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# A close friendship: Plants and Butterflies

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## Purpose:

Through this activity, students will understand that plants and butterflies have a relationship where both receive benefit from the other. They need each other to successfully complete their life cycles. For that reason, if a place has high butterflies' presence, it also indicates high plant diversity. Butterflies are important pollinators and as such they need to be protected. The Cascade-Siskiyou National Monument supports one of the highest diversities of butterflies and among it, some unique species.

## Objectives:

1. Students will recall the terms pollination, pollen and nectar.
2. Students will demonstrate the pollination process by mimicking how butterflies interact with plants.
3. STUDENTS WILL RECOGNIZE THE IMPORTANCE OF CSNM FOR BUTTERFLY AND PLANT DIVERSITY BY NAMING AND DESCRIBING ONE OF THE RARE BUTTERFLIES FOUND ON IT, THE MARDON SKIPPER.

**Time Required:** 50 minutes

**Appropriate grades:** 1<sup>st</sup> – 3<sup>rd</sup>

**NGSS and Common Core Standards:**

3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

## Materials:

- Partial map of Oregon + CSNM
- Image of Mardon skipper
- Bug viewers or magnifying lenses
- Small images of the Mardon skipper
- Butterfly outline (provided in Teacher's binder for copies)
- Color pencils (not provided)
- Life cycle of a butterfly poster
- 2 beach balls
- ~ 45 sticky notes (not provided)



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- Image of butterfly with pollen
- Image of pollen under microscope

## Activity:

<p><b>Introduction</b></p>	<p>For this activity, students will be making an imaginary trip to the Cascades-Siskiyou National Monument (CSNM). Show them the location of the Monument in the map. Ask them if they have been in this place before. Allow them to share what they remember of this place or use this moment to describe your favorite trail. While a monument is usually a structure created to commemorate a person or event, the CSNM is a unique place because the diversity (lots of different) animals, plants and other organisms that are found there.</p>
<p><b>Body</b></p>	<p>Ask students to mention some animals that might be found in the CSNM. Guide them until someone mentions butterflies. Tell them that CSNM is considered to have one of the highest diversities of butterflies in North America and that is one of the reasons it became a protected area. Until now, scientists have found at least 120 different butterflies in the Monument! Ask students to describe a butterfly. This might be a good opportunity to reinforce their knowledge of butterfly's body parts.</p> <p>There is one butterfly called the Mardon skipper that is found in the Monument and very few other places. Show them the picture of the Mardon skipper in nature and hand out the bug viewer with small image of the Mardon skipper to every pair of students. Tell them to be observant and to make their best description of what they see. [Description: the Mardon skipper is small, less than 1 inch (about the size of a quarter coin) with a robust, hairy body of tawny-orange color. The upper surface of both wings is orange with spots of light yellow and broad dark borders.] Then hand out the butterfly outline and have students color it as a Mardon skipper.</p> <p>Besides housing rare butterflies like the Mardon skipper a high variety of butterflies in the Monument also indicates high plant diversity. Ask students why would this be? How do plants and butterflies interact? Use poster to briefly review the butterfly's life cycle: egg, caterpillar, chrysalis and butterfly. Most butterflies fly long distances and are able to reproduce (lay their eggs) in different places. However, the Mardon skipper is not a strong flier and spends</p>



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	<p>its entire life cycle in one location. The females lay their eggs in grasses, when it becomes a caterpillar it eats the leaves of the grass and as an adult it feeds from the nectar of flowers. From this interaction, does it seem like the plants are getting any benefit from the butterflies?</p> <p>Plants do benefit from butterflies and to visualize it, students will mimic the plant-butterfly interaction with the following activity. Have all students circle up in an open space. If you have a big group, it might be better to divide them into two groups. All students become flowers. Give half of them three (3) sticky notes, those will represent flowers that produce pollen. The other flowers won't have any sticky notes to begin with (those need to be pollinated in order to reproduce). Luckily, there will be a butterfly, represented through a beach ball to help out with that. The butterfly will be bounced from flower to flower to feed from its nectar. As the ball gets to a flower with pollen, the pollen gets stuck in the butterfly's hairy legs and the student will attach one of their sticky notes to the ball. The ball gets thrown again; the next student that gets the ball can grab that pollen. If it was a flower without pollen originally, it has been successfully pollinated and will be able to produce fruits and seeds. Each time the butterfly lands on a flower that has pollen, that flower grabs one pollen from the butterfly, but must also give one to the butterfly. The idea is to move the ball as much as possible to pollinate the greatest number of flowers in a limited time. When time is up, count how many flowers were pollinated.</p>
<b>Closure</b>	<p>Ask students what happened during the game. Did they noticed how butterflies benefit plants? Try them to come up with the word pollination by themselves if the topic has been covered in class already. Otherwise, ask them why the butterflies visit the flowers. Show them the picture of the butterfly with pollen in its legs. Also, show them how those tiny grains look under the microscope. Without butterflies and other pollinators, pollen wouldn't be able to move easily from one plant to another and we wouldn't have the beautiful flowers or the delicious fruits those plants produce. Do they agree that places like CSNM should be protected? Why? Can they remember the name and describe the rare butterfly that lives in the Monument? Invite them to observe more butterfly-plant interactions next time they are outside.</p>

## Modifications:

- **4<sup>th</sup>- 6<sup>th</sup> grade:** Apply two flower types for the pollination activity. Use two different colors of sticky notes. In this case, a successful pollination will require that flowers get the pollen (sticky note) of a specific color.



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