



CRITTER CONNECTIONS



**Texas
Pollinators**



Texas Bluebonnet



By now you should see Texas Bluebonnets (*Lupinus texensis*) blooming all along highways and fields across Texas. There are six species or types of bluebonnet in Texas and they are all considered the state flower. The Texas Bluebonnet is the most recognizable species and is commonly photographed in the springtime.

Bluebonnets are actually in the same family of plants as peas and beans. Their seeds grow in pods just like peas, but these peas are toxic or poisonous to humans. This plant is considered a winter annual which means it begins to grow in fall or winter and continues to grow over winter when many other plants are dormant. Bluebonnets produce flowers in early March and continue to bloom through May.



Bluebonnets produce light-green, velvety leaves that grow close to the ground and are palmately compound. This means that many small leaves called leaflets grow from a central point. Bluebonnet leaves have five leaflets. The plant is actually made up of many blue flowers that grow all around the stem. The tip of the plant has a whitish cluster. The flowers begin to open at the bottom of the plant and each flower has a white dot on one of the petals, which turns a reddish maroon color as the plant ages. This is why the petals at the bottom of the plant have red dots and the ones at the top have white dots.



Bluebonnets are important food sources for pollinators like butterflies and especially bees. It is also the host plant for the gray hairstreak butterfly, which means this butterfly lays its eggs on bluebonnets so the larva, or caterpillar can eat the leaves.

Photos and source: Ladybird Johnson Wildflower Center

Crafting a Bee House

Not all bees live together in hives, some bees live alone and you can craft a bee house to provide shelter for these species.

Materials:

- A container like a can that is open on one end and closed at the other end.
- Paper drinking straws (not plastic) – enough to fill the container
- Yarn or twine to hang your bee house
- Marker
- Scissors

Steps:

1. Clean out the container you are using.
2. If you wish, decorate the outside of the container in a bright color that will attract bees.
3. Place one of the paper drinking straws in the can and use a marker to mark the spot where the straw lines up with the opening of your container.
4. Cut the straw at the point you marked.
5. Fill the container with more cut straws until your container is tightly full and the straws won't fall out.
6. Use yarn or twine to hang your bee house somewhere that is sheltered from the rain and wind.



You can also use hollow bamboo sticks, or rolled up pages from a magazine as the individual cavities inside your bee house.

Did you know...

- ... that many flowering plants need pollinators to complete their life cycle?
- ... that flowers have markings to guide pollinators toward the nectar and pollen?
- ... that bird pollinated flowers do not have a strong scent because birds have a poor sense of smell?
- ... that some plants are pollinated by non-living things like wind or water?
- ... that pollinators are responsible for 1 out of 3 bites of food we take?
- ... that fly pollinated flowers are very stinky, like rotting meat?
- ... that some flowers open at night for nocturnal pollinators like bats and moths?
- ... that you can help pollinators by planting pollinator gardens?
- ... that one of the earliest pollinated flowers is the Magnolia?



Gulf Fritillary on a Thistle

Photo source: Elanor Dean

Color Me

Bee Pollination

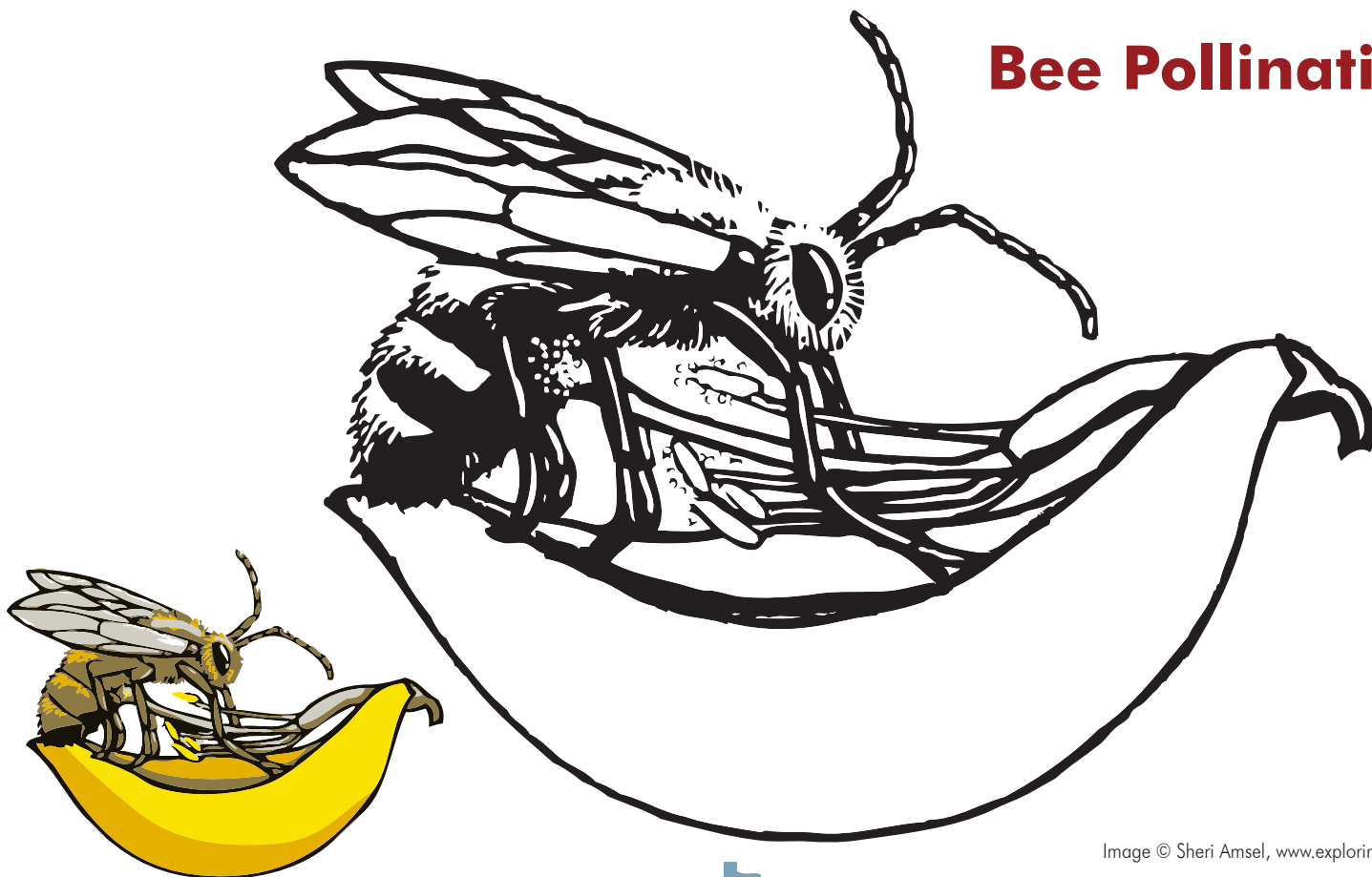


Image © Sheri Amsel, www.exploringnature.org



By Elanor Dean

Pollination is the act of transferring pollen grains from one flower to another so the plant can produce fruit. This is an important step in a plant's life cycle. Flowers rely on something called a **vector** to transfer pollen. Plants can be pollinated by non-living factors such as wind and water, but most plants are pollinated by animals. These are all examples of vectors.

Flowers have different colors, shapes and even smells to attract the right pollinator. Let's go into a bit more detail about different kinds of pollinators and the adaptations flowers have to attract them.

Wind and Water

Flowers that are pollinated by wind or water do not need to have a special smell or color because they do not attract living pollinators. Wind pollinated flowers produce many tiny grains of pollen which float through the air and hopefully land on another plant. These tiny grains of pollen are the source of allergies for many people. Some examples of wind pollinated plants are grasses and oak trees. Water pollination is rare. These plants use the water's current to transfer pollen downstream.



Oak flowers

Beetles

Millions of years ago, before bees and butterflies existed, there are fossil records that show the interaction between beetles and magnolia flowers. Because beetle pollinated flowers have been around for so long, they have a much more basic structure than flowers that are pollinated by other animals. Beetles rely on



Magnolia with beetles

their sense of smell to find food, so beetle pollinated flowers produce a strong smell that is sweet or spicy. The flowers are often large and bowl-shaped allowing many beetles to walk around inside. Beetles have biting mouthparts instead of a long tongue or a straw-like mouth like other pollinators, so the flowers are thicker and larger to prevent too much damage when the beetle is trying to feed. Beetle pollinated flowers are also plain in color, white or green.

Flies

Did you know that some flowers are pollinated by flies? Think about what flies are attracted to and take a guess, what does a fly pollinated flower smell like? Flies are attracted to things that smell bad like garbage and dead animals, so fly pollinated flowers produce a bad odor like rotting meat. The flowers are plain in color like meat, or darker shades like brown and purple. Fly pollinated flowers are shaped like a funnel and sometimes act as a trap to catch the insect. Another interesting thing about fly pollinated flowers is that many of them do not produce nectar. Flies enter the flower because they are attracted to the smell, picking up pollen along the way and once they realize there is nothing to eat inside, they move on.

Bees

There are many different kinds of bees, honeybees, bumblebees, mason bees and more. Bees pollinate many different types of flowers and are excellent pollinators. Bees are covered with tiny hairs which collect pollen and transport it from flower to flower. Many bees will consume both nectar and pollen and **colonial** species of bee will bring it back to their hive. Bee pollinated flowers produce a lot of nectar and sticky pollen that can easily attach to the hairs. The flowers are brightly colored, often yellow and blue, but not red because bees cannot see the color red. They produce a sweet or sometimes minty smell. The flowers are often tube shaped with the petals forming a landing platform. This allows the bee to easily land on the flower and walk inside to find the nectar and pollen. Another interesting characteristic of some bee pollinated flowers is that they have special ultraviolet markings leading the bee to the nectar. These markings, called nectar guides, are invisible to humans, but bees can see them making it even easier to find nectar and the flower even more likely to be pollinated.



Bee covered with pollen



Honeybee and Texas Bluebonnet



Monarch Butterfly

Butterflies

Another insect commonly associated with pollination is the butterfly. Butterflies are not as efficient at collecting pollen as bees. Butterfly pollinated flowers are also brightly colored including purple and red shades, because butterflies can see the color red. Butterfly pollinated flowers will often have a landing platform, and some flowers are clustered together so the butterfly has the opportunity to collect more pollen. They produce a lot of nectar, but it is usually deep inside the flower where the butterfly has to use its long tongue-like mouth part called a **proboscis** to sip the nectar. Butterflies rely more on their sense of sight than smell, so these flowers usually do not have a very strong odor.

Moths

Moths also pollinate flowers, however moths are nocturnal, so their flowers open at night. Moths have a similar body structure to butterflies, so the flowers have similar adaptations too. They will often produce flowers in clusters, and the nectar is found deep inside the flower like butterfly pollinated plants. Moths also drink nectar using a proboscis. One difference between moth and butterfly pollinated flowers is the color. Moths need to be able to see the flowers at night time, so they are usually white in color. Moth pollinated flowers also produce a strong sweet scent so they are easier to find in the dark.

Bats

Moving on from insects, let's talk about bat pollinated flowers. There are only two species or types of nectar drinking bats in Texas, the Mexican long-nosed bat and the Mexican long-tongued bat. Bats are also nocturnal, so bat pollinated flowers share some characteristics with moth pollinated flowers. The flowers are pale or white in color and open at night.



Mexican long-tongued bat

They are also very strongly scented with a fruit-like odor. Bats are able to drink nectar by sticking their narrow nose into the large flower and extending their long tongue. As a mammal, bats are covered with hair, which collects pollen as they stick their nose into the flower.

Birds

Finally, let's talk about bird pollinated flowers. While hummingbirds are most commonly associated with pollination, the White-winged Dove is also a pollinator of the saguaro cactus, which is found in Arizona. Hummingbird pollinated flowers are typically tubular shaped, which is why hummingbirds have long, thin beaks and a long tongue which they use to sip nectar. Hummingbirds can beat their wings 70 times in a second which uses a lot of energy when they fly, so the flowers produce a lot of nectar. As they drink nectar, the feathers on their face collect pollen which is then transported to other flowers. Hummingbirds are very attracted to the color red, so hummingbird pollinated flowers are usually bright red. Birds have a poor sense of smell, so these flowers do not produce an odor.

These are just a few examples of animals that pollinate flowers. There are many other pollinators including other insects such as ants and wasps, and in other parts of the world plants are even pollinated by other vertebrates such as lemurs, lizards and honeycreeper birds. So much of the food we eat comes from plants that are pollinated by animals, which is why pollination is so important. We can do our part by reducing pesticides and creating pollinator habitats at home and at school. Pollinator gardens not only provide a great food source for different insects and hummingbirds, but they also are a great way to observe wildlife.



Hummingbird and Lantana

WORD BANK

Vector – something that transports pollen between flowers
Colonial – animals that live with other members of their species in a group or colony
Proboscis – the straw-like mouthparts that insects use to sip nectar

Sources: USDA Forest Service

Photos: Joe Schneid, Ladybird Johnson Wildflower Center, Beatriz Moisset, Jessie Eastland, Alex Wild, Kenneth Dwain Harrelson, USFWS, Elanor Dean

Pollination Crossword

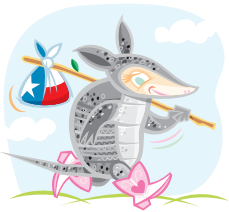
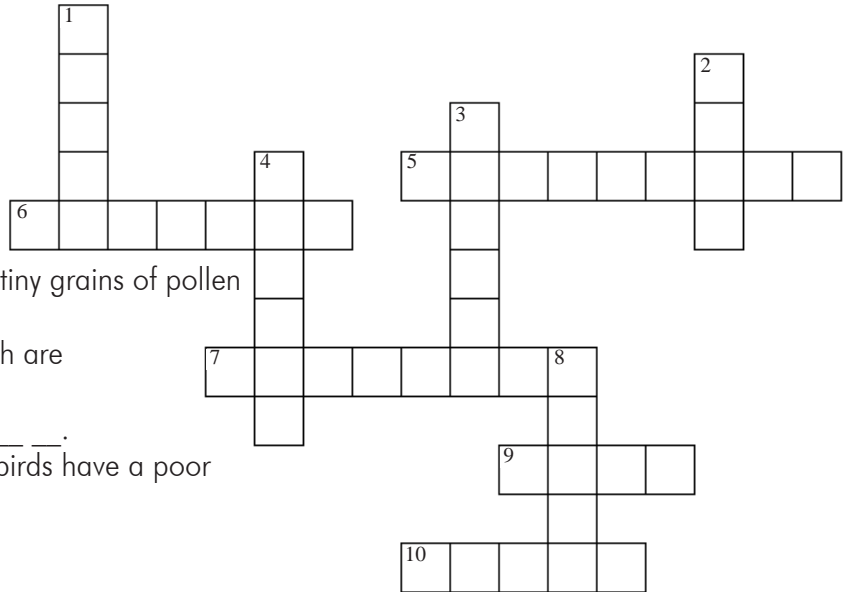
Created by Puzzlemaker at DiscoveryEducation.com

Across

5. Moth pollinated flowers open at night time because moths are _____.
6. One of the oldest plants to be pollinated is the Magnolia which is pollinated by _____.
7. Bee pollinated flowers have hidden _____ that lead the bee to the nectar and pollen.
9. Fly pollinated flowers smell like rotting _____.
10. Pollination is an important step in a plant's life _____.

Down

1. Bat pollinated flowers are _____ so that bats can see them better at night.
2. _____ pollinated flowers are plain and produce tiny grains of pollen that float through the air.
3. Flowers produce tiny grains of _____ which are transported to other flowers to make fruit.
4. Butterflies use their long proboscis to sip _____.
8. Bird pollinated flowers do not have an odor because birds have a poor sense of _____.



Nancy's Corner



Draw a picture of the pollinator in the blank space.



Share the Info – Tell your friends and family about the different types of pollinators.

Provide Food – Plant a garden with native flowers in your backyard or school yard to attract pollinators.

Become a Citizen Scientist – You can record pollinator observations using the iNaturalist app.

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