

Scientist: _____

Date: / /

Pollination Investigation: Flowers

Use this journal page to make careful observations about a flower. Remember, as a scientist, this information will be very important to your research!

Use the boxes to make drawings of the flower and a closeup of its center, where the anthers and stamen are located.



Flower

1. What color is the flower?

2. Is the flower close to the ground?

3. Do you see any nectar guides?

4. Describe the flower's smell.

5. Is the flower big or small?

6. Which pollinators visited during your observation?

7. What shape is the flower?

Select all that apply.

Close-up of Center

Shallow Deep

Tubular Bowl-Like

Narrow Wide

Complex Simple

Trap-Like Funnel-Like

8. Using your notes and drawings, can you determine the species of the flower you observed? Is it native to your area?



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Pollination Investigation: Hummingbirds

Birds' beaks are shaped by what they eat. Hummingbirds are colorful, avian pollinators with long, slender beaks and tongues adapted to drink nectar from flowers. They fly to different flowers to sip nectar and eat small insects, while also moving pollen from flower to flower.

1. What colors are the hummingbird's feathers? _____
2. What color flowers does the hummingbird visit? _____
3. What shape are flowers it visits? How does this flower shape seem to help the hummingbird? _____
4. Describe the flowers' fragrance. Why do you think hummingbirds might like flowers that smell like this? _____
5. Can you see any visible nectar guides on the flowers? _____
6. Draw the hummingbird and one of the flowers that you observed. _____

Post-Field Trip Questions: Based on your research and observations, what native plants could you add to your garden to help attract hummingbirds? _____

There are about 300 species of hummingbirds in the world, but only two dozen different species of hummingbirds either reside in or migrate to North America. Only one species, the ruby-throated hummingbird (*Archilochus colubris*), is regularly found east of the Mississippi River.

Using your notes and drawings, can you determine what species of hummingbird you observed? Is it native to your area? _____



Smithsonian Gardens

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Pollination Investigation Answer Sheet: Hummingbirds

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

Post-Field Trip Question: _____



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Pollinator Investigation: Beetles



Beetles are often depicted as weird or creepy in cartoons and movies, but they are actually important and remarkable pollinators. In fact, they are one of the original pollinators! Fossil evidence has shown that beetles were hard at work pollinating over 105 million years ago in the mid-Mesozoic era.

1. Observe a beetle in a flower. How does its pollination process differ from other pollinators that you have observed? What is a “mess and soil” pollinator?



2. What shape is the flower that you found it on? Does the shape help determine the type of pollinator it attracts?

3. Describe the beetle. What color is it? Do you notice any adaptations that might help it pollinate the flower?

4. What color is the flower?

5. Describe the flower’s fragrance.

6. Can you see a lot of pollen on the flower the beetle visited? Why might a flower that evolved alongside native beetle pollinators produce so much pollen?



7. Draw the beetle that you observed and one of the flowers that it visited.

Post-Field Trip Question: Based on your observations and research, what native plants can you add to your garden to help attract beetles?

Using your notes and drawings, can you determine what species of beetle you observed? Is it native to your area? Can you determine what species of flower you observed and when it evolved?



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Date: / /

Pollination Investigation Answer Sheet: Beetles

1. _____

2. _____

3. _____

4. _____

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6. _____

7. _____

Post-Field Trip Question: _____



Scientist: _____

Date: / /



Pollination Investigation: Bees

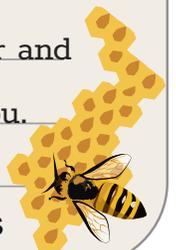
Bees are some of the most well-known pollinators. They pollinate plants that humans and animals rely on for food while collecting nectar to fuel their flights and feed their young.



1. Observe a bee and describe its color and pattern.
2. What color flowers does the bee land on?
3. What shape are these flowers? Why do you think the bee is attracted this flower shape?
4. Describe the flowers' fragrance. Why do you think this scent would attract a bee?
5. Do you see any nectar guides on the flowers? If so, describe them. Don't see anything? Remember, bees see UV patterns that humans may not recognize!
6. Draw the bee and one of the flowers that you observed.

Post-Field Trip Questions: Based on your observations and research, what native plants could you add to your garden that support bees by providing nectar and pollen? There are thousands of different species of bees around the world and about 4,000 native to North America alone. Some bees are black and yellow, but others, like the Blue Orchard Mason bee (*Osmia lignaria*), are well known for being bright blue. Using your notes and drawings, can you determine what species of bee you observed? Is it native to your area?

Note: Please give bees plenty of space while observing them. Bees are usually uninterested in people and focus on gathering nectar and pollen. If you do not bother them, they should not bother you.



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Date: / /

Pollination Investigation Answer Sheet: Bees

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Post-Field Trip Question: _____



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Pollination Investigation: Butterflies

Butterflies are some of the most colorful pollinators. Some butterflies, like the Painted Lady (*Vanessa cardui*), can fly for thousands of miles over oceans and deserts to migrate, pollinating as they go.



1. What colors are the butterfly's wings? Is there a pattern on the wings?
Are they elongated or wide?
2. Can you see the butterfly's proboscis? What does the butterfly use its proboscis for?
3. What color flowers does the butterfly visit? Why do you think it would be attracted to these colors?
4. What shape are the flowers it visits? How does this flower shape seem to help the butterfly?
5. Describe the flower's fragrance. Is it a strong smell?
6. Do the flowers have any visible nectar guides?
7. Draw the butterfly and one of the flowers that you observed.

Post-Field Trip Questions: Based on your observations and research, what native plants could you add to your garden to help attract butterflies?

There are roughly 17,500 different species of butterflies in the world, with about 750 species in the United States.

Using your notes and drawings, can you determine what species of butterfly you observed? Is it native to your area?



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Pollination Investigation Answer Sheet: Butterflies

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Post-Field Trip Question: _____



Pollination Investigation: Flies

Flies often have a bad reputation. They tend to be associated with trash or stinky things. However, they can be very helpful by spreading pollen and are welcome in gardens as efficient pollinators. Unlike honeybees, who stay relatively close to their hive, flies can travel long distances to flowers to eat nectar and pollen along the way.



1. What color is the fly? Does it have any markings? _____
2. What shape are the flowers that the fly is landing on? _____
3. What do the flowers smell like? Why do you think a fly might be attracted to the smell of this flower? _____
4. Are there any visible nectar guides on the flower? _____
5. Do you see any pollen on the flower? _____
6. Draw the fly you observed and one of the flowers that it visited. _____

Post-Field Trip Questions: Based on your observations and research, what native plants can you add to attract flies that pollinate flowers in your garden? _____

Since there are over 110,000 known species of flies in the world, they can vary in appearance quite a bit. Some flies have long legs and others imitate bumblebees. _____

Using your notes and drawings, can you tell what species of fly you observed? Is it native to your area? _____



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Pollination Investigation Answer Sheet: Flies

1. _____

2. _____

3. _____

4. _____

5. _____

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Post-Field Trip Question: _____



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Pollination Investigation Drawings

