



The Bio/Diversity Project

Sonoran Desert Biodiversity Outreach Curriculum Fall 2025 Lesson 2: Keystone Species

Grade Level: 6th

Time: 50 minutes

AZ Science Standards:

- 6.L2U1.13 – Develop and use models to demonstrate the interdependence of organisms and their environment including biotic and abiotic factors.
- 6.L2U1.14 – Construct a model that shows the cycling of matter and flow of energy in ecosystems.

Student Facing Learning Objectives:

- I can identify keystone species in the Sonoran Desert and describe their importance within the Sonoran Desert ecosystem.
- I can create a biodiverse ecosystem that supports the life of a chosen keystone species.

Guiding Questions:

- What are keystone species?
- How do keystone species support a biodiverse ecosystem?

Vocabulary:

- Keystone species: a species in an ecosystem that other animals/plants largely depend on; without that species, the ecosystem might collapse

Materials:

- [L2 Slides](#)
- [L2: Keystone Species Handouts](#)
- [L2: Diorama Planning Sheet](#)
- [L2: Desert Animal Cut-Outs](#) (have these already cut and ready for students to choose & tape)
- Colored pencils
- Paper plates (folded and cut, ready for diorama usage)
- Rolls of scotch tape



Lesson 2: Keystone Species



Mini-Lesson (15 minutes)

Section Objective: Introduce the new topic of keystone species by reviewing the food webs from last week and getting students to think further about the interreliance of species.

Introduction to class and Keystone Species (10 min):

- Display slideshow and introduce the topic: keystone species
- Present the Scientist of the Week and talk about the significance of their work related to the topic of this lesson. Be sure to ask a guiding question that engages students with the scientist of the week.
- Introduce learning objectives. Have student volunteers read them aloud.
- Ask students: Can you make a taco without tomatoes? (Yes) Can you still make a taco without meat? (More difficult but yes) Can you still make a taco without a tortilla? (Probably not)
- Tell students that out of all these ingredients, a tortilla is the most important because it holds the entire taco together. Without it, you don't have a taco. That's exactly the same idea of a keystone species.
- Review the definition of a keystone species and discuss how keystone species are vital species in an ecosystem whom without, the ecosystem would collapse.
- Talk about what the word "keystone" means for architects and show students where the keystone lies in an arch (the center stone in an arch). Explain to students that without this stone, the whole arch would collapse. (draw on the board or show in slideshow)
- Tell students that keystone species play a vital role in maintaining biodiversity in an ecosystem. Who can remember what biodiversity is?

Examine how keystone species influence biodiversity by examining food web (5 min):

- Before you start the lesson, insert a photo into the slides of a student example food web from the last class. Choose an example that features a keystone species. Tell students you will examine the importance of keystone species by reviewing food webs from last class.
- Make this part interactive. Your questions will differ based on the keystone species you're featuring. Start the discussion by identifying the keystone species and then asking students some questions. Example questions if the keystone species is mountain lion might be:
 - What does this keystone species eat? (rabbits, deer)
 - What would happen to the rabbit and deer population if mountain lions didn't eat them? (The population would grow).
 - What do rabbits and deer eat? (plants)
 - If there was an overabundance of rabbit and deer, what would happen to all the plants? (They'd be eaten all gone)



The Bio/Diversity Project

- What other forms of life would be harmed if all the plants were eaten? Who else relies on plants for food? (Insects, lizards)
- Would the insects and lizards be able to find food as easily? (No)

Other questions you might ask for other keystone species:

- What eats this keystone species? (How does this species give energy to other life forms?)
- Do we think this keystone species creates homes for other species?
- Does this keystone species pollinate?
- Why is pollinating important?

Instructions & Work Time (25 minutes)

Section Objective: Explain the lesson's main task and provide models and examples for what a finished product looks like; establish specific criteria of what you'd like to see featured in their dioramas.

Give Instructions for Diorama Task (5 min):

- Tell students that today's task will involve researching one keystone species of their choice and using their research notes to create a diorama that illustrates how their keystone species supports biodiversity in its environment.
- Show students a finished example of a diorama to spark interest. Then walk them through the steps they'll take to complete this task:
 - Step 1: Choose your keystone species
 - Step 2: Read the 1-page [Keystone Species Handout](#) about your keystone species & complete the [Diorama Planning Sheet](#). The planning sheet must record TWO ways your keystone species supports other forms of life in its environment. Review with students your example of a completed diorama planning sheet.
 - Step 3: Make your diorama. Establish a protocol for how students will let you know when they're done with their planning sheet and ready for the supplies to make their diorama. Be sure to review with students in more detail how your example diorama illustrates the TWO ideas from your planning sheet.

Student Work Time (25 min):

- Walk around the room and monitor students as they work. Be ready to give students the [paper cut-outs](#) of their chosen keystone species along with the folded and taped paper plates for their dioramas after they've completed their diorama planning sheets.
- Decide if you want students to tape their own desert animal cut-outs to their dioramas or if you'd like to control the tape and they can tell you when they're ready for taping.
- Provide students with time checks as they work. By 10 min they should be almost done with their diorama planning sheet.



Wrap-Up (5 minutes)

Section Objective: Clean up the classroom and share dioramas with classmates.

Clean up (5 min):

- Have students clean-up and return all supplies where they belong.
- Organize students into groups of 2-3 and give each student a turn to share their dioramas with their classmates. While sharing, students should address:
 - My keystone species is...
 - One role my keystone species plays to support its environment is...
 - Another role is...
- Ask partner teachers if they might hang up student dioramas in the classroom to promote student achievement and pride.