

Buzz or Blunder: 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.

1. There are more than 200,000 species of animals that are pollinators.
2. Pollinators that are active during the day are usually attracted to flowers that are brightly colored.
3. Pollen is yellow.
4. The world's chocolate supply depends upon pollination by bats.
5. 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. _____



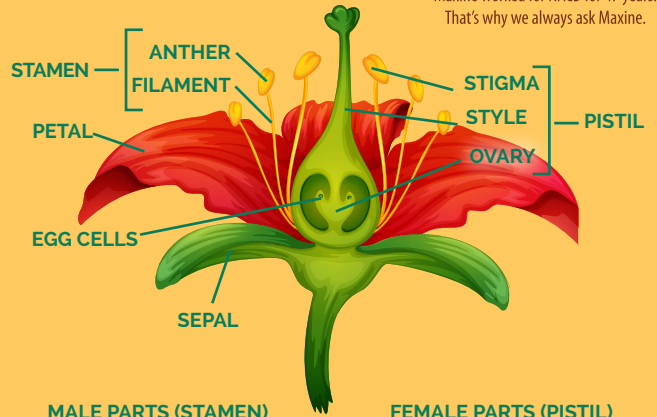
Answer Key: Pg 1 Animal Pollination
Pg 2 Clue Words: tube, avian, ovary, seeds, pollen, flower, species, anther.
Phrase: Pollinators are responsible for one out of every three bites of food we eat.
Pg 7 Salad bar items pollinated by animals: onion, celery, broccoli, cauliflower, cabbage, avocado, kidney beans, bell peppers, cucumber, carrot.
Pg 8 Fact or Fiction
1. Fact: Most are insects; only about 1,000 of the species are birds, bats, or other small mammals. 2. Fact: Nighttime pollinators are attracted to plants with strong odors. 3. Fiction: The nutrition that pollinators seek comes in a variety of colors. 4. Fiction: The midge, a fly with two wings, pollinates cacao flowers. 5. Fact: Coffee in the morning and soft cotton sheets at night are considered worth having by a lot of people.

Ask MAXINE!



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

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



MALE PARTS (STAMEN)
•anther (makes pollen)
•filament

FEMALE PARTS (PISTIL)
•stigma
•style
•ovary (eggs inside)

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!



National Association
of Conservation Districts (NACD)
www.nacdnet.org



www.pollinator.org



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for the educators guide, additional worksheets and resources
Visit: http://www.pollinator.org
for additional resources
Booklet designed for use with Grades 6-8
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Where would we
BEE
without Pollinators?



Something **SMELLY** ... Something **Itchy** ...

What's Missing?

Kaylee was trying to sleep, but there was too much noise. Her brother, Adam, was complaining that his socks were "itchy." He was loud enough for the neighbors to hear! The stores didn't carry his favorite cotton socks anymore and he didn't like the new ones. He had worn his old ones until the smell got so strong the neighbors could probably smell them! She felt sorry for their neighbors! As she showered and washed her hair, she missed the smell of the



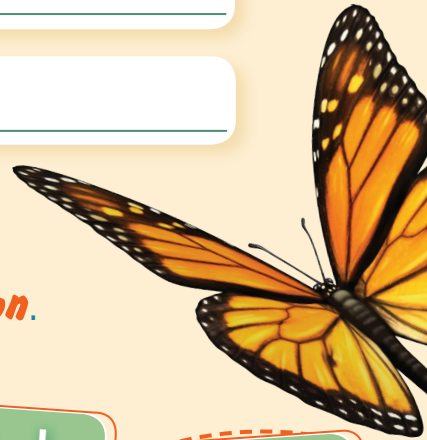
mango scented shampoo she used to have. The stores didn't seem to carry it anymore either. Her mother yelled up the stairs that it was time to eat breakfast. Kaylee and Adam both got a whiff of the pancakes she had prepared and raced down the stairs. Kaylee wanted blueberries on hers, while Adam wanted strawberries on his. Neither one got the berry they wanted because they were hard to find these days. Their dad came through the kitchen hoping for a cup of coffee but all they had was tea. He grabbed a cup to go and headed to work.



What are **five** things that Kaylee, Adam and their parents are missing because they are hard to find or no longer available?

All of the missing items have **something in common**. Unscramble the tiles below to see what it is.

PO ANI ION NAT LLI MAL



Check out **page 6** to find out why these items might be missing!

Several animals are pollinators, and remember, we depend upon them for non-itchy socks and our favorite berries. A few pollinators you might have seen in your own yard or neighborhood are; bats, birds, and insects, such as bees, butterflies, and beetles.



Read **POLLINATE** below to find the clue words.
 Unscramble each of the clue words and copy the letters into the cells next to it.
 Copy the letters in the numbered cells into other cells with
 the same number to solve the puzzle.

UBET LOPNEL
 NIAVA REWFOL
 VAORY SEPCISE
 SESED NAHTER

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
 26 19 10 9 27 28 19 29 30 9 26 31 32 33 13 34 30 35 10 36 37
 23 5 30 36 38 9 26 26 9 9 39 40 25 16 41 30

Pollination by animals begins when the pollinator gets hungry and decides to "dine out." It visits a flower in search of food in the form of pollen or nectar. Pollinators are like us - they have to eat or they don't function very well.

Once on a flower, a pollinator may brush against the flower's anthers, which are the male reproductive parts. Pollen grains get stuck to its body while it is "dining out." **Pollen is sticky stuff**, so the pollinator picks up some pollen and continues buzzing along at the flower buffet.

Leaving some of the pollen behind as it moves around from flower to flower leads to pollination. Pollination occurs when pollen grains from a flower's anthers are moved to its stigma, the female reproductive part, of the same species of flower.

Leading from the stigma to the style, the pollen grain grows a tube that reaches to the ovary where fertilization occurs, producing seeds.

Insect-pollinated plants are responsible for **99%** of the **vitamin C** that comes from the foods you eat!

Nectar is produced by some plants to attract pollinators. As the pollinator moves from flower to flower-collecting nectar, it is also moving pollen from flower to flower.

Avian pollinators, like hummingbirds **feed on nectar**. Avian pollinators also **eat insects**.

Three-fourths of the world's food crops that YOU must have depend on animal pollinators to reproduce.

Estimates by scientists indicate that **one out of every three bites** of food we eat exists because of animal pollinators.




All About Pollinators



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

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.



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.

WANTED



Have You Seen A POLLINATOR?

The pollinator population in North America has been declining for several years. We need them for food and other necessities we use every day!

Here are a few ways you can do your part to make sure pollinators aren't missing in your neighborhood.

Feed them! Pollinators get hungry and need good nutrition just like we do. You can plant some native flowers! Pollen grains contain the proteins, fats, vitamins and minerals that pollinators need. Even a few pots can attract some pollinators to your neighborhood. For more information go to: www.pollinator.org.



Provide them with a home!

Different pollinators need different types of nests. For example, bees can use small holes in a fallen log. Butterflies lay eggs on plants that their caterpillars can eat. You can also make a pollinator box for bees!

Buy local! Support the farmers and beekeepers in your community by buying local honey and locally grown produce.



Good Pollinators Are Hard to Find



Not just any animal can be a pollinator! A good pollinator.....

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.

Cross-pollination happens when pollen is moved from plant to plant rather than on the same plant.

Cross-pollination results in hardier plants.



Step Up to the SALAD BAR



A good pollinator...

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.



A good pollinator...

Has a specialized mouth

made for collecting nectar!



Disappearing Pollinators = Disappearing Food Supplies

Most pollinators are very **SMALL** in size but they play a **LARGE** role in the production of the food we eat. The reproduction of hundreds of crops and flowering plants worldwide depends on pollinators. We depend on the food these crops produce. A decline in the numbers and health of pollinators can lead to problems in ecosystems and biodiversity all over the planet.



Hope you're hungry! Take a look at the salad bar and write the names of the items you would like in **YOUR** salad on the plate.

Now, **Circle** the items on your plate that you think depend on a pollinator for growth and reproduction.

