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Introductions

SUPER FUN Activity! - Debbie

MUNCHIE Pollinator Activity - Susan

Overview of NACD Pollinator Material -
resources - educators guide and worksheets
- Susan

EXCITING Activities in student booklets -
Susan

FABULOUS Activity from Debbie

DOOR PRIZES!!!!!!





SUPER FUN Activity! - Debbie



INFO COMERCIAL FOR THE POLLINATOR BACK PACK!!
\$9.00 FROM THE NACD MARKETPLACE! nacdstore.org





MUNCHIE Pollinator Activity - Susan



INFO COMERCIAL FOR THE POLLINATOR BACK PACK!!
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Overview of NACD
Pollinator Material -
resources -
educators guide and
worksheets - Susan



Pollinators Help Us Have:

Honey



Bees are pollinators, and they make honey. A bee gathers nectar from a lot of flowers. Nectar is sugar water that flowers make. The bee takes the nectar to its hive. Then the bee uses its wings to move the air and dry up most of the water. What's left is honey!

Do you eat honey?
 YES NO

Orange Juice

Oranges are just one of many fruits that need pollinators. Many vegetable plants need pollinators too. Trees, plants and flowers can't move around by themselves. Pollinators move pollen from flower to flower so that they can make seeds and fruit.

Do you drink orange juice? YES NO

Jeans



Most jeans are made with cotton. Some cotton plants are pollinated by bees!

Do you wear jeans?
 YES NO

Cheese

Milk comes from cows. Cows eat alfalfa hay. Alfalfa needs to be pollinated!

Do you eat cheese?
 YES NO

Answer Key: Pg. 2: Circle Pollinators: hummingbird, beetle, fly, bat. Check Items: all of them

Ask MAXINE!



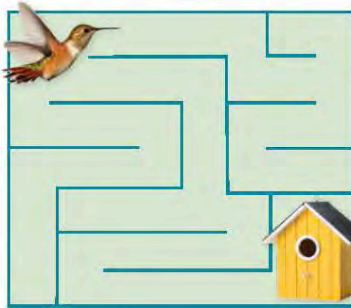
Question: I am glad we have pollinators. We need them! Is there anything I can do to help pollinators where I live?

Answer: You are right; we all need pollinators. There are lots of things you can do to help them. You can:

- Put bird feeders and bird baths in your yard or on your deck.
- Plant native flowers in your yard or in pots on your deck.
- Make homes for birds, bats or bees. You can make them out of recycled items.

Maxine worked for NACD for 47 years. That's why we always ask Maxine.

Help the bird find the bird house you put in your yard.



LOCAL HEROES

Your Hardworking POLLINATORS

Level 1 Grades K-1



Special thanks to the NACD SBE Committee and reviewers:
 Project Manager: Susan M. Schultz, NACD: ssm@shippenaero.org
 Content Writer/Researcher: Tina D. Southard
 Booklet designed by Willow Marketing Indianapolis, IN
 Visit <http://www.nacdn.org/education/resources/local-heroes>
 for the educator's guide, additional worksheets and resources.
 Visit <http://www.pollinator.org> for additional resources.
 Booklet designed for use with Grades K-1
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What is a Pollinator?

Hi! My name is Haley the Hummingbird. I am a **POLLINATOR!**

Pollinators are small animals like birds, bats, bees and bugs. We like to eat the **pollen** or nectar found in flowers.

Pollen is STICKY!!

While we are eating, **pollen** gets stuck to our bodies. Pollinators move from flower to flower looking for food. We carry **pollen** with us.

This bee has a lot of sticky pollen on its body!

If you look very close, sometimes you can see pollen. Pollen looks like tiny grains.

Can you see the pollen grains on this flower? **Circle** the pollen grains you can see.

How many pollen grains can you count? _____

Pollinators Are Hardworkers!

Hello there! I'm Harold the Hairy Honeybee... bzzzz...

and I am a **HARD WORKER!** Bzzzz... bzzzz... I can flap my wings **230** times every second. We honeybees have hair on our bodies. We carry a lot of **pollen** in our hair. Some of us bees have **pollen** baskets on our legs. Bzzzz... We stuff them as full as we can. I can carry my own weight in **pollen** and nectar, and still fly... bzzzz... bzzzz...

How much do you weigh? _____

Do you think you could carry that much food and still walk?
 YES NO

Can you see the pollen basket on the back leg of the bee?

Count how many times you can flap your arms in 1 second. _____



What is Pollination?

Hi! I am so happy to meet you! My name is Bob the Busy Beetle. I am a **POLLINATOR!** What is your name?

Pollination is a very important job. It happens when **pollen** is moved from one flower to another. Flowers use this **pollen** to make seeds that grow into fruit. Since I move **pollen** around **YOU** have yummy fruits like apples and berries to eat!

Since I work so hard to help you, can you help me? Please **Color me!**



Circle the animals that are pollinators



Hello! I'm Becca the Butterfly,

Pollinators Are Heroes!

and I am a **HERO!** **Pollinators** are heroes because they do things to help us all day. **Pollinators** work to make sure that we have plenty of crops. **Pollinators** help us have healthy fruit and vegetables to eat. All of the plants that are **pollinated** give us air to breathe.

FUN FACT: Butterflies taste with their feet!

Put an **X** by each item you think pollinators help us have



Help the bee find the pollen in the flower.

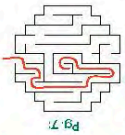


Fig. 7: 1

Answer Key: Fig. 1: A: Honeybee on strawberry flower, eating strawberry. Fig. 2: Honeybee - The pollinator has lots of little hairs. Entirely - The pollinator likes wildflowers. Bees - The pollinator likes to eat the petals. Eat - This pollinator eats insects. Fig. 3: Bees breathe, deny pollinating, foods, healthy, medicine, plants, pollinate, roots, soil. Fig. 4: Pollinators are Heroes.



Special thanks to the NACD SAGE Committee and reviewers:
 Project Manager: Susan M. Schulte, NACD (susan@shippenahe.org)
 Content Writer/Researcher: Tessa D. Southward
 Booklet designed by Willow Marketing and Design, IN
 Visit <http://www.nacdn.org/education/resources/book-heroes>
 for the educator guide, additional worksheets, and resources.
 Visit <http://www.pollinator.org> for additional resources.
 Booklet designed for use with Grades 2-3
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Ask



Author created by NACD for 47 years. That's why we always ask Maizee.

Question: It seems like most pollinators are pretty small. I would like to know what the smallest pollinator is and what the largest pollinator is.

Answer: One of the **smallest** pollinators is *Perdita minima*. It is a tiny bee found in the southwestern United States. This bee is less than two millimeters long! It eats the nectar and pollen of wildflowers. It likes to build its nest in sandy desert soils. One of the **largest** pollinators is the **black and white ruffed lemur**. On the island of Madagascar, it is the main pollinator of the Traveler's Palm Tree. The flowers on these trees have very tough leaves around them.



Perdita Minima on a Carpenter bee's head!

This lemur is the only animal with the strength to crack the leaves and get to the pollen in the flowers!



Level 2 Grades 2-3



A honeybee is a **pollinator**. **Pollinators** visit flowers to find food.

While the **pollinator** is eating, **pollen** from the flower may stick to its body. As the **pollinator** moves from flower to flower, the **pollen** it is carrying also gets moved from flower to flower.

What do Honeybees have to do with Strawberries?

POLLINATION!!

Pollen looks like tiny grains.

Plants use **pollen** from other plants to make seeds and fruit - like strawberries!

A lot of the good food we eat comes from plants that have been **pollinated**.

Which is First??

Look at each picture. **Number** each picture in the order that you think they happen.

Meet Some Pollinators

A **pollinator** is an animal that carries **pollen** on its body from one flower to another. **Pollinators** visit flowers to drink nectar or eat **pollen**. Some examples of **pollinators** are: birds, bees, beetles and bats.

Pollinators help **pollinate** more than **1,200** crops. That means that **1** out of every **3** bites of food you eat depends upon **pollinators**!

Draw lines to match the pollinator with the description of how it collects pollen.

- Beetle**: This pollinator likes wildflowers. It picks up small amounts of pollen as it looks for nectar. It has long skinny legs and picks flat shaped flowers that help give it a landing pad. **Pollinator Point:** This pollinator tastes with its feet!
- Bat**: This pollinator eats insects, flower parts and pollen at night. It gets pollen on its face while eating. **Pollinator Point:** This pollinator migrates over a thousand miles every spring!
- Honey Bee**: This pollinator likes to eat the petals, pollen and nectar found in flowers with a strong smell. Pollen falls onto its body as it eats. **Pollinator Point:** These pollinators have been nicknamed the "mess and soil" pollinators!
- Butterfly**: This pollinator has lots of little hairs on its body. Pollen sticks to the hairs. It moves the pollen from the hairs to a pollen basket on its hind legs. **Pollinator Point:** Even the eyes of these pollinators have hairs!



ENDANGERED

Several species of bats are endangered. Indiana bats are one of them. These bats can be found in most states in the eastern half of the U.S. Many of these bats hibernate in caves in Indiana.



Working after DARK

Bats are pollinators that work at night while we are sleeping. Bats are a nocturnal animal; they are busy at night, and they rest during the daylight hours. They get around in the dark by using echolocation.

Echolocation works like the sonar used by submarines under water. Bats use echolocation to fly and find food in the dark. The bats make noises that send out sound waves; when the waves hit an object they bounce back to the bats' ears. Using echolocation, bats can navigate as well as find insects to eat and flowers to visit. As bats reach into flowers to get to the nectar inside them, pollen clings to their head. The bats spread this pollen around as they move from flower to flower.

Visit <http://www.msb.unm.edu/mammals/batcatL/html/speciesaccounts.html> to hear bat sounds!

BAT FACTS

- Bats are the **ONLY** mammals that can fly.
- Several species of bats are on the federal **ENDANGERED** species list.
- Female bats usually give birth to **ONE** offspring per year.
- Using **ECHOLOCATION**, bats can detect objects as thin as a human hair in complete darkness.

*What is Echolocation? ASU School of Life Sciences <http://siskabio.gsu.edu/echolocation>

NAVIGATION & POLLINATION

Does a fruit smoothie sound good? How about a tropical smoothie with banana, mango and pineapple? We need some bat pollination for that smoothie! Help the bat get to the flowers on the banana tree, mango tree and the pineapple plant so we'll have plenty of fruit.



HIBERNATION: to be in a dormant state resembling sleep over the winter while living off reserves of body fat, with a decrease in body temperature and pulse rate and slower metabolism.

Bats hibernate upside down!!



POLLINATION BY ANIMALS IS NOT ONLY IMPORTANT TO OUR ECOSYSTEMS AND FOOD SUPPLIES, IT IS ALSO VALUABLE ECONOMICALLY.

Fill in each blank with the correct number from the box at the bottom of the page.

A single southeastern blueberry bee can pollinate 50,000 blueberry flowers in one year. This one bee gives us \$ _____ worth of blueberries per year.

The yearly value of honey bee pollination to the agricultural plants they pollinate in the U.S. is estimated at over _____ dollars.

_____ % of the world's food crops rely on animal pollinators.



Imports: Bananas, pollinated by fruit bats and birds, is the #1 fresh fruit eaten in the U.S. Over _____ tons of bananas were imported in 2011.

Exports: In 2010 the U.S. exported _____ metric tons of pineapples. Hummingbirds are one of the pineapple pollinators.

The Midge fly pollinates cocoa trees. Cocoa is used to make the chocolate we love to eat. Chocolate sales in the U.S. were over \$ _____ billion in 2010.



17

35

75

4,000

99,075

9,000,000,000



Buzz or Bunder: Fact or Fiction

Write the number of the statement on the left next to the correct fact or fiction statement that it matches on the right.

- There are more than 200,000 species of animals that are pollinators.
- Pollinators that are active during the day are usually attracted to flowers that are brightly colored.
- Pollen is yellow.
- The world's chocolate supply depends upon pollination by bats.
- A lot of the commodities we make use of each day wouldn't exist without pollinators.

Fact: Coffee in the morning and soft cotton sheets at night are just two of the things considered worth having by a lot of people.

Fiction: The nutrition that pollinators seek comes in a variety of colors.

Fact: Most are insects; only about 1,000 of the species are birds, bats, or other small mammals.

Fiction: The midge, a fly with two wings, pollinates cacao flowers.

Fact: Nighttime pollinators are attracted to plants with strong odors.

Answer Key: 1 & 4 are Facts; 2, 3, 5 are Fictions.

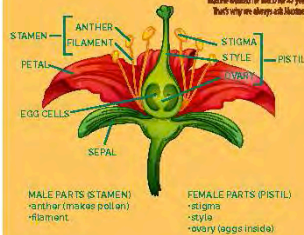
1. Fact: There are more than 200,000 species of animals that are pollinators.
2. Fiction: The nutrition that pollinators seek comes in a variety of colors.
3. Fact: Most are insects; only about 1,000 of the species are birds, bats, or other small mammals.
4. Fact: The midge, a fly with two wings, pollinates cacao flowers.
5. Fact: Nighttime pollinators are attracted to plants with strong odors.



Ask MAXINE!



Question: Since flowers have male and female parts, does that mean that some flowers are male and some flowers are female?



Answer: Some flowering plants are male, some are female, and some are both. They all have one thing in common - they have to be pollinated to reproduce. Why is this important to us? We have to have plants to breathe; we have to have plants to eat; we have to have plants to build homes, etc.

For pollination to happen, pollen has to make it from the anther (the male part which produces the pollen) to the stigma (the female part which leads to the ovary).

This leads us to why pollinators are so important to us. Most plants can't move on their own, so over 70 percent of all flowering plants, including crops, rely on animal pollination. Other methods of pollination include wind and hand pollination.

Remember - we have to have plants so we HAVE to have pollinators!



Special thanks to the MID-58E Committee and reviewers:
Project Manager: Susan M. Schute, MID-58E@dnr.maryland.gov
Content Writer/Researcher: James D. Southland
Book Designer: Jody Miller, Marketing, Indrapacific, Inc.
Visit <http://www.nacdd.org/publications/conservationdistricts> for the book to be purchased, additional work sheets and more.
Visit <http://www.pollinator.org/> for additional resources.
Book designed for use with Grades 6-8
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LOCAL HEROES
Your Hardworking
POLLINATORS

Level 4 Grades 6-8



All About Pollinators

Use a separate sheet of paper to **list** all of the words you can find in this pollinator. All of the words can be found in this booklet. Check your answers and email the total number of words you found to stewardship@nacdn.org. Visit <http://www.nacdn.org/education/resources/local-heroes> for results.

Bees have **five eyes**, **three simple eyes** and **two compound eyes**.

Most bee species like warm weather, but there are some that live in the Arctic where annual winter temperatures can reach **-27 degrees Celsius**.

American honeybees pollinate more than **90** commercial crops in the United States.

Some flowers can hold a static charge until visited by a pollinator. Bumblebees can sense static electricity and use it to choose which flowers to seek out for food.

North America is home to **4,000** species of native bees.



Bees communicate by dancing! For example, the **"waggle dance"** is used to communicate the location of a food source and includes two loops with a straight path in the middle. The direction of the straight path indicates the direction of the food source.







Pollinators are small animals like birds, bats, bees and bugs.



Los polinizadores son animales pequeños como pájaros, murciélagos, abejas e insectos.



Pollinators do many things for us. We need to do what we can to help pollinators.

Los polinizadores hacen muchas cosas por nosotros. Debemos hacer lo que podemos para ayudar a los polinizadores.





[http://
www.nacdnet
.org/
education/
resources/
local-heroes](http://www.nacdnet.org/education/resources/local-heroes)





Level 1-Grades K-1

Local Heroes: Your Hardworking Pollinators

Booklet Objectives

Students will:

- Realize that humans need food in order to live and grow and that a large portion of their food comes from plants.
- Gain an awareness of the dependence of plants upon pollination.
- Deduct which items utilized in their daily lives are dependent upon pollination.
- Explain the steps in animal pollination.
- Recognize that humans can have a positive impact their environment by making changes beneficial to pollinators.

Next Generation Science Standards

Disciplinary Core Ideas

K. Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment

LS1.C: Organization for Matter and Energy Flow in Organisms

ESS2.E: Biogeology

ESS3.A: Natural Resources

ESS3.C: Human Impacts on Earth Systems

ETS1.B: Developing Possible Solutions



1. Structure, Function, and Information Processing

LS1.A: Structure and Function

LS1.B: Growth and Development of Organisms

Vocabulary Words

Nectar—the sweet liquid that flowering plants produce as a way of attracting the insects and small birds that assist in pollination.

Pollen—a powdery substance produced by flowering plants that contains male reproductive cells. It is carried by wind and insects to other plants, which it fertilizes.

Pollination— to transfer pollen grains from the male structure of a plant anther to the female structure of a plant stigma and fertilize it.



Pollinators and Me

Activity Objectives

Students will:

- Realize the correlation between the food they eat and pollinators.
- Relate the ways in which they function to the ways in which pollinators function.

Materials

- Pollinators and Me hand out (pg 8)
- Food items that are a result of pollination (apple slices, grapes, cheese cubes, cherry tomatoes, strawberries, etc.)
- Pictures of pollinators: - page 24
 - bee eating pollen
 - butterfly using proboscis to drink nectar
 - hummingbird



Discussion

- Define pollinator for students: Pollinators are small animals like birds, bats, bees and bugs that eat the pollen or nectar found in flowers. Show picture of bee eating pollen, pg 24.
- Discuss how we eat with our mouths and pollinators eat with different body parts; mouth, beak, proboscis, etc. Show picture of butterfly drinking nectar with proboscis (the long or tubular mouthparts of some insects, worms, and spiders, used for feeding, sucking, and other purposes) pg 24.

Instructions

1. After discussing how pollinators eat, place the food items you have chosen around the room. Tell the students what items are available. Invite the students either individually or in small groups to go and get a food item and return to their seat.
2. While the students eat have a discussion on what body parts they used to collect their food. Discuss what body parts pollinators use to collect their food; legs, wings. Show students picture of hummingbird, pg 24
3. Explain to students how pollination occurs: pollen is moved from one flower to another. Flowers use this pollen to make seeds that grow into fruits, vegetables and grains that we can eat.
4. Distribute copies of the "Pollinators and Me" handout for students to complete.



Pollinators and Me

Pollinators get hungry and have to eat just like we do. Pollinators eat pollen. Draw a circle around the body part that you use to eat. Draw a circle around the body parts that the pollinators use to eat.

Pollinators have to move around to find food just like we do. Draw a square around the body parts you use to move around and find food. Draw a square around the body parts that the pollinators use to move around and find food.



Pollinators help us have many good foods to eat. Draw a circle around the foods that you like to eat. Write the name of the food on the line by the picture.









apple

cheese

carrot

banana







Bee, Bird, Bug & Butterfly Catcher

What is a pollinator? _____

What is pollination? _____

Why do we need pollinators? _____

 <p>bee</p>	<p>True or False? Bees carry pollen in a pouch under their head.</p>	<p>True or False? Bees have no sense of smell.</p>	 <p>beetle</p>
<p>True or False? Bees are hairy!</p>	<p>True! Bees have hair all over their bodies. Even their eyes are covered with tiny hairs.</p>	<p>False! Bees carry pollen in pollen baskets on their hind legs.</p>	<p>True or False? Beetles are messy eaters.</p>
<p>True! Bees have hair all over their bodies. Even their eyes are covered with tiny hairs.</p>	<p>False! Bees carry pollen in pollen baskets on their hind legs.</p>	<p>False! Beetles like to eat the petals, pollen and nectar found in flowers with a strong smell.</p>	<p>True! In fact, beetles have been nicknamed the "mess and soil" pollinators!</p>
 <p>hummingbird</p>	<p>True! When hummingbirds fly, their wings often make a humming sound.</p>	<p>True! Butterflies have skinny legs and pick flowers that help give them a landing pad.</p>	 <p>butterfly</p>
<p>True or False? Hummingbirds weigh about the same as a small dog.</p>	<p>False! Many hummingbirds weigh about the same as a penny!</p>	<p>True! Butterflies taste with their FEET.</p>	<p>True or False? Butterflies taste nectar with all proboscs.</p>

National Association of Conservation Districts (NACD)
nacdn.net.org/education

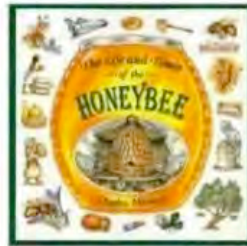


Literature Connections



Are You a Bee?

By Judy Allen (Author)
Age 5-8
ISBN-13: 978-0753458044



The Life and Times of a Honey Bee

By Charles Micucci (Author)
Age 5-8 |
SBN-13: 978-0395861394



What is Pollination?

By Bobbie Kalman
Age 7 and up
ISBN-13: 978-0778732860



Honey in a Hive

By Anne Rockwell (Author)
Age 4-8
ISBN-13: 978-0064452045



The Magic School Bus Inside a Beehive

By Joanna Cole (Author)
Age 4-8
ISBN-13: 978-0590257213



Conservation Habits = Healthy Habitats

By NACD Pre K—Grade 3
Purchase from the NACD Marketplace www.nacdstore.org



Local Heroes—Your Hardworking Pollinators

Resources and Information

Photo by Susan
Henning, OK



Pollinator Partnership

What is pollination/pollinator?
Why are pollinators important to us?

Types of pollinators

<http://www.pollinator.org/Resources/What%20is%20a%20pollinator.pdf>

List of additional resources

<http://www.pollinator.org/resources.htm>

Xerces Society

Pollinator Conservation: <http://www.xerces.org/pollinator-conservation/>

Fact Sheets: <http://www.xerces.org/fact-sheets/>

Butterfly Conservation

<http://www.xerces.org/butterfly-conservation/>

**POLLINATOR
PARTNERSHIP**

DID YOU KNOW??

Worldwide, approximately 1,000 plants grown for food, beverages, fibers, spices, and medicines need to be pollinated by animals in order to produce the goods on which we depend.

Bee Friendly Certification for Farmers and Gardeners

<http://pfspbees.org/bee-friendly-farming/certification>

Crop Life

<http://www.croplifeamerica.org/pesticide-issues/protecting-our-pollinators>

America's Heartland

<http://www.americasheartland.org/pollinators/index.htm>



USDA—Natural Resource Conservation Service

How Farmers Help Pollinators

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/pollinate/farmers/>

How Gardeners Can Help Pollinators

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/pollinate/gardeners/>

How NRCS is helping Pollinators

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/pollinate/help/>

More information on Pollinators

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/pollinate/info/>







pollinators

help pollinate
more than
1,200 crops.

That means that
1 out of every **3**
bites of
food you
eat depends upon

pollinators!



A Good Pollinator...

Likes to travel!

A pollinator needs to be on the go a LOT to move pollen around so that we get to enjoy the food and other necessities it provides for us.



Is hairy!

The more hair, scales or feathers a pollinator has, the more pollen can stick to its body and be carried around to other flowers.

Has a specialized mouth

made for collecting nectar!



Visit <http://www.naccinc.org> for a copy of National Food Heroes: The Education Guide, additional worksheets and resources.

Visit <http://www.pollinator.org> for additional resources.



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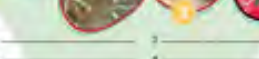
Bees... Butterflies... Birds... and Bats - Your Hardworking Pollinators!

Most plants depend upon pollinators to reproduce and we depend upon plants. In fact, one out of every three bites of food we take begins as a plant that was pollinated! Healthy food isn't the only thing we need pollinators for. Caffeinated coffee, chocolate, vanilla and bread also come from plants that must be pollinated.

Pollination begins when a pollinator visits a flower in search of food in the form of pollen or nectar. Pollinators are like us—they have to eat. If they don't function very well, plants can't reproduce. In fact, one out of every three bites of food we take begins as a plant that was pollinated!

What Is It?

These pollinators work hard every day to help plants reproduce. They fly from flower to flower, carrying pollen from one flower to another. This process is called pollination.



1 _____
2 _____
3 _____
4 _____

LOCAL HEROES Your Hardworking POLLINATORS

A POLLINATOR'S MOST IMPORTANT JOB IS TO MOVE POLLEN from one flower to the next. It can be found on the head of a flower, the stamen. The pollen must be moved to the female part of the flower, the stigma & ovary ("ovule maker").

- Like to travel: A pollinator needs to be able to go a LOT to move pollen around!
- It is busy! The more busy, scales or feathers a pollinator has, the more pollen it can collect on its body to be moved around.
- Has a specialized mouth made for collecting nectar!



More Than HONEY

Bees are a very hardworking pollinator. They fly from flower to flower and provide us with honey. For example, they pollinate alfalfa. Alfalfa seedlings help us without bees, we wouldn't have had alfalfa to feed our cows!

JOIN THE POLLINATOR MOVEMENT! Bees are a very hardworking pollinator. They fly from flower to flower and provide us with honey. For example, they pollinate alfalfa. Alfalfa seedlings help us without bees, we wouldn't have had alfalfa to feed our cows!

A **CRUCIAL** job of a pollinator is to move pollen from one flower to another. This process is called pollination. The pollen must be moved to the female part of the flower, the stigma & ovary ("ovule maker").

DOWN									
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10



What Is It? A BUTTERFLY!

- PROBOSCIS** - A butterfly's long, tube-like mouthpart that it uses to sip nectar from flowers.
- WINGS** - Butterflies have two pairs of wings that allow them to fly.
- EYES** - Butterflies have large, compound eyes that help them see.
- ANTENNAE** - Butterflies have long antennae that they use to feel and smell.

We Need POLLINATORS



- ACROSS**
- 1. A _____ pollinator that can fly and is very important.
 - 2. One of the _____ that you can see in a garden.
 - 3. A _____ that is very important to many plants.
 - 4. A _____ that is very important to many plants.



- DOWN**
- 1. Many _____ are very important to many plants.
 - 2. It is the _____ of the plant that is very important to many plants.
 - 3. It is the _____ of the plant that is very important to many plants.
 - 4. The _____ of the plant that is very important to many plants.
 - 5. It is the _____ of the plant that is very important to many plants.

Pollinators NEED US

The pollinator population in North America has been declining for decades. This is a big problem because many plants and animals depend on pollinators to reproduce.

- FEED THEM!** Feed pollinators with flowers that they like to eat.
- GIVE THEM A DRINK OF WATER.** Keep them hydrated with water.
- PROVIDE THEM WITH A HOME!** Many pollinators need places to live and raise their young.
- DON'T 'KILL' POLLINATORS!** Avoid using pesticides that can harm them.
- OUT DOWN ON THE AMOUNT OF PESTICIDES AND OTHER POISON SPRAYS USED AROUND YOUR HOME AND IN YOUR YARD.** Learn about safe ways to control pests.



MORNING NOON NIGHT

*Our Future Flies On The
Wings Of Pollinators*



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MORNING NOON & NIGHT

Our Future Flies On The Wings Of Pollinators

LOCAL HEROES
Your Hardworking POLLINATORS





**HELP
FEED
US**

**LOCAL
HEROES**
Your Hardworking
POLLINATORS



**HELP
CLOTHE
US**



NACDSTORE.ORG



Special thanks to conservation district staff

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Thank you to our reviewers and
Sponsors and reviewers of the project.

**POLLINATOR
PARTNERSHIP**



POSTER Contest

- <http://www.nacdnet.org/education/contests/poster/2015-poster-contest/2015>



2015 is the 60th Anniversary of
Soil and Water
Stewardship Week

April 26-May 3, 2015





Local Heroes Your Hardworking Pollinators

Pollinator Resources



The National Association of Conservation Districts (NACD) in collaboration with the NACD Auxiliary sponsors a yearly poster contest. You must participate with your local conservation district they will send the winning entries to their state contest. State winners are then judged at the national level. These resources are also used for local & state essay and speech contests. Visit <http://www.nacdnet.org/about/districts/directory> to find your local conservation district.
NACD education pages: <http://www.nacdnet.org/education/resources>
NACD Poster Contest: <http://www.nacdnet.org/education/contests>

Resources for poster, essay, speech contests or other pollinator projects

Visit these website links for information for your project. Most of these links will have additional pollinator resource links. This is only a small sample. There are many more resources. Check you local library.

Pollinator Partnership

What is a pollination/pollinator?
Why are pollinators important to us?
Types of pollinators
<http://www.pollinator.org/Resources/What%20is%20a%20pollinator.pdf>

Xerces Society

Pollinator Conservation: <http://www.xerces.org/pollinator-conservation/>
Fact Sheets: <http://www.xerces.org/fact-sheets/>

Pollinators and their importance to you.

In researching about pollinators you will find a variety of opinions from a variety of sources. Pollinators are important to each citizen. There are many reasons for pollinator decline. We hope that you focus on solutions to increase pollinators and their habitats. Providing accurate information is essential. Find out what pollinators are in your area and see what your community is doing to help them.

Photo by Henning, OK



DID YOU KNOW??

- Worldwide, approximately 1,000 plants grown for food, beverages, fibers, spices, and medicines need to be pollinated by animals in order to produce the goods on which we depend.
- In the United States, pollination by honeybees and other insects produces \$40 billion worth of products annually!

Source: Pollinator Partnership www.pollinator.org



Eco-regional Pollinator Planting Guides



Great resource to learn about your area and what is best to plant for pollinators.
Pollinator Partnership
<http://www.pollinator.org/guides.htm>

The Power of Pollinators

3 downloadable PowerPoint's and additional resources

- 1) Why Pollinators Matter



- 2) Bee Biology & ID



- 3) Gardening for Pollinators

http://ocvn.osu.edu/sites/d6-ocvn.web/files/sites/drupal-ocvn.web/files/PoP_flier_final_version.pdf



Photo by Crouch, UT

Butterfly Conservation:
<http://www.xerces.org/butterfly-conservation/>

Crop Life
<http://www.croplifeamerica.org/pesticide-issues/protecting-our-pollinators>

America's Heartland
<http://www.americasheartland.org/pollinators/index.htm>

Ohio State University Bee Lab
http://osu.campusguides.com/agnic_bees_pollination

Research
<http://www.pollinator.org/research.htm>

Pollinator Live Lesson Plans and Resources
<http://pollinatorlive.pwnet.org/teacher/lessons.php>

Citizen Science Sites
<http://www.xerces.org/educational-resources/#citizen>

Plants and Animals – Partners in Pollination

And 4 lesson plans
http://www.smithsonianeducation.org/educators/lesson_plans/partners_in_pollination/lesson_2_main.html

EPA's Pollinator Information
<http://www2.epa.gov/pollinator-protection>

USDA NRCS Pollinators and Plants
<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/plantsanimals/pollinate/>

USDA Forest Service Pollinator Resources
<http://www.fs.fed.us/wildflowers/pollinators/>

Bee Friendly Certification for Farmers and Gardeners
<http://pfspbees.org/bee-friendly-farming/certification>

Bats Are Pollinators, Too; Bat Conservation International
<http://batcon.org/pdfs/stories/PollinatorBrochure2010Web.pdf>

"Good guy"
pollinator masks!
<http://kidsgrowingstrong.org/print/masks>
 Great site for a butterfly, bee, bat and hummingbird mask. Be a good guy and a pollinator! Will help them understand that lots of critters can be pollinators!



Pollinators - Putting Food on the Table on Vimeo movie
<https://vimeo.com/39219>

BEE DETECTIVE – WHO IS BEHIND DECLINING BEE POPULATIONS?
<https://www.natureworkseverywhere.org/#resources/527be724c4b7765f18581cb6>



NACD Education Materials
Local Heroes Your Hardworking Pollinators



Student booklets
 Level 1—Grade K-1
 Level 2—Grade 2-3
 Level 3—Grade 4-5
 Level 4—Grade 6 and up

Posters
Banners
Bookmark
Activity Sheet/Placemat
Educators Guide –PDF only
Education CD with PowerPoint's for each booklets and more

www.nacdstore.org (to order)

www.nacdnet.org/education
 (resource pages for pollinator and other NACD education materials)

FUN FACTS!!!

- Foods and beverages produced with the help of pollinators include: apples, bananas, blueberries, chocolate, coffee, melons, peaches, potatoes, pumpkins, vanilla, almonds, and tequila. (Imagine a world without some of these things!)
- In the United States, pollination by honeybees and other insects produces \$40 billion worth of products annually!



BUSY BEES!

<http://fisforfirstgrade.blogspot.com/2011/09/weve-been-busy-bees.html>

a)it really helps the kids understand and remember what pollination is all about
 b)it's a way to get in some fun artsy craftsy time and we call it "science"

c)they're so darn cute buzzing around to each flower

So here's what we do:

1. Each child decorates a flower (pompom style with tissue paper, does anyone still use the word "pompom" or even know what I mean?).
2. Then they each make a bumble bee, glue it on a popsicle stick, and glue a cotton ball on the underside of the bee so there will be something for the "pollen" to stick to.
3. Glue a cupcake liner to the middle of the flower and put a spoonful of "pollen" (yellow cake mix, lemon is good too) in the cup.
4. Have the kids dip their bees in the pollen and then fly around and pollinate all the other flowers in the room.

Additional information on web link above.



More Pollination Fun!!! <http://teach-from-the-heart.blogspot.com/2012/03/flashback-to-fourth-pollination.html>



<http://aroundthekampfire.blogspot.com/2014/04/poetry-and-painting-and-butterflies-oh.html>

This link has another fun and education way to teach kids about pollinators and how they help pollinate plants.

Special thanks to Debra Ruff – Livingston County SWCD, IL for the fun activities on page 3 & 4

A to Z - Pollinators Are Important To Me
Buzz Words Bingo

Fill in each square of the board with words from your classroom's "A to Z" list. Use each letter only once. Words do not need to be in alphabetical order.

	P Pollen		

A to Z - Pollinators Are Important To Me
Buzz Words Bingo

Fill in each square of the board with words from your classroom's "A to Z" list. Use each letter only once. Words do not need to be in alphabetical order.

		P Pollen		

A to Z - Pollinators Are Important To Me

Every hour of every day, we use products that pollinators helped make in some way!

Can you think of a pollinator word for every letter of the alphabet? It can be names of different pollinators, products that are a result of pollination, the parts of a flower or terms used to explain pollination. Use a variety of resources to make your own pollinator alphabet. Be ready to explain the words you chose.

A	_____
B	_____
C	_____
D	_____
E	_____
F	_____
G	_____
H	_____
I	_____
J	_____
K	_____
L	_____
M	_____
N	_____
O	_____
P	_____
Q	_____
R	_____
S	_____
T	_____
U	_____
V	_____
W	_____
X	_____
Y	_____
Z	_____

Pollinator “Who Am I?”

Flower Fly

- Looks like a social bee or wasp
- Antennae are short with a bristle on the end
- Has only one pair of wings
- Cannot sting or bite
- Hairy
- Considered a significant pollinator

Honey Bee

- Social, lives in colonies in hollow trees or hives
- Used for honey production and agricultural pollination
- Hairy, color is tan with varying degrees of orange or brown
- Carry pollen in pollen baskets on their hind legs and it sticks to the hairs on their body
- Antennae very sensitive to touch and odor
- Two compound eyes detect color, shape and movement
- Three simple eyes detect light
- See colors in the spectrum from ultraviolet to orange (don't see red)
- Stings only once (dies once stinger is detached from body)
- Drinks nectar, honey, and water through a long hairy tube called a proboscis
- The whole colony can live through the winter

Bumble Bee

- Only social bee native to North America
- Make nests close to or in the ground. Likes abandoned rodent holes.
- Large and very furry
- Yellow and black
- Wings are clear with black veins
- Slow and unsteady when flying.
- Can collect nectar and pollen from hard to get into flowers such as snapdragons
- Can sting more than once
- Only the queen survives through the winter

Butterflies

- Every part of their thin body is covered with scales
- Fly only during the day when it is warm
- Fold their wings straight up over their bodies when resting
- Antennae have bare knobs at the end and are used for smell and also for hearing according to some experts
- Pass through 4 stages of development--egg, larva, pupa, adult
- In the larva stage they are recognized as caterpillars and can be destructive to flower gardens and crops because of their huge appetite.
- In the adult stage they are harmless and beautiful.
- A long tube that can be uncoiled for drinking nectar is called the proboscis
- Two large compound eyes detect color and movement
- Some are migratory and travel great distances

Moths

- Fly only at dusk and at night
- Every part of their body is covered with scales
- Have a plump body
- spread their wings flat when resting
- Antennae are either hairy or plummy and end in a point
- Attracted to light or white flowers that are open at night

Leafcutter Bee

- A solitary bee
- Cuts neat circles in leaves and uses the pieces to line their nests
- Builds nest in hollow twigs or other openings about the diameter of a pencil
- Usually will not sting unless trapped
- Help pollinate alfalfa

Carpenter Bee

- Solitary
- Hairy
- Females are bluish-black in color and can sting
- Males are blond or tan in color and can't sting
- Over 1 inch long and as wide as your thumb
- Nest in wood such as dead tree trunks, firewood or exposed wood on structures
- Nest consists of a tunnel about 10 inches long
- Female gathers nectar and pollen which is rolled into a ball that she pushes to the back of the tunnel where she lays an egg and seals it in a chamber about 1 inch long. This process is repeated until the tunnel is filled with chambers of growing bees

Alkali Bees

- Solitary
- Pollinate alfalfa better than honey bees

Hummingbirds

- Important for pollinating flowers and eating insects
- Bright red, orange and pink flowers are more visible to them than other colors
- Red, tubular-shaped flowers are ideal
- Fragrance is not important
- Have the largest brain, heart, energy output, and breast muscles in proportion to body size of any bird.
- They feed 5 to 8 times/hour consuming half their weight in sugar each day.
- Nests are usually 1.5 inches in outer diameter and used year after year
- Eggs are 1/2 the size of a jelly bean and hatch in 14 to 21 days

Bats

- Bats, like moths, do their foraging at night and are also attracted to white flowers.
- Pollen clings to their forehead as they reach into the flower with their long snout and bristly tongue to reach the nectar.
- The Saguaro and Agave cactus depend on bats for pollination
- They are responsible for pollinating bananas, cashews, peaches, avocados, mangos and other tropical fruits and vegetables
- There are nearly 1,000 species of bats
- They are generally divided into two groups; mega and micro bats
- Megabats live mostly in tropical parts of Australia, Asia, Africa, and the Pacific and eat fruit, nectar, or pollen.

Beetles

- They are clumsy when they fly and can't smell or see colors very well.
- They are attracted to flowers that are white or green and either have a very strong scent or none at all.
- The flowers they visit must produce a lot of pollen so there is enough for food as well as pollination.
- They usually pollinate flowers with large openings where there is plenty of room to land.

Information from <http://www.pollinator.org/nappc/PDFs/curriculum.pdf>

EXCITING Activities in student booklets - Susan



FABULOUS Activity from
Debbie



DOOR PRIZES!!!!

