

Attached is our Field and Community Science Final Report



We greatly appreciate your support!





Annual report of activities performed by Bosque School's
Porcupine's Perch Program –
Gaining Perspective on Species of Greatest Conservation Need

For the

New Mexico Department of Game and Fish and its
 Share with Wildlife Program



Under Contract 24-516-0000-00031

Executive Summary

16 Dec 2024

As a direct result of funding from the New Mexico Department of Game and Fish's (NMDGF) Share with Wildlife program, Bosque School supported 892 K-12 students from other Albuquerque area schools in the Porcupine's Perch program during the calendar year 2024. In so doing we were able to directly engage students in actual, hands-on wildlife field research while those young New Mexicans learned about their stewardship responsibilities for both common wildlife and Species of Greatest Conservation Need. Furthermore, students were able to share their learning and findings with others beyond their own classrooms. We extend our heartfelt thanks to the NMDGF and its staff for supporting the development of new young stewards across the Middle Rio Grande.



(Left) Students from Bosque's LYNX (Learning in Your Native Xeric Habitat) program teach first graders from Inez Elementary about otter habitat during an Otter Day. (Right) Students observe the processing of small mammals captured at a riverside site where fire and flooding have altered the landscape and impacted animal communities.

Background

Bosque School, a private independent school, is committed to providing students with transformative learning experiences. A primary way we do that is through field education experiences on ancestral

and current homelands of Puebloan people along the Rio Grande and its riverside forest, the *bosque*. We offer opportunities for students to care for and learn from the environment as we strive to be good stewards of it. We do this for both our own students and those from other schools. All funds we have received and expended under the NMDGF Share with Wildlife program have supported students who do not attend Bosque School.

Bosque School's *Cebrin Goodman, Youth, Leadership, and the Environment Program* is at the heart of how Bosque School does this work of guiding young people to conduct research about and take responsible action in support of New Mexico's wildlife. Within the Goodman Project, Bosque School hosts many hundreds of students from area schools, at no charge to them or their schools, to do science that matters beyond the classroom. We do this within our Porcupine's Perch program. In it, students first learn about local wildlife and how to safely participate in ethical wildlife research. Then they are supported as they help to conduct original research and monitoring activities related to both common wildlife and Species of Greatest Conservation Need. Finally, we support these students develop art and ecology and mathematical representations of their data and findings to share with others.

Our NMDGF Share with Wildlife program funding is an important part of how we are meeting our curricular and programmatic goals in 2024 around the Porcupine's Perch program. We are combining NMDGF Share with Wildlife funds with grants from several other organizations and donations from various families to make all of this happen.

Report of Progress on Scope of Work in Contract 24-516-0000-00031

The following accomplishments are related to the Scope of Work under Contract #24-516-0000-00031. This report represents the full duration of the contract from 16 April 2024 through 16 December 2024.

Item 1a. Directly engage at least 500 students in the Porcupine's Perch program.

Bosque School has exceeded the goal of 500 student participants in our Porcupine's Perch program. During the course of the project, we supported 892 K-12 students from other Albuquerque area schools. We also served 133 visiting adults who were chaperones or teachers on the field science trips. The total number of visiting students and adults combined for the duration of this contract was 1,025 individuals.

During the school year, we hosted 22 participating Field & Community Science Groups; 81% of the students were from Title 1 schools. Our work involved hosting 54 field days with one to six classes participating on each day. The general schedule for each day involved students rotating through a series of field research activities and learning stations. Some of the rotations included activities such as:

- 5 gallon bucket pitfall trapping
- Macro-invertebrate sampling
- Amphibian swabbing for chytrid fungus

- Bird banding
- New Mexico ancestral puebloan trading history
- New Mexico timeline
- Porcupine capture demonstration (stuffed porcupine)
- Beaver habitat studies
- Bird habitat analysis
- Additional activities found in the appendix



Students from the Albuquerque Sign Language Academy learning about local wildlife through bio-artifacts provided in partnership with the NM Dept of Game and Fish.

On most days, the wildlife field work and supporting educational lessons were taught or co-taught by Bosque School high school students who are a part of the *Learning in Your Native Xeric Habitat* (LYNX) group. These Bosque students profiled their own original wildlife research and, where possible, had visiting students help collect data as a part of their research projects. Some of that field work is being conducted in partnership with NMDGF.

On several days, material was delivered mostly or entirely in Spanish in support of English as a Second Language learners. One of our goals moving forward is to translate our written materials into Spanish to further support our Spanish-speaking students.

Item 1b. Develop/Adapt Species of Greatest Conservation Need Curriculum.

We have developed and refined several different programs that are aligned with NM Public Education Department science standards, incorporate Traditional Ecological Knowledge, and include education about Species of Greatest Conservation Need. Programs include:

| Field Day Theme | SGCN | Common Wildlife | Field Research |
|------------------------|-------------------------|----------------------------------|---|
| Bosque Rodents | NM Meadow Jumping Mouse | Peromyscus, Hispid Cotton Rats | Small Mammal Live Trapping & Release |
| Bosque Birds | Western Bluebird | Spotted Towhee | Bird Banding and Release |
| Aquatic Turtles | Big Bend Slider | Red-eared Slider, Painted Turtle | Turtle Hoop Net Live Trapping & Release |
| Otter Day | River Otter | Beaver | Riparian Habitat Analysis, Wildlife Inventory |

| | | | |
|----------|---------------------------|----------------------|---|
| Fish Day | Rio Grande Silvery Minnow | Western Mosquitofish | Aquatic Habitat Analysis and Macroinvertebrates |
|----------|---------------------------|----------------------|---|

The program curriculum and supporting materials can be found in the Appendix at the end of this report. Item 2. Provide Classroom Safety & Ethical Wildlife Research Orientations

All participating students received necessary orientations on how to safely and ethically participate in our Porcupine’s Perch wildlife research programs. About half of the students received a pre-field/study trip orientation in their own school’s classrooms and the other half received that safety and ethics information on the Bosque School campus.

Item 3. Field/Study Trips

All 892 visiting student participants had at least one field/study trip day on the Bosque School campus and in the adjacent City of Albuquerque Open Space Division property (bosque, riparian habitat). Many students had some combination of both classroom and field experience with our program.



5th graders from Armijo Elementary (title 1 school) using radio telemetry equipment to find a collared porcupine.

Each of the field/study trips included direct work of some combination of both observing and supporting wildlife research/monitoring, as appropriate for the particular age group and abilities of the involved students. Participating students regularly saw and learned first-hand how radio telemetry works as it relates to radio collared porcupines. Other field activities included turtle trapping, small mammal trapping, beaver habitat

studies, bird banding and identification, macroinvertebrate/*Gambusia* (mosquitofish) sampling, amphibian swabbing, butterfly netting, and fish identification. Activities to support the animal studies are typically done in the afternoon portion of the field day. The supporting activities also take place outdoors, weather permitting.

We engaged students in field opportunities outside of the school year over the summer months. We partnered with Horizons Albuquerque and Bosque School’s summer camps to provide outdoor field experiences for students ranging from 1-8th grade from a mix of schools across the Albuquerque area. Horizon summer camp students from 1-4th grade received programming on mammals, birds, fish, and herps during a one-day field experience.

Several student groups participated in multi-day field opportunities with our Field and Community Science Program throughout the school year and summer. We included ‘field hours’ as an additional category in the data table below to reflect the time these repeat students spent in the bosque ecosystem. Our Nex+Gen Academy students worked on an in-depth project where they collected data on porcupines over six different field days at the Valle de Oro National Wildlife Refuge. They later processed their quill samples in the University of New Mexico (UNM) Center for Stable Isotopes alongside UNM professors and graduate students, after taking part in a 3-day course on stable isotope research that we co-hosted with UNM. The course and lab work lasted for an intensive 27.5 hours. Other multi-day programming groups included Horizon’s 8th graders, who joined us on five occasions. Two groups of Bosque summer campers (2-4th graders and 5-7th graders) received two weeks of programming on mammals and herps, respectively. Collectively, we provided these multi-day summer camp students with a total of 67 hours of hands-on field science.

Outreach numbers, field & lab hours from 16 April 2024 to 11 December 2024

| Field & Community Science Groups | | | | | |
|---|-----------------------------------|-----------------|-------------------------|--------------------------|------------------------|
| Date | School | Grade | Title One School | Visiting Students | Visiting Adults |
| 4/16/2024 | NM International School | 1st Grade | Y | 36 | 5 |
| 4/16/2024 | Valle Vista Elementary | 1st Grade | Y | 50 | 5 |
| 4/16/2024 | McCullum Elementary | 1st Grade | Y | 38 | 7 |
| 4/22/2024 | Manzano Day School | 4th Grade | N | 32 | 6 |
| 4/23/2024 | Manzano Day School | 4th Grade | N | 32 | 4 |
| 5/6/2024 | Int School at Mesa del Sol | 3rd Grade | Y | 34 | 3 |
| 5/7/2024 | Cross of Hope | 4/5 | N | 14 | 9 |
| 5/20/2024 | John Baker Elementary | 2nd Grade | Y | 21 | 12 |
| 9/16/2024 | Albuquerque Sign Language Academy | High School mix | Y | 7 | 4 |
| 9/27/2024 | NM International School | 5th Grade | Y | 57 | 13 |
| 10/3/2024 | Inez Elementary | 1st Grade | Y | 41 | 10 |
| 10/4/2024 | The Montessori Elementary School | 7th Grade | Y | 40 | 5 |
| 10/7/2024 | Inez Elementary | 4th Grade | Y | 40 | 8 |
| 10/17/2024 | Marie Hughes Elementary | 5th Grade | Y | 54 | 6 |
| 10/18/2024 | Marie Hughes Elementary | 5th Grade | Y | 25 | 5 |
| 10/25/2024 | Inez Elementary | 5th Grade | Y | 50 | 5 |
| 11/4/2024 | Inez Elementary | 4th Grade | Y | 25 | 6 |
| 11/12/2024 | Manzano Day School | 5th Grade | N | 31 | 6 |
| 11/15/2024 | NM International School | 4th Grade | Y | 52 | 11 |
| 11/19/2024 | Manzano Day School | 5th Grade | N | 31 | 9 |
| 12/11/2024 | Armijo Elementary | 5th Grade | Y | 44 | 4 |
| | | | | 754 | 133 |

Multi-Day Field Opportunities

| Date | Program | Age | school | # Students | # Field Hours |
|-----------|---|--------------|--------|------------|---|
| 6/14/24 | | | | | 3 |
| 6/21/24 | | | | | 3 |
| 6/28/24 | | | | | 3 |
| 7/5/24 | | | | | 3 |
| 7/12/24 | | | | | Horizon's Summer Camp |
| June 2024 | Bosque Summer week herp camp (5 days) | 5-7th grade | mixed | 10 | 10 |
| June 2024 | Bosque Summer week herp camp (5 days) | 2- 4th grade | mixed | 20 | 10 |
| July 2024 | Bosque Summer week mammal camp (5 days) | 5-7th grade | mixed | 10 | 10 |
| July 2024 | Bosque Summer week mammal camp (5 days) | 2- 4th grade | mixed | 20 | 10 |
| 8/15/24 | | | | | 2 |
| 9/6/24 | | | | | 2 |
| 9/13/24 | | | | | 2 |
| 9/20/24 | | | | | 2 |
| 9/27/24 | | | | | 2 |
| 9/10/24 | | | | | Field Science Project - data collection |
| | | | | 82 | 67 |

Special Programs

| Date | Program | Age | # Students |
|-----------|-----------------------|-----------|------------|
| 6/13/2024 | Horizon's Summer Camp | 1st grade | 14 |
| 6/20/2024 | Horizon's Summer Camp | 2nd grade | 14 |
| 6/27/2024 | Horizon's Summer Camp | 3rd grade | 14 |
| 7/3/2024 | Horizon's Summer Camp | 4th grade | 14 |
| | | | 56 |

Lab opportunities

| Date | Program | Grade | School | # Lab hours |
|-----------|---|---------|-----------------|-------------|
| 10/3/2024 | Isotope Workshop | | | 9 |
| 10/4/2024 | Isotope Workshop | | | 8 |
| 10/5/2024 | Isotope Workshop | | | 5 |
| 11/9/24 | Field Science Project - lab work day @ UNM Center for Stable Isotopes | 12th gd | Nex+Gen Academy | 5.5 |
| | | | | 27.5 |

Item 4. Student Data Analysis and Representation

All students were supported in collecting, recording, and analyzing field and wildlife data. Where possible, this included both art and ecology and/or mathematical visual data representation, although sometimes because of end-of-school-year scheduling for a number of the classes, activities were limited to what could be accomplished at the end of the field visit to the Bosque School campus and its adjacent bosque riparian habitat.

Each site visit and field day was planned in advance and in concert with the teacher for each class. Lessons were modified to address current educational goals for each particular class. Learning assessments were generally handled by the visiting teachers, although in 2025 we hope to more formally analyze and aggregate student learning outcomes to refine our educational programming.

Report of Expenditures in Contract 24-516-0000-00031

The \$18,852 for this contract has all been encumbered or spent within the line-item topics listed in our original proposal (i.e., field/study trip bussing for participating students; salary and benefits for Field Science Educator and student interns to develop and deliver the curriculum; and educational supplies).

Report Submission Details

This report prepared and transmitted to the NMDGF Share with Wildlife Coordinator on Monday 16 December 2024. This report, submitted with gratitude to the NMDGF and to the best of our knowledge, is true and accurate. By:

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Appendix:

Program Materials:

Example pages from student field journals (entire field journals can be provided upon request). Field journals are modified for each visiting school group based on the field science activity and group needs.

Summary of all wildlife-related activities conducted with Porcupine's Perch Participants

| All wildlife handling done under necessary and required permits and with Bosque School Institutional Animal Care and Use Committee (IACUC) approval | | | |
|--|----------------|------------------------|---|
| Activity | Passive | Active Handling | Under Permit? |
| Amphibian Chytrid swabbing | | yes | land use permit City of ABQ Open Space; permission also on private land |
| Aquatic macroinvertebrate/ <i>Gambusia</i> seining | | yes | land use permit City of ABQ Open Space; permission also on private land |
| Beaver Activity Inventory | yes | | no permit required for activity; land use permit City of ABQ Open Space; permission also on private land |
| Beaver Hair Snare | yes | | land use permit City of ABQ Open Space; permission also on private land |
| Bird Watching | yes | | no permit required for activity; land use permit City of ABQ Open Space; permission also on private land |
| Bird Banding | | yes | Yes, under state & federal permits Dr. Joan Morrison; land use permit City of ABQ Open Space; permission also on private land |
| Butterfly Inventory/Monarch Tagging | yes | | no permit required for activity; land use permit City of ABQ Open Space; permission also on private land |
| Lizard/Invertebrate Pitfall trapping | | yes | land use permit City of ABQ Open Space; permission also on private land |
| Porcupine Radio Collaring | | yes | land use permit City of ABQ Open Space; permission also on private land |
| Porcupine Tracking | yes | | no permit required for activity; land use permit City of ABQ Open Space; permission also on private land |
| Small mammal trapping | | yes | land use permit City of ABQ Open Space; permission also on private land |
| Turtle hoop net trapping | | yes | land use permit/permission MRGCD; permission also on private land |