

# Program Overview

The Bosque Ecosystem Monitoring Program (BEMP) collaborates with K-12 students and their teachers to track long-term environmental change in the Middle Rio Grande riparian forest, or "bosque." The University of New Mexico (UNM) and Bosque School are partners in BEMP, which is an outreach arm of UNM's Sevilleta Long-Term Ecological Research program.

Founded at UNM in 1996, BEMP was created as the result of teaching and research that, for the previous decade, focused on the relationship between the bosque's health and the flow regime of the Rio Grande. K-12 students using BEMP monitoring procedures apply "hands-on" science to this historically important and now greatly altered ecosystem. The products of their efforts are made available to their community and to resource managers.



- ◆ annual participation rates of over 4,900 students & teachers (up from 400 in 2001-2002)
- ◆ involvement: Public, Traditional, Alternative, Charter, Private, Parochial & Home Schools
- ◆ students from: Rio Arriba, Sandoval, Bernalillo, Valencia, Socorro & McKinley counties
- ◆ monitoring occurs at 25 BEMP sites located between Ohkay Owingeh pueblo & Lemitar
- ◆ agency representative, teacher & student training workshops provided by BEMP staff
- ◆ peer teaching opportunities with older students mentoring younger students
- ◆ participating BEMP students and teachers have received local, state and national recognition and awards for their BEMP science, community service outreach & educational activities
- ◆ student BEMP projects have won local, state & national science fairs & competitions
- ◆ BEMP is consistent with national & state science education reform efforts
- ◆ BEMP has been featured as a community monitoring model program at local, regional & national conferences
- ◆ BEMP has 2 annual Student Congress events (April 29<sup>th</sup>: 7-12<sup>th</sup> grades; April 30<sup>th</sup>: K-6<sup>th</sup>); all program participants are welcome to attend and present their experiences in the bosque!



# BEMP Education Activities

◆ - in the classroom    ♣ - in the field

- ◆ **BEMP Basics** - an introduction to BEMP and the bigger picture; students learn about ecosystem dynamics, monthly monitoring and make a map of a field-site
  - ~ focus on: groundwater wells, precipitation gauges, leaf litter fall
  - ~ appropriate for grades 2-12
- ◆ **Native & Exotic Producers** - discuss what "native" and "exotic" mean, we pass out cuttings of different bosque plants and make an identification sheet for future field expeditions
  - ~ limited to: summer, fall and late spring for fresh cuttings
  - ~ focus on: cottonwood, willow, saltcedar, Russian olive, etc.
  - ~ appropriate for grades 2-12
- ◆ **Changing River Model** - see how the middle Rio Grande Valley has changed over the last 2000 years with this hands on Bosque Education Guide activity
  - ~ Rio Bravo: topography, native plants & animals, historic communities
  - ~ Rio Manso: levees, ditches, jetty jacks, exotic plants & animals, population ↑
  - ~ Rio Nuevo: restoration, monitoring, education, water resources
  - ~ appropriate for grades 2-12 (1 1/2 hours needed or can be split into 2 visits)
- ◆ **Aquifer Model Fun** - learn about the water cycle & conservation, explore a model of the Middle Rio Grande Valley and each student gets to make a mini aquifer to take home
  - ~ focus on: the water cycle, groundwater vs. surface water, filtration
  - ~ appropriate for grades 2-12
- ◆ **Leaf Litter Lab** - we'll provide the equipment and scales, but your students will have the chance to sort by species, weigh and process leaf litter collected in the field for input into our UNM database
  - ~ focus on: plant identification, data sheet entry, using scales
  - ~ appropriate for grades 5-12
- ◆ **Fauna of the Floodplain** - learn about some of our local bosque animal inhabitants with bio-artifacts like skulls, scat and tracks
  - ~ focus on: adaptations, animal groups
  - ~ appropriate for students of all ages
- ◆ **Data Interpretation** - discuss monthly monitoring and graph the data from your field site, note ecological trends and seasonal changes
  - ~ focus on: graphing, comparison of data points, multiple graph components
  - ~ appropriate for grades 5-12
- ◆ **Creepy Crawly Critters** - students learn about phylum Arthropoda, BEMP pitfall traps and insect classification with hands-on lab activities
  - ~ focus on: local bosque insect identification, data sheet entry and sorting
  - ~ appropriate for grades 2-12
- ♣ **Bosque Study-trip** - come to Bosque School for a BEMP nature hike and discover our bosque up close and personal (porcupine radio telemetry tracking included when available)
  - ~ focus on: evidence of animals, native/exotic plants, BEMP monitoring
  - ~ limited funding is available for bus transportation
  - ~ students should bring a packed lunch to picnic along the Rio Grande
  - ~ students should dress appropriately for varying seasonal conditions
  - ~ appropriate for students of all ages

