



The Bio/Diversity Project

Sonoran Desert Biodiversity Outreach Curriculum Fall 2025 Lesson 4: Diversity of Sonoran Desert Insects

Grade Level: 6th

Time: 50 minutes

AZ Science Standards:

- 6.L2U3.12 Engage in argument from evidence to support a claim about the factors that cause species to change and how humans can impact those factors

Student Facing Learning Objectives:

- I can describe similarities and differences between the mouthparts of insects.
- I can explain how the various mouthparts of insects allow them to fulfill different jobs/roles in their ecosystem.

Guiding Questions:

- What are some physical adaptations insects have acquired living in the Sonoran Desert?
- What important ecosystem functions (jobs) do insects perform in the Sonoran Desert?
- How do the different physical adaptations of insects allow them to fulfill a variety of jobs in their ecosystems?

Vocabulary:

- Adaptation - process by which animals and plants change so that they're better suited to survive in an environment

Materials:

- [Lesson 4 Slides](#)
- [Video - Why are insects important?](#)
- [L4: Learning Worksheet](#)
- [L4: Station Instructions](#)
- Mini Turkey basters (2)
- Plastic Tweezers (2)
- Smarties candies (5-8 rolls)
- Plastic bowls (2)
- Sponge pieces (cut into tiny squares - 10)
- Salt or baking soda (salt is less messy)
- Paper plate
- Party blowers (10)
- Mini pompoms
- 3 cups of water
- Green food coloring
- Red food coloring
- Plastic wrap
- Rubber bands



Lesson 4: Diversity of Sonoran Desert Insects

Mini-Lesson (18 min)

Section Objective: Spark interest in this lesson's topic: insects and their strange/differing mouthparts.

Introduce learning targets, scientist of the week, and topic of insects (8 min):

- Review the lesson's learning objectives. Choose student volunteers to read objectives aloud.
- Review the scientist of the week. Ask an engaging question that prompts students to demonstrate what they understand about the scientist or helps students connect the scientist's work to their own lives.
- Opener: Ask students which animal group has the biggest population: insects, mammals, birds, reptiles, amphibians, fish? Have the class take a vote. (Answer: Insects!)
- Explain to students that in the Sonoran Desert, the insect population accounts for more species than all the other animal groups combined.
- Explain that there are many traits that make insects so abundant in their numbers, such as their ability to breed quickly and abundantly, their small size (can escape easily from enemies), their endless food supply (tend to have diverse diets, which means they can eat many things), and more.
- Tell students that we're going to watch a video about the importance of insects. After the video, you will ask them to answer the question: What role do insects play in their environments? Why are they important?
- Present the following video to students: [Video - Why are insects important?](#) (Video is in English but you can set the subtitles to Spanish)
- Review the discussion question. Ideal student answers:
 - Insects are pollinators which gives us and other animals food
 - Insects feed other animals (amphibians for example)
 - Insects are scavengers. They help decompose food waste.
 - Some insects eat other insects which are pests (this is called pest control)
- Explain that different insects possess different qualities that allow them to have different "jobs" in the world. Some of these qualities include physical adaptations such as the different types of mouthparts insects have.
- Each specific type of mouthpart allows insects to fulfill different roles in their ecosystem. If all insects had the same types of mouthparts, then not all crucial roles in an ecosystem would get filled.



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Exploring the different mouthparts (10 min):

- Distribute the [L4: Learning Worksheet](#) to students. As you review each of 4 mouthparts on the slideshow with students, be sure students are following along on their worksheets. They will have the same text from the slides on their own worksheets.
 - On the slideshow, project Mouthpart 1: Mandibles. Read the short paragraph about mandibles aloud. Tell students that as we read, we will be underlining the key roles/jobs that insects with that mouthpart fulfill in an ecosystem. Students will be underlining these key roles/jobs on their own L4: Learning Worksheet copies.
 - Before moving on to the next mouthpart, ask students to draw a quick sketch of that mouthpart in the designated box on their worksheets.
 - *Tip: If you are presenting on a smartboard, it's recommended you outline the insect mouthpart students should draw with a smartboard marker. This better helps students distinguish the outlines and draw the mouthpart more easily.*
 - Repeat this same routine for all 4 mouthpart slides.
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Instructions & Work Time (23 minutes)

Section Objective: Students engage in simulations to better understand the diverse mouthparts of various insects.

Introduce the four stations (8 min):

- In order to better understand these mouthparts, you will now participate in a station activity. There are 4 stations in total. And 4-6 students per group. You will spend three minutes at each station.
- Each station will simulate the eating process for insects of various mouthparts. Their job is to try to guess which insect mouthpart corresponds to each station activity.
- Tell students to turn their [L4: Learning Worksheet](#) to the backside. Briefly review with students the three questions they must answer at each station:
 - Which insect mouthpart does this station demonstrate?
 - What role do insects with this mouthpart play in their environment?
 - Bonus: Which insects have this mouthpart?
- Explain to students that they may not answer all three questions during their station time, but everyone should strive to answer the first question: Which insect mouthpart does this station demonstrate?
- Explain to students that only TWO students from each group will participate in each station activity. The others will watch/observe. Groups should take turns so that all students get to participate in at least one station activity.
- Briefly describe/show the activities at each of the four stations by referencing the [station instructions](#). Be sure to also review the safety rules for each station that are listed on the station instructions.



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- ❖ Station 1: Students will use a party blower that unrolls when you blow in it. Students will use the party blower to try to collect and capture as many cotton balls as possible.
- ❖ Station 2: Students will use the tweezers to pick up Smarties candy from one bowl and bring it to another bowl.
- ❖ Station 3: First have students attempt to pick up baking soda off of a plate with a dry sponge. Next, students will wet their sponge and attempt to pick up some of the baking soda off of the plate.
- ❖ Station 4: Students will use clear plastic cups containing water colored with food coloring (one green for plant food and one red for blood) to show the different types of foods piercing insects eat. Before beginning, the teacher will place clear plastic wrap over each cup and secure them, with a rubber band. Then, with the tip of the turkey baster, one student will steady the cup while another student pierces the plastic wrap surface and sucks some of the liquid into the stem of the baster.

Station Rotation Time: (15 min):

- It's highly recommended that instead of students rotating between stations, teachers bring the new station materials to students. This will reduce the amount of time it takes to rotate between stations and ensure the transition is less chaotic.
 - Roam the room during the station time and prompt students with guiding questions should they have trouble answering any of the worksheet questions.
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Wrap-Up (9 minutes)

Section Objective: Review the answers to the station activity and clean up space before releasing to next class.

Review Station Answers:

- Briefly review with students which mouthparts correspond to which station and the roles each mouthpart play in the environment.
- Answers:
 - Station 1: Siphoning. These insects are pollinators and promote the growth of fruit, flowers, and vegetables.
 - Station 2: Mandibles. These insects are decomposers and help decompose waste in our environment by breaking down waste into smaller parts.
 - Station 3: Sponging. These insects are decomposers and help decompose waste in our environment by breaking down waste into smaller parts.
 - Station 4: Pierce & Suck. These insects are food for other animals, especially amphibians like turtles and lizards. They help balance the ecosystem.
- If there's time, review the bonus answers. Share with students examples of insects with each mouth part.



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- Answers:
 - Siphoning: butterflies and moths
 - Mandibles: beetles, ants, grasshoppers, wasps
 - Sponging: flies
 - Pierce & Suck: mosquitos, fleas, aphids, cicadas, bed bugs

Clean up: Explain to students where you'd like them to place all station materials. Tell students what to do with their L4: Learning Worksheets