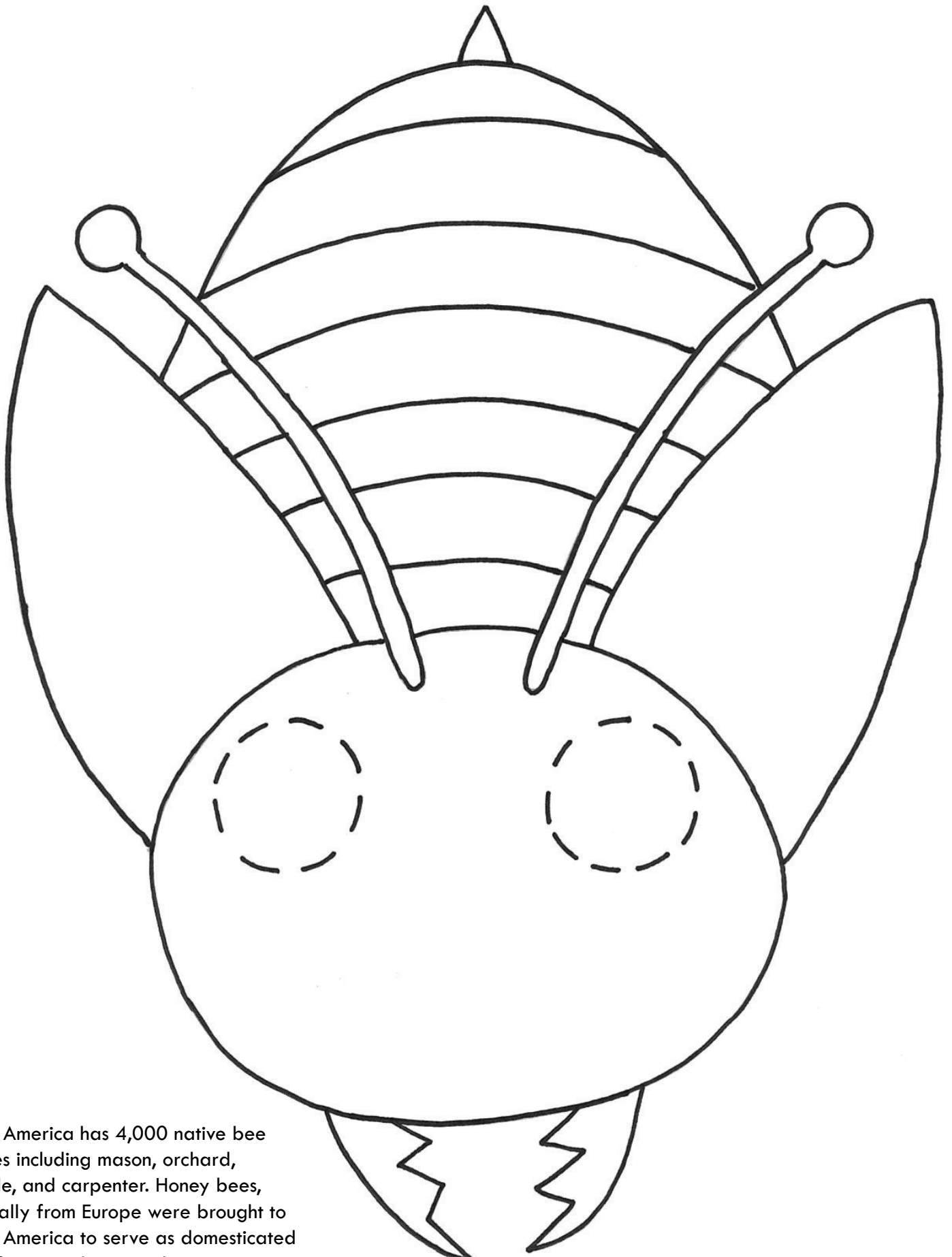
U.S. Department of Agriculture - Insects & Pollinators
www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/pollinate

U.S. Forest Service
www.fs.fed.us/wildflowers/pollinators/



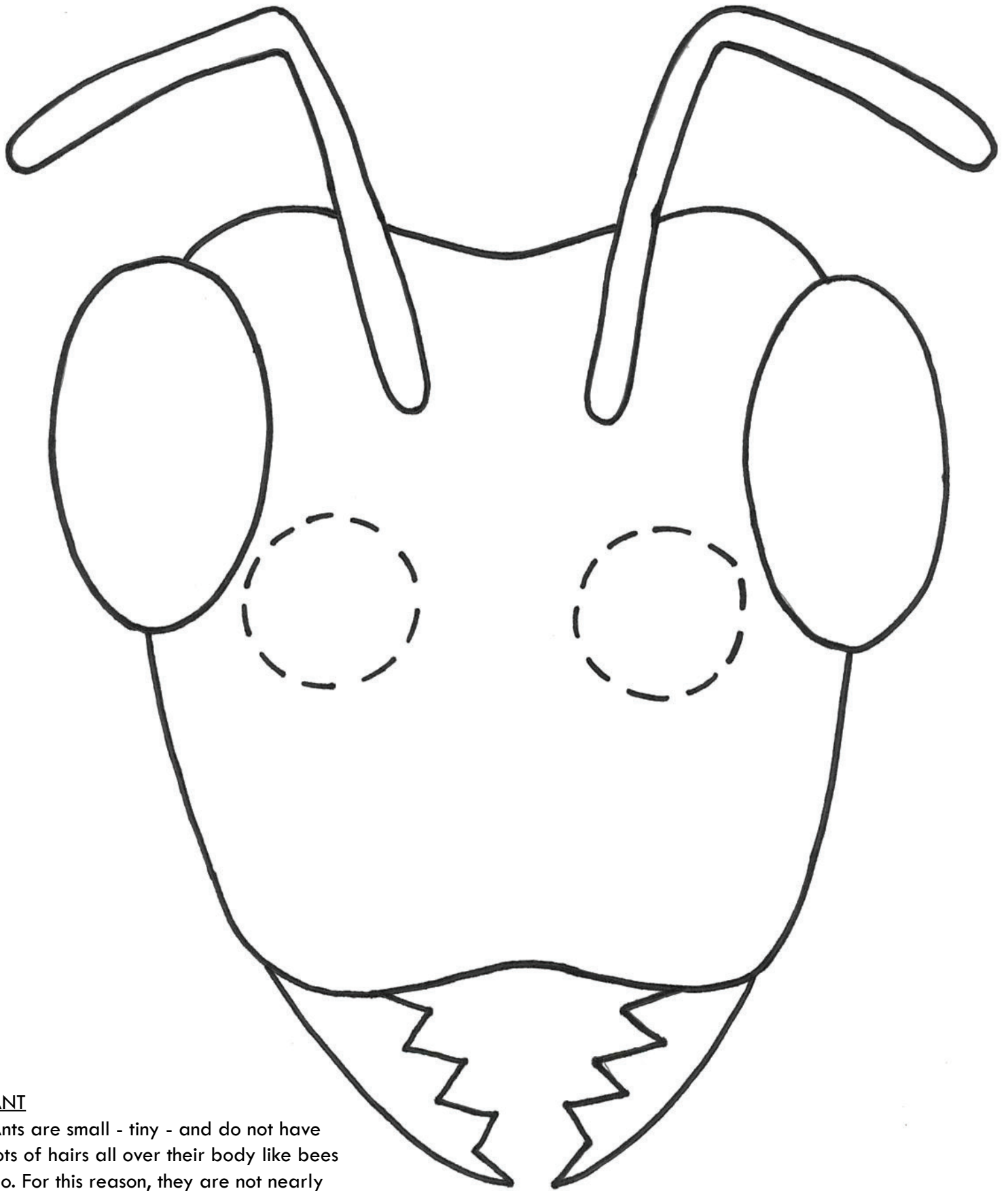
BUTTERFLY

Found throughout Nebraska, butterflies can be identified by four large wings and a long, straw-like tongue perfect for sipping on nectar. Butterflies are often, but not always, brightly colored.



BEE

North America has 4,000 native bee species including mason, orchard, bumble, and carpenter. Honey bees, originally from Europe were brought to North America to serve as domesticated bees for agriculture production. Bees are often black and yellow in color, but can also be green and orange. They eat pollen and some nectar.



ANT

Ants are small - tiny - and do not have lots of hairs all over their body like bees do. For this reason, they are not nearly as efficient at pollinating as bees. But, there are tons of ants. Because of their numbers, ants pollinate a fair number of flowers. They typically visit flowers which grow low to the ground. Ants that visit flowers eat nectar.

You can bee a pollinator super hero!

Pollinators are really important in producing many of the foods we eat. Strawberries, bananas, apples, blueberries, almonds, cashews and chocolate all require the help of a pollinator to be produced! Plus, many wildlife species need pollinators to help produce their food, too. But many of our pollinators are declining in numbers.

Be a pollinator super hero! Try some of these simple, but important, steps to help conserve our pollinators.

- **PLANT POLLINATOR FRIENDLY PLANTS**

Pollinator-friendly plants are often native to your area and have lots of pollen and nectar. Check out the Pollinator Partnership website - www.pollinator.org - to learn what plants are perfect for pollinators in your area.

- **PROVIDE SHELTER**

Even small insects need homes. Consider putting up a bee or butterfly house in your backyard. Some important bee pollinators need brush piles or bare ground to create their nests. Learn more about all the different pollinators in your area and what kinds of shelter they need. Then work to create a pollinator pad!

- **AVOID INSECTICIDES**

Some insecticides are necessary - like when there a ton of mosquitoes biting! But, too many insecticides are not good for pollinators. Try using as little insecticide as you can. Also, spray insecticides in the evening when most pollinators are not buzzing around.

- **DONATE TO A CONSERVATION ORGANIZATION.**

There are lots of organizations doing great work to help conserve and protect pollinators. Consider donating or volunteering for these groups.



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