

~ a classroom visit time of 1- 1.5 hours is recommended ~

KEY: ♦ - overview, ♦ - plant focused, ♦ - water focused, ♦ - animal focused

♦ **River of Change** – [Excellent introductory lesson about the Rio Grande and the bosque.](#) Learn about BEMP and how the middle Rio Grande watershed has changed over the last 2000 years with this hands-on modeling activity. We will take your students on an in-class journey to see the changes from the historical Rio Grande to its more managed form today.

~ *focus on:* ecosystem dynamics, flooding disturbance, human influences on the Rio

~ *appropriate for grades 3-12 (see Common Core grid for more details)*

~ *We ask that all teachers who participate in Monthly Monitoring sign up for this class*



♦ **BEMP Basics** – [Only for school groups that do the BEMP Monthly Monitoring.](#) An introduction to BEMP and scientific monitoring. We will also go over the BEMP field data procedures for measuring precipitation, groundwater depth, and leaf litter collection. Students will practice interacting with the measurement data tools and see maps of the study sites.

~ *focus on:* groundwater wells, precipitation gauges, leaf-litter fall

~ *appropriate for grades 2-12*

♦ **Bosque Botany Bonanza Jr.** – Learn more about the native and exotic plants of the bosque. We will discuss how exotic plants came to the bosque, share cuttings of bosque plants and make a field journal with rubbings & scientific descriptions.

~ *focus on:* cottonwood, willow, salt cedar, Russian olive

~ *appropriate for grades K- 6*

♦ **Bosque Succession Game** – Discover how natural and anthropogenic disturbances of the bosque drive ecological succession and change. We'll play a simulation game and talk about exotic and native plant interactions.

~ *focus on:* succession, disturbances, fire, native & exotic plants

~ *appropriate for grades 7-12*



♦ **Leaf Litter Lab** – [Only for school groups that do the BEMP Monthly Monitoring.](#) Work with actual BEMP leaf litter to practice identification, sorting, and weighing of BEMP biotic data. We'll observe common plants of the bosque, and students will sort BEMP collected litterfall by species and biomass. The students' findings are essential for input into our UNM database.

~ *focus on:* plant identification, using scales & data sheet entry

~ *appropriate for grades 5-12*

♦ **Agua Adventures** – Learn about the water cycle of the Rio Grande and water conservation. We will play a game to model water movement between rivers, aquifers, plants, animals and the atmosphere. We will also bring a model of the Middle Rio Grande Valley to show how humans' use of water impacts the water cycle.

~ *focus on:* the water cycle, groundwater/surface water, conservation

~ *appropriate for grades 3-6*

◆ **Water Budget of the Rio Grande** – Learn about water allocation and conservation in New Mexico. We will do a math-centric conversion of water budgets during “normal” and “drought” years. Students will delve into how the water from the aquifers, rivers, and reservoirs is distributed around the Middle Rio Grande valley.

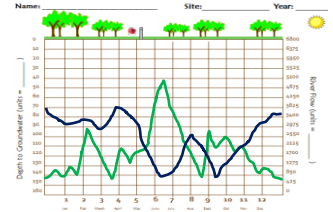
- ~ focus on: economics of water supply, math concepts
- ~ appropriate for grades 7-12



◆ **Dabbling in Data** – Hands-on experience graphing and examining actual groundwater table data (collected by BEMP students).

We start with a water cycle activity to show the relative amount of freshwater on Earth. We then discuss monthly monitoring collections & graph data from actual BEMP sites, to show the relationship between groundwater and river flow (volume).

- ~ focus on: shallow groundwater table, graphing, chart analysis
- ~ appropriate for grades 4-12



◆ **Stormwater Science** – Examine how the Rio Grande is directly tied to health of surrounding watershed. We’ll explore the meaning of a watershed, how pollutants enter our water system, and how individuals can contribute to environmental degradation or environmental sustainability.

~Extension Lessons also in the **Stormwater Science Curriculum: Water Chemistry Lab or Stormwater Study trip to the Rio Grande**

- ~ focus on: run-off, nutrient-loading and pollution, water quality
- ~ appropriate for grades 3-12



◆ **Fauna of the Floodplain Jr.** – Explore who the native animals of the bosque are. We will discuss food webs, physical, and behavior characteristics and examine bio-artifacts like skulls, scat and tracks. We’ll take an in-depth look at beavers by dressing up one of the students as a beaver!

- ~ focus on: adaptations, animal classification & diversity
- ~ appropriate for grades K-6

◆ **Fauna of the Floodplain Sr.** – Learn more about how animals’ physiological and behavioral adaptations have helped them thrive in the bosque. In small teams, students will research a specific animal of the bosque and then teach the rest of the class about how it serves the functionality of the whole ecosystem.

- ~ focus on: adaptations, ecosystem functions, migration, reproduction
- ~ appropriate for grades 6-12



◆ **Creepy Crawly Critters** – Learn common characteristics of arthropods (bugs!), understand why BEMP does pitfall trap collections, and practice insect classification with hands-on lab activities.

- ~ focus on: local insect identification, data journaling and sorting
- ~ appropriate for grades 4-12



♣ Bosque BEMP Study-Trip — Come explore the BOSQUE for a day! We offer 1-day Study Trips (academic field trips) at the Bosque School's own BEMP monitoring site (in Albuquerque). We will learn about the ecology of the bosque – the plants and animals, both native and exotic. We'll talk about the seasonal changes affect the plants and wildlife of the bosque and collect data for [Nature's Notebook](#), a national citizen science project with the National Phenology Network. We'll also focus on what students of Albuquerque can do to help protect the bosque and its special inhabitants! We ask that anyone who comes for a Study Trip, also signs up for at least one BEMP presentation.

Rough Agenda for Study Trips

Time	BEMP Activity	How can the Teacher help?
~9:00 am	Pick up at your school	Manage students on Bus (Patrick is our lovely bus-driver)
~9:20-10:00	Welcome to Bosque School and BEMP – introductions with BEMP staff Hand-out Field Journals ACTIVITY: What is Phenology?	Play with us!
~10:00-10:45	We explore the pond, the ditch, the levee. History of the bosque as we walk. GAME: "Bosque Bingo" aka "Nature Scavenger Hunt" – tape our samples into the Field Journals	Play with us, help keep students on trails or in near-by area, help students fill out field journals
~10:45-11:45	<u>Phenological Monitoring Explanation & Data Collection</u> Check out 3 cottonwood trees and collect leaf, bud, fruit, data on how the tree responds to seasons. Discussion why we monitor, diversity of bosque, etc.	Help when students are in small groups to manage student behavior
11:45-12:45	Lunch Use the Kestrl (measurement tool) to measure weather data – wind speed, temp, etc. Discussion about weather and the river.	Lunch with all students and staff at the river's edge.
~12:45-1:30	Nature Games/Activities that explore fire in the bosque, predator-prey interactions, animal adaptations	Play with us and help students fill out field journals
~1:30-2:00	Quiet Journaling/Reflection time and review of day's learnings. Farewell to the bosque –	Help gather all students to the bus.

- ~ *focus on*: phenology, evidence of animals, native/exotic plants, BEMP monitoring
- ~ students should bring a water bottle, pencil & packed lunch to picnic along the Rio Grande
- ~ students should dress appropriately for seasonal conditions & walking in the bosque
- ~ all participants receive a take home field journal
- ~ transportation times between 9:00am-2:00pm, however *schedule is flexible*
- ~ group **limit of 30** students per trip
- ~ *appropriate for students grades 3-12*
- ~ BEMP has (limited) funding for busing



TEACHERS

Need Continuing Education Credits ???

Consider taking **Bio 408/508L**

Bosque Internship at UNM

Offered in Fall & Spring semesters.

Connect with the science and environmental education of BEMP in the COLLEGE classroom!

