

Interim Progress Report – June 2025
NM Wildlife Conservation Teacher Training: Engineering Design in Action
Professional Services Contract #25-516-0000-00020

Project Objective

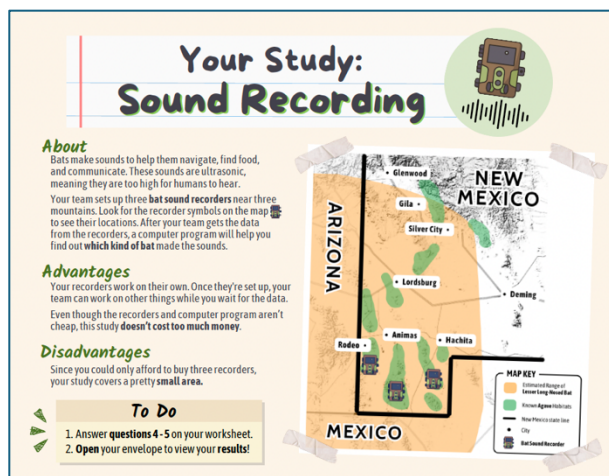
The NM Wildlife Conservation Teacher Training: Engineering Design in Action project will help 3rd through 5th-grade teachers teach their students about New Mexico wildlife conservation using engineering design standards. Forty teachers and approximately 800 students will engage in hands-on lessons featuring Species of Greatest Conservation Need (SGCN) through teacher workshops, classroom lessons, and public events.

Progress From February - June 2025

1. **Developed four 3rd-5th grade activities that focus on NM wildlife** (each lesson includes one SGCN) and address the following NM STEM Ready engineering standards for 3rd through 5th grades: (1) ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost; (2) ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem; (3) ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Each of the four lessons was designed with Asombro's 15-step lesson development process, which includes screening for standards alignment, pilot testing (which occurred in April and May 2025), and revisions. Lessons include:

- Bats and Agave: Using Science to Protect the Lesser Long-Nosed Bat - In this one-hour lesson, students learn that Lesser Long-Nosed Bats (a SGCN) feed on nectar from agave flowers as they migrate from southwest New Mexico to Mexico in the fall. However, the agave habitats they rely on are often threatened by human activities. Students read handouts (one shown below) to learn about one of three bat study methods and view a map showing where their study detected Lesser Long-Nosed Bats. They use this information to select agave habitats on the map that they would want to protect. Students learn how different study methods reveal different information and why sharing data and looking at the results from multiple studies is so important in science.
- Gray Vireos: Using Science to Protect a Threatened Species (modification of a 2018 lesson) - In this one-hour lesson, students play the role of scientists working for the New Mexico Department of Game and Fish. They work through four steps with the goal of conserving the Gray Vireo (a SGCN) in New Mexico: (1) using a model to survey two habitats for Gray Vireos, (2) learning what scientists already know about the species, (3) choosing a limited number of strategies to include in a Gray Vireo Recovery Plan, and (4) comparing their plan to other recovery plans.
- Desert Shrimp: Using Science to Protect Playa Shrimp and their Habitat – In this two-part lesson, students learn how rainwater collects in playas, creating temporary wetland habitats for many desert organisms. They set up a mini playa in the classroom and observe the changes as several shrimp species hatch and grow over two weeks. There are multiple shrimp species that are dependent on playas and are SGCN. Students learn that runoff carries pollution and litter towards



playas. They then use engineering design steps to create a poster that convinces people to reduce pollution to protect desert shrimp.

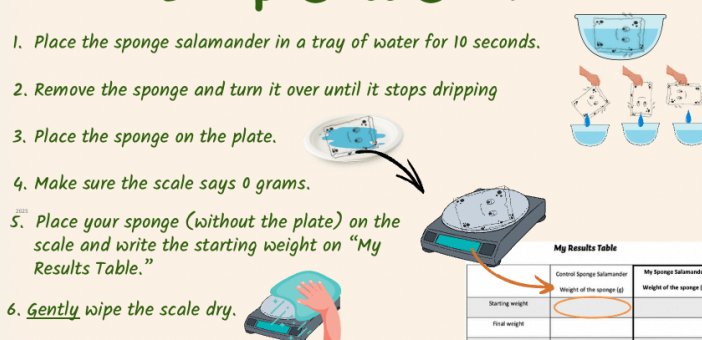
- **Sponge Salamanders: Using Science to Protect the Sacramento Mountain Salamander**

(modification of a 2016 lesson)

- In this two-part lesson, students work in teams to plan, design, and build a habitat that will help a “sponge Sacramento Mountain Salamander” (a SGCN) retain water for 1 to 3 days. Students calculate the water loss over the course of the experiment and compare their habitat to a control and to other students’ habitat designs. Students discuss strengths and weaknesses of various designs before determining what changes they would make if they repeated the experiment.

Set up: Class Control

1. Place the sponge salamander in a tray of water for 10 seconds.
2. Remove the sponge and turn it over until it stops dripping
3. Place the sponge on the plate.
4. Make sure the scale says 0 grams.
5. Place your sponge (without the plate) on the scale and write the starting weight on “My Results Table.”
6. Gently wipe the scale dry.



	Control Sponge Salamander	My Sponge Salamander
Starting weight		
Final weight		
Total water lost (starting weight minus final weight)		

Slide from the Sponge Salamander lesson showing students how to set up the control for the experiment

2. Submitted lessons to the Share with Wildlife Coordinator for review by the Agency’s

Conservation Educator – On June 2, we submitted the teacher guidelines, worksheets, slides, and associated materials for all four lessons to the Share with Wildlife Coordinator for review by the Agency’s Conservation Education Coordinator.

3. Planned, advertised, and accepted teachers for a workshop we will host on July 15, 2025 – In April and May, we advertised a one-day **New Mexico Wildlife Conservation: Engineering Design in Action** teacher workshop, which will be held on July 15, 2025, in Las Cruces. We advertised broadly throughout the state, and all 20 spots are filled. We admitted 22 teachers in case there are any teachers who have to cancel at the last minute. We will prepare materials for 22 teachers.

The workshop will use Asombro’s successful teacher training model; approximately half of the workshop will focus on increasing teachers’ content knowledge about NM wildlife conservation and the engineering design standards, and the other half will focus on introducing teachers to the lessons designed for this project. Each teacher will leave with a kit of prepared materials to teach the lessons showcased in the project. Teachers will also receive a stipend and travel reimbursements (if traveling from more than 75 miles away).

Next Steps (July – September 2025)

- Assemble 22 kits of supplies for all four lessons – These will be given to teachers in the workshop so they can implement the lessons with their students in the fall.
- Prepare for and deliver the teacher workshop on July 15, 2025.
- Plan, prepare, and host a public program on Wildlife Conservation at the Chihuahuan Desert Nature Park on August 30, 2025. Teachers who attend the July workshop will be invited to participate with their students in this public event, which will feature hands-on activity stations about Species of Greatest Conservation Need in New Mexico.

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