



Washington
Department of
**FISH and
WILDLIFE**

Protecting Pollinators

6-8th Grade

Themes: Pollinators, biodiversity, food systems

Location:

We encourage you to take students to [visit a wildlife area](#) during spring, summer, or early fall. You can also take a trip in your schoolyard or visit a local greenspace, estuary or wetland where you might be likely to find pollinator species.

Remote learning modification: Lessons can be taught over Zoom and projects can be done in students' yards or nearby greenspaces with an adult.

Modifications, Adaptations:

For COVID-19 distance learning, or other remote learning modification, look for **remote learning modifications** throughout the lesson plan.

Standards:

NGSS

[MS-ESS3-3](#)

Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.*

[MS-LS1-1](#)

Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.

OSPI

[ESE Standard 1](#)

Students develop knowledge of the interconnections and interdependency of ecological, social, and economic systems. They demonstrate understanding of how the health of these systems determines the sustainability of natural and human communities at local, regional, national, tribal, and global levels.

Materials:

WDFW pollinator PowerPoint, paper, iPad, camera or phone, clipboards (one for each student), student instruction sheet.

Objectives:

Students will...

1. Explain what a pollinator is and why they are important to global ecosystems and economies
2. Sketch a sound-map of a local outdoor area and observe and describe habitat conditions of the area.
3. Compare and contrast differences in insects and how they use flowering species.
4. Create a summary of their community science project findings and develop ways community members can help pollinator species.

Vocabulary:

Biodiversity: The full range of life in all its forms. This includes the habitats in which life occurs, the ways that species and habitats interact with each other, and the physical environment necessary.

Cross-pollination: A plant that needs a vector (wind, water, animal) to get the pollen from one plant to another plant of the same species.

Ecosystem services: Benefits people obtain from ecosystems and wildlife.

Phenology: Cyclic and seasonal natural phenomena, especially in relation to climate and plant and animal life

Pollen: The male fertilizing agent of flowering plants, trees, and grasses.

Pollination: The act of transferring pollen grains from the male anther of a flower to the female stigma.

Pollinator: Animals and insects that transfer pollen from plant to plant.

Self-pollinating: When a plant can fertilize itself.

Procedure:

Introduction to pollinators

Open up the WDFW pollinator PowerPoint. Make sure presenter notes are on. Go through the 12-slide PowerPoint. The presentation includes two videos and one activity for students. The activity on slide eight suggests you pair students together, but if you are teaching remotely **Remote learning modification:** Students can take three-five minutes and answer the questions themselves, or you could answer the questions as a class.

Learning to observe

Take students into school yard. Each student should have a piece of paper, pen or pencil and preferably a clipboard. You can also visit a local park or other greenspace where you are likely to find pollinator species. When you get to your outdoor space, make sure you set boundaries (i.e., within sight of you, or fence line, etc.) Students should choose a spot that is away from other students. Instruct students to not interact with other students once they have found their sit-spot.

When students find their spot, have them put a dot in the center of the paper. This will represent where they are. The space at the top of the paper will be the space in front of them, right side of the paper is their right, etc. Ask students to close their eyes and listen. Give students five-minutes to record the sounds they hear, things they smell, and what they may feel (i.e., warm sun, cool breeze, fly landed on them, etc.). Students can choose to write things down as they experience them, or wait until the time is up to complete their map. Students will place the sounds, smells and feelings on the map in relation to where they are sitting. For example, if they heard someone walking in high heels behind them, they might draw a pair of high heels on the paper behind the dot that



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represents them.

After students have finished their sound map, give them 10-15 minutes to observe the habitat in their area. Have students describe the insects and their habitat (food, water, shelter, space).

- 1) Search for insects.
 - a. On the ground
 - b. In the soil,
 - c. In trees,
 - d. In shrubs,
 - e. On grasses, etc.
- 2) Describe what the insect looked like (they can do this either by drawing or writing).
- 3) Explain what the insect was on?
- 4) Describe the insects behavior.
- 5) Write what time of day did they saw the insect.
- 6) Describe what was the weather like.
- 7) Explain whether the insect was alone or with other insects?

Students can write or draw about the insects they found and the environment they found them in. Once students are back in the classroom, have them pair with a partner and ask them:

- 1) Describe your insect habitat.
- 2) Describe what you noticed about the insects you found.
- 3) What similarities or differences did you notice?
- 4) What is one thing you found interesting about observing an insect's habitat?
- 5) Did you observe any pollination?

After students shared with another, have them compare the insects and habitat they were in.

- 1) What were the similarities? The differences?
- 2) How do you think the plants help the insects, and the insects help the plants?

Give students about five minutes for this and then share some examples as a class.

Remote learning modification: Have students observe in their backyard, or a nearby greenspace with an adult. During your next virtual session use breakout rooms to have students share their observations with another.

Optional extension: have students visit their same sit-spot at least once a month and continue to record observations. At the end of the school year, have students share how their areas changed throughout the year.

Learn to identify bumble bees

The final activity of this lesson is a community-science lesson where students identify bumble bees. If you would like a more dedicated version of this project, please see the requirements of the PNW Bumble Bee Atlas in the supplemental resources of this lesson plan. This part of the lesson is best done in late spring, summer, and early fall when bees are active.

The second part of the WDFW PowerPoint is the introduction to this activity. Review through the two slides on this PowerPoint and pass out student instructions. You may choose to have students pair with a partner or in small groups. Students will need:

- Camera or phone
- [Pacific Northwest Bumble Bees Guide](#)

Instructions

1. Download the free Bumble Bee Watch app ([App Store](#) / [Google Play](#)) or create a [Bumble Bee Watch account](#) from your computer.
2. Take a photo of a bumble bee. It can be hard to photograph a moving bee so try waiting near an open flower for a bee to land. Then take several photos from different angles so you can identify the bee later. Check out these [additional tips for photographing bees](#).
3. Using the Pacific Northwest Bumble Bees guide, look to see if your bee resembles any of the common bees in Washington. Remember to look at the coloration of the head, thorax, and abdomen.
4. After identifying your bee, you can use the [Bumble Bee Watch species website](#) to learn the types of flowers it prefers, how large its range is, and when you can expect to see it each year.
5. Log in to your account and upload your photo (Watch this [nine-minute step-by-step video](#) for help).
6. The website will help you determine which species of bumble bee you observed. Do your best to identify the bumble bee based on its markings. Your sighting will be verified by an expert.

Remote learning modification: Students can do this part of the lesson on their own, in their yards or local greenspace with an adult.

Synthesis:

After students have completed their community science project, have them put together a summary of their findings. This can be via PowerPoint, a formal paper, or an illustration. Additionally, have students answer the following questions in their summary:

- 1) What species did you find?
- 2) What species were most common?
- 3) Describe the types of plants or flowers you saw the species on. Does this fit in with the pollinator syndrome chart?
- 4) Describe how bees and flowers support another.
- 5) What do you think would happen to Washington ecosystems if bees were to disappear?
- 6) Do you think the bees were pollinating plants they were on? Why or why not?
- 7) Why are pollinators important?
- 8) Research and come up with three solutions every person can do to help pollinators.



Idea: Show off your students' work! Share student projects from this lesson with WDFW.

Facebook: @WashingtonFishWildlife

Instagram: @TheWDFW

Twitter: @WDFW

#WildWashington #WildWa

Did you teach this lesson? [Give us your feedback.](#)



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Additional Resources :

We encourage you to use the following resources as either a supplement to this lesson, or to share the resources with students for their project.

Supplemental activities:

- [PNW Bumblebee Atlas](#)
- [Pollinators at home activities](#)-WDFW

Other resources:

- [Pollinator Poster](#)-USFS
- [Pollination and protecting pollinators](#)-WSU video
- [Pollinator Conservation Resources: Pacific Northwest Region](#)- Xerces Society
- [School garden kit](#)-Pollinator Partnership
- [Habitat at Home](#)-WDFW