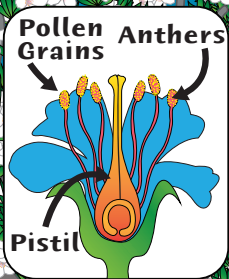
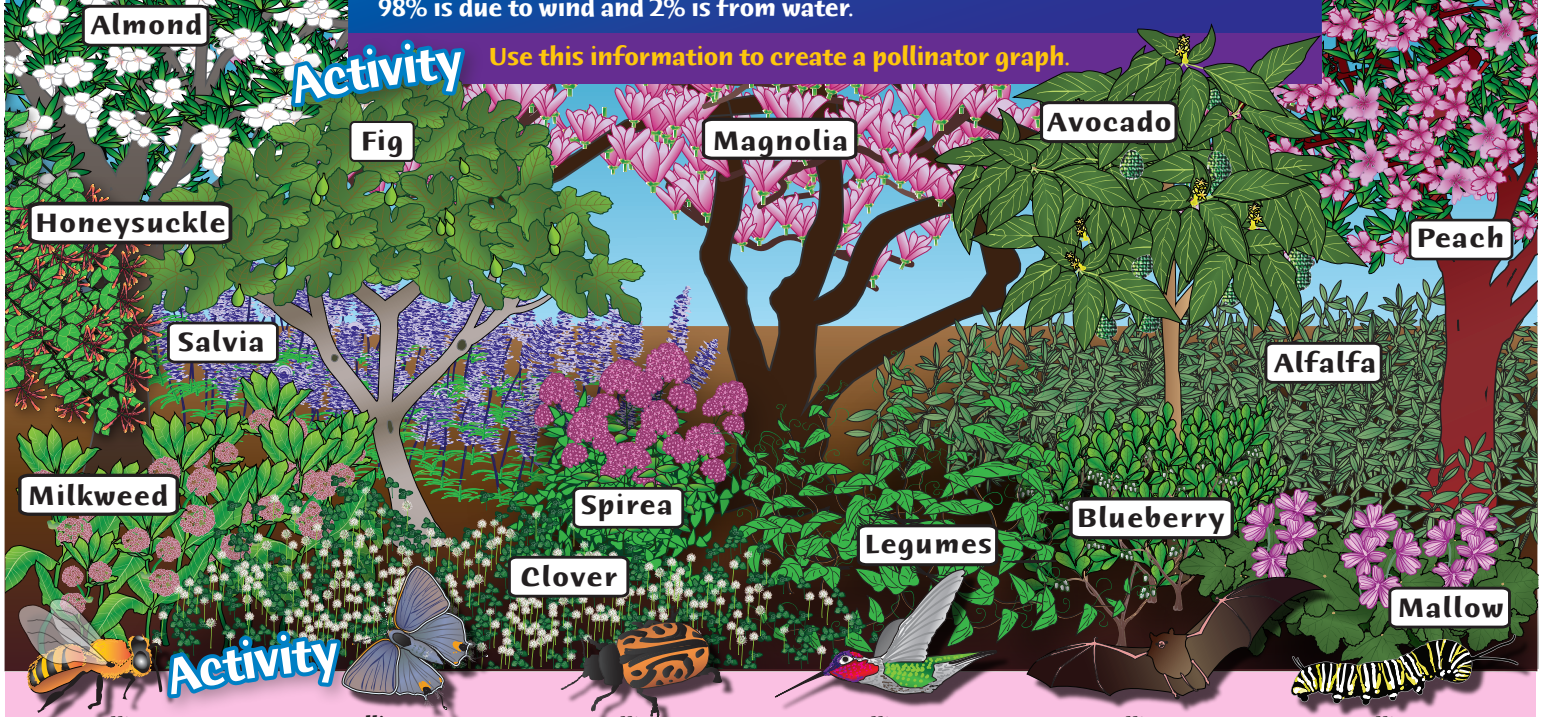


Prolific Pollinators



Pollinators are essential to agriculture and the environment. 80% of plants are pollinated by animals (biotic pollination) and 20% are pollinated by wind and water (abiotic pollination). There are about 200,000 species of animals that pollinate, most of which are insects and only about 1,000 of which are vertebrates such as birds, bats, and small mammals. For abiotic pollination, 98% is due to wind and 2% is from water.

Activity Use this information to create a pollinator graph.



Pollinator:	Pollinator:	Pollinator:	Pollinator:	Pollinator:	Pollinator:
1. _____	1. _____	1. _____	1. _____	1. _____	1. _____
2. _____	2. _____	2. _____	2. _____	2. _____	2. _____
3. _____	3. _____	3. _____	3. _____	3. _____	3. _____

Using information from the Pollinator Chart below, or your own research, write the pollinator's name on the top line above. Then list three facts about them.

What is Pollination?

Pollination is the transfer of pollen grains from the male anthers of flowers to the female pistils of flowers. This allows for fertilization which allows the flowers to produce seeds.

Pollinator Math:

- A $\frac{1}{4}$ cup of bees is about 200 bees. If a colony of bees contains 40,000 bees, how many cups of bees is that?

- An 8-frame colony of bees contains 12,000 bees. How many bees are in 1-frame?

- Almond flowers produce about 1.0 mg of pure pollen. If you have 2 million flowers/acre, about how many grams of pollen will be produced on a 100-acre orchard? If 1 gram = .0022 pounds, how many pounds of pollen is that?

(Answers: 50 cups, 1,500 bees, 440 pounds)

Pollinator Chart

POLLINATOR	PLANTS THEY VISIT	FACT
Honey Bees	Almonds, Apples	Visit flowers to get pollen or nectar for their food.
Monarch Butterfly Caterpillar	Milkweed	Sheds, or molts, its skin five times before the pupa stage.
Bats	Avocado, Peaches, Figs	Bats use smell, sight, and echolocation to find flowers.
Beetles	Magnolia trees, Spirea shrubs	Around for 200,000,000 years! Largest group of pollinators.
Hummingbirds	Blueberries, Honeysuckle, Salvia	Fly up to 60 mph, wings beat 20-170 beats per second.
Gray Hairstreak Butterfly	Mallows, Legumes, Alfalfa	Caterpillars known to cause damage to certain crops.

Pollinator Conservation:

There is a concern that we are losing pollinators due to habitat loss, disease, parasites, and environmental contaminants. Farmers help by planting cover crops, wildflowers and native grasses in areas not in production. By building hedgerows, windbreaks, and providing a variety of flowering plants, farmers are attracting the native pollinators they need to grow their crops. How can you help? Add bee-friendly plants to your school yard or home to help increase native honey bee populations.

Citizen Science
Try this! Check out Zombee Watch at www.zombeewatch.org to learn more about the zombie fly, how it is a parasitoid to honey bees, and how you can help!

Activity
Create a Pollinator Poster or Collage. Illustrate, color and label at least five pollinators. Be creative!

CA Standards: CCSS ELA: RI.3-8.4, SL.3-8.2, 5; CCSS Math: 3.OA.2, 3; 4.OA.3, 4.NBT.1, 5.NBT.1, 7.6.RP.3d
Sources: plants.usda.gov/pollinators/Native_Pollinators.pdf, PollinatorLive.pwnet.org, vmga.net/PDF/jim%20Revell%202015%20Talk.pdf, www.fs.fed.us/wildflowers/pollinators, www.beebristol.org/pollinators, www.nrcs.usda.gov

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This content is adapted from page 11 of *What's Growin' On?* student newspaper, edition 15. A new edition is created each year. Request a free classroom set from our collection at LearnAboutAg.org/wgo.

