

Autumn 2017 Newsletter



"What-er" We Finding in the Rio Grande?

by Kim Fike, BEMP Science Coordinator

One day each month throughout 2017, BEMP scientists and students from La Academia de Esperanza High School have been hopping in and out of the river, sampling sites from Bernalillo to southern Albuquerque in order to study the water quality of the Rio Grande. This reach of river is often subject to influxes of pollutants from the surrounding urban region, so BEMP was contracted by the Middle Rio Grande Stormwater Quality Team (or StormTeam) to monitor the river on a monthly basis. The StormTeam consists of 11 organizations and agencies with the shared goal of educating the public on how to reduce stormwater pollution in order to keep the Rio Grande clean.

Several of the students have participated in water quality sampling more than once, which allowed them to streamline the multi-step process of gearing up with waders and life jackets, gathering the various instruments, heading to the bank of the river and cautiously stepping into the current. Even returning students notice that each river experience is unique. Some days our knees barely get wet, other days the river is high enough that only the tallest students can enter the water safely.



Everyone plays a role in the data collection. A student in the river shouts the dissolved oxygen reading to a person recording data on the bank. Another reads the pH, and a third calls out the conductivity and specific conductance of the water. BEMP staff members collect water samples for *E.coli* analysis while a student fills the turbidity vial. *E.coli* is a bacteria that originates from the intestines of warm blooded animals (including humans) and their existence in river systems can indicate the presence of other



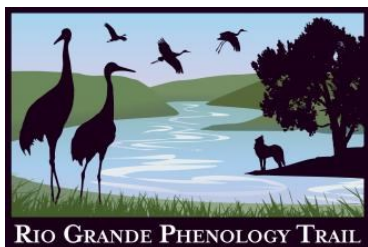
potentially disease-causing pathogens. Back on shore, students count upstream waterfowl, record air temperature measurements, and take upstream photos for documentation.



The results of our sampling efforts thus far show some interesting trends. *E.coli* is the parameter of greatest concern for the StormTeam. Thus far, our data show that *E.coli* concentrations increase as one travels the reach from north to south. At our most southern site, located near the Valle de Oro National Wildlife Refuge and downstream from the Southside Wastewater Treatment Reclamation Plant, we see a large spike in *E.coli*, up to 100 times greater than some of our upstream sites. We see similar trends in our turbidity and specific conductance measurements along the north to south gradient. Dissolved oxygen on the other hand, shows the reverse, with an increase in dissolved oxygen levels further downstream.

Some of this data was presented in Spanish by the students from La Academia de Esperanza to students in Luquillo, Puerto Rico for BEMP's annual Spanish Symposium in May 2017. These same students will likely present their findings again in 2018 at the National Groundwater Association Conference, held in Albuquerque this coming winter. Sharing information about the health of our water is extremely important and BEMP looks forward to continuing and expanding this valuable dataset. We love our Rio Grande and let's all do our part to help keep it clean!

For more great stories like this one,
check out our **BEMPin It Up** blog
bemp.org/blog



Educator

Phenology UPDATE

*By Liz Douglass-
Gallagher, RGPT
Coordinator & BEMP*

Through BEMP's partnership with Valle de Oro National Wildlife Refuge and the USA National Phenology Network, we're continuing to learn more about how and when species change along the Rio Grande Phenology Trail (RGPT). Along with our BEMP phenology site at Bosque School, the RGPT has five additional partner organizations, with committed volunteer groups. These awesome volunteer citizen scientists have already surpassed last year's number of observations. By the end of 2016, there were just over 29,000 observations for the RGPT. As of October 2017, the RGPT has already recorded almost 37,000 observations. Since our last newsletter, the RGPT has supported multiple

phenology tours at the Albuquerque Biopark, Santa Fe Botanical Garden, and Valle de Oro sites. There have also been multiple trainings during the summer of 2017 – and check out our website for upcoming events: bemp.org/rgpt

Additionally, through BEMP and the RGPT's partnership, we have worked with many more young citizen scientists during study trips at Bosque School, through schoolyard phenology sites, and with the Horizons Albuquerque summer enrichment program. Finally, during the next few months as phenological changes quiet down, we'll be planning more tours and trainings, refining and revising RGPT research questions, and analyzing some of the great data that our volunteers have collected.



BOSQUE ECOSYSTEM MONITORING PROGRAM



CITIZEN SCIENCE AND
RIO GRANDE STEWARDSHIP

WWW.BEMP.ORG



84,500 PEOPLE

In our 20 year history, we've worked with students from over 100 different public, parochial, private, tribal, and home schools.

270 MILES OF THE RIO GRANDE

Every month, 31 sites along the Rio Grande are monitored by students in 2nd-12th grades from Santo Domingo/Kewa Pueblo to Las Cruces, New Mexico.

1,000,000 DATA POINTS COLLECTED EACH YEAR

Monitoring work by students helps government agencies make multi-million dollar decisions about land and water management in the bosque.



YEAR-ROUND LEARNING

28% of students who work with BEMP, do so 6 or more times each school year.



CREATING SCIENCE CAREER PATHS

70%

For students who do advanced work with BEMP in high school and college, 70% now have careers in STEM fields.

FREE!

Busing fees are often the reason teachers can't take students outside. BEMP covers the cost of all busing and all our programs are free!



BEMP Needs Your Help

BEMP maintains 31 sites along 270 miles of the Rio Grande, stretching from Santo Domingo (Kewa) Pueblo in the north to Las Cruces in the south. Sites are monitored by K-12 students, and the research they do provides both valuable information to our river managers and much needed outdoor science education. **Core monitoring and education activities at each site cost approximately \$16,000 per year.** Please consider donating to help us continue this important work. Tax deductible donations, directed 100% to BEMP, can be made online.

www.bemp.org/donate

BEMP's Current Operations Supporters

Albuquerque Bernalillo County Water Utility Authority ♦ Bernalillo County Open Space ♦ Bosque School ♦ EPA ♦ Greater Rio Grande Watershed Alliance ♦ Goodman Family ♦ John and Eunice Davidson Fund ♦ McKee/Crawford Foundation ♦ Middle Rio Grande Conservancy District ♦ Middle Rio Grande Stormwater Quality Team (Albuquerque Metropolitan Arroyo Flood Control Authority; City of Albuquerque; City of Rio Rancho; Eastern Sandoval County Arroyo Flood Control Authority; NM Dept. of Transportation; Sandoval County; Southern Sandoval County Arroyo Flood Control Authority; Town of Bernalillo; Village of Corrales; Village of Los Ranchos; Ciudad Soil & Water Conservation District) ♦ National Science Foundation's Schoolyard Education Program at UNM's Sevilleta Long Term Ecological Research Site ♦ US Army Corps of Engineers ♦ US Bureau of Reclamation ♦ US Fish and Wildlife Service ♦ Valencia Soil and Water Conservation District

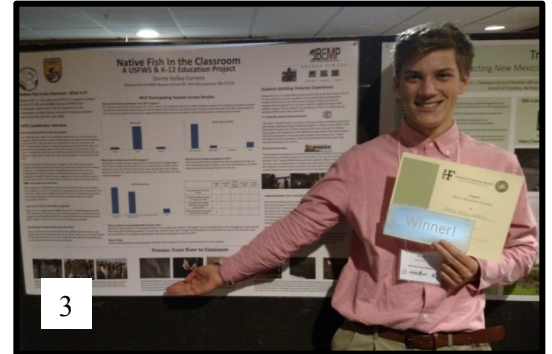
For more great
stories, check out

[@bempinitup](http://www.bemp.org)



Science, education, and stewardship of the Rio Grande and its watershed through long-term, hands-on student research of ecosystem response and function to inform public policy.

What has BEMP education looked like this year?



1. Dan Shaw helps students trap and measure a 26lb snapping turtle (Sep 2017)
2. New monthly monitoring activities for School Year 2017-2018
3. Donny of Bosque School wins an award at the Joint Annual Wildlife Society Conference (Feb 2017)
4. BEMP Congress presenters from J. Paul Taylor Academy, Las Cruces (Apr 2017)
5. Bosque School opens the new Rod and Mary Kay Pera Science Center, where BEMP's offices are located (Sep 2017)
6. BEMP's annual Spanish Simposio Virtual with Puerto Rico (May 2017)
7. BEMP students host Otter Day for 1st and 2nd graders (Apr 2017)
8. BEMP's Tallie Segel teaches middle schoolers about aquifers (Feb 2017)
9. BEMPers Sarah Moser and Delaney Hill (not pictured) do genetic research of porcupine DNA at UNM (Mar 2017)
10. BEMP has some new climate change activities this year. Thanks to Kei and Molly Textiles for the botany game board! (Oct 2017)