Bosque Ecosystem Monitoring Program

Autumn 2016 Newsletter

In the Footsteps of BEMPers and Beavers...

Lauren and Grace (Bosque School students, Class of 2021) took on a big project: they stared up at the enormous cottonwood tree, unfastened the chicken wire girdling the tree, and readjusted the wire mesh to circumvent the tree, yet allow for its growth over the coming years. This particular project has been an incredible example of new BEMPers following in the footsteps of previous BEMPers to sustain a project through the decades. Nineteen years ago, Thomas Nichols (Bosque School 2007) learned from BEMP educators that cottonwoods were having a tough time re-establishing themselves due to beaver herbivory. In response, Thomas sought donations for chicken wire, gathered a posse of BEMPers from several schools, including his own Bosque School-mates, and worked diligently to wrap vulnerable trees throughout the bosque to protect them from the large-toothed rodents. Eight years down the road, Madeleine Carey, Dara McDevitt, and Sean O'Neill (Bosque School 2010) returned to the same areas Thomas had worked on and documented for their high school wildlife project that 99% of the wrapped trees were successfully still alive while neighboring unwrapped trees had been beaver-ized.

After presenting their findings at a professional wildlife conference, while still in high school, these three individuals went on to careers with Wild Earth Guardians (Madeleine), the National Park Service (Dara), and as a biologist for BEMP's science office (Sean).

Fast forward to 2013: Lauren and Grace met Sean and he shared his findings about the project with the students. A week later they approached BEMP's Co-Director and Bosque School faculty member, Dan Shaw, and asked how they could get involved. They recruited their fellow 6th graders as well as students from Albuquerque Public Schools to go out into the bosque to loosen some of the previously wired trees that were now strangled.

Lauren and Grace, pictured on the left and far right, teaching others about tree wrapping.

As 7th graders, Lauren and Grace continued to be involved with BEMP by explaining to community members, including Senator Tom Udall, how BEMP engages students in rigorous scientific study and stewardship of the Rio Grande bosque. They also presented their work at BEMP's annual Crawford Symposium, alongside professional scientists and graduate students.

One of BEMP's specialties is building connections - multi-generational connections and sense of place connections. The students experience a sense of pride in being part of a project that spans well beyond their own time at school *and* part of a project that has direct impacts on the health of the bosque ecosystem. Each generation of BEMP students (BEMP will be 20 years old in 2017!) builds on the legacy created by the students who preceded them.

News from the Field

Over the last 20 years, BEMP has collected **197 kilograms** (**434 pounds)** of leaf litter across the BEMP sites! When a single cottonwood leaf weighs about 0.1 gram, you can see just how much leaf litter we've collected, sorted, and weighed over the years. Both scientists and students help sort and weigh leaf litter and it's no small task to keep up with 10 bags of leaf litter from 32 sites every month. Go Team!

New Faces At BEMP in 2016

Meet Ruby Estrada (BEMP South Educator), Katie Higgins (Stewardship Coordinator), and Audrey Kruse (Education Coordinator).
Check out their bios on our website: bemp.org/our-staff

Crawford Symposium 2016

On Tuesday, March 1st, 2016 BEMP held its annual Crawford Symposium. It was an incredible night of sharing, learning, and inspiration. Students of all ages presented posters on topics ranging from "Why the Love BEMP!" (presented by the Belen Family School with presenters as young as 8 years old!) to graduate students showcasing their work regarding episodic drying events of the Rio Grande river in New Mexico.

Many high school students spoke eloquently about their year-long research projects and three students (Caramen, Kinsey, and JoJo) from Rio Rancho High School wowed the audience with both their poise and the quantity of Personal Care Products and artificial sweetener they found in river sampling above and below Albuquerque's waste-water treatment plant.

Caraman, Kinsey, and JoJo of Rio Rancho High School presented their poster and gave an oral presentation about the Rio Grande's water quality.

Crawford Symposium 2016 continued…

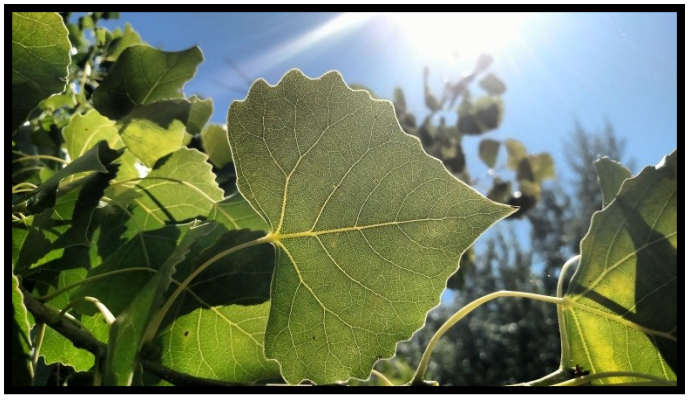
A number of BEMP scientists and professionals spoke about what BEMP has found in terms of arthropod communities of the bosque along with fuel loading and fire potential in the bosque. Cameron Weber presented her master's thesis findings about the usability of BEMP data by water and land managers, noting that the fact that BEMP data is collected by citizen scientists, is not a barrier to its usability. Barbara Garrity, former Executive Director of Environmental Educators of New Mexico, celebrated the incredible success the Environmental Education Memorial which passed all committees and both houses of the New Mexico government without a single "No" vote! Congratulations to Barbara, retired teacher Molly Madden and the Los Lunas 4th graders that courageously testified to our representatives. Well done!

Laura Paskus presented an inspirational, humorous, and galvanizing keynote address to the attendees about how we need the kind of scientists BEMP is ushering toward the future. She said that BEMP is doing the work of the curious and the steadfast. But this work is getting more challenging, because the science and the research produced by scientists, is increasingly politicized. Laura said: "to love a place means sustaining it and building a relationship to that place." We hope to continue in this work in the next year – welcoming more and more students and future environmental stewards to the bosque through science and exploration.

Keynote Speaker Laura Paskus

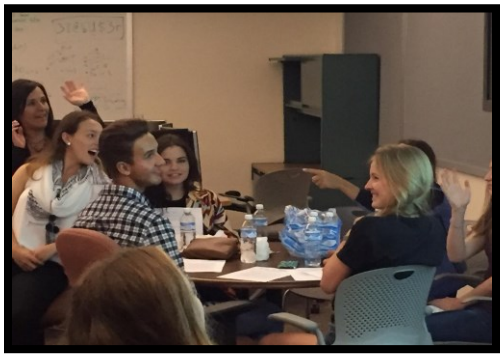
10 Years with BEMP!

BEMP is thrilled to honor four individuals outside the BEMP staff that have been working with BEMP for over 10 years. **Molly Madden**, retired teacher from Rio Grande Elementary School has been working with BEMP at the Belen field site for 17 years and now does educational programming at the Whitfield Wildlife Conservation Area. **Delphine Baca** is still working at Rio Grande Elementary School, teaching 2nd grade and has been a long-time monthly monitoring teacher for BEMP, also in Belen. **Mary Erwin**, middle school science teacher at Wilson Middle School, has been monitoring and working with BEMP for over 10 years, first at Bandelier Elementary School and then she continued to work with BEMP when she switched to Wilson. We're thrilled to have her and her students monitoring one of our oldest BEMP sites at the Rio Grande Nature Center. And finally, **Phil Tonne** has been doing botany surveys for BEMP for 10 years and we would not have the robust vegetation data set we have without his hard work and love of the bosque. **Thank you to all our dedicated and long-time BEMP enthusiasts.**



¡Ciencia en Español!

On May 17th, 2016 Spanish-speaking students from seven schools in New Mexico and Puerto Rico gathered to share (en Español!) their scientific discoveries after a year of monitoring their local bosques (forests) via digital webinar. Students in Puerto Rico worked with the Luquillo Long Term Ecological Research Schoolyard program to study environmental issues like cactus die-off, heavy metal and PCB contamination of water systems. New Mexico BEMPers with the Sevilleta Long Term Ecological Research Schoolyard program, presented their studies on Rio Grande bosque monthly monitoring, bear populations in the Sandias, and chytrid fungus in amphibians of the Chama River. The presentations and follow up questions were all done in Spanish, showing how the exchange of scientific discoveries can happen across cultural and language boundaries.



Students participate in the digital webinar.

BEMP's Newest Publications

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ARTICLE

BRINGING CITIZEN MONITORING INTO LAND MANAGEMENT: A CASE STUDY OF THE BOSQUE ECOSYSTEM MONITORING PROGRAM

20/04/2016

Abstract:
Despite the rapid expansion of citizen-based monitoring, data from these programs remain underutilized by natural resource managers, perhaps due to quality and comparability issues. We present the Bosque Ecosystem Monitoring Program as a case study of an initiative successfully meeting long-term monitoring needs of federal, state, tribal, and local natural resource managers, and informing public policy. To maximize potential for partnerships with managers, we recommend the creation of a five-year plan including scientific goals and financial solvency strategies prior to establishing a citizen science program, and offering multiple platforms for data-sharing and dialogue.

Authors:
Rowan Converse, Daniel Shaw, Kim Eichhorst, May Leinhart

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Falling Arthropods and Citizen Science

by Green Teacher on July 5, 2016

Originally appears in the Summer 2016 issue

"Open the trap away from yourself. That way if anything jumps out it will land on your too-close partner, not you." With those words I begin another session of pitfall trapping. For 20 years, my students have been digging holes in the dirt, planting open cups, and waiting 48 hours for insects and other arthropods to fall into these traps. We call it "pitfalling," and it has been a central part of our 20 year citizen science effort to better understand our Rio Grande's riverside forest, known by its Spanish name, bosque.

For more great stories, check out
www.bemp.org > BEMPin' It Up Blog

@bempinitup

New BEMPer Sticker from our summer artist!
Created by Donny, Bosque School student

BEMP's Fall Field Tour

Friday, October 14th, 2016
10:00-1:00
"The Future of the Bosque"

We invite you to learn more about the work BEMP has been doing and our research findings. BEMP staff and partner groups will present on impacts to riparian areas due to post-burn recovery, riverbed degradation, and bank-lowering.
Email Katie.higgins@bosqueschool.org if you did not receive a Save the Date via email.

Happy 4th Birthday Valle de Oro!

Celebrate Saturday, Sep. 24th
10am – 3pm

come find us and get a new BEMPer Sticker

BEMP Needs Your Help

BEMP maintains 32 sites along 350 miles of the Rio Grande, stretching from Ohkay Owingeh 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 $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

Thank You! Thank You! Thank You!

BEMP's Recent Supporters Albuquerque Bernalillo County Water Authority ♦ Bernalillo County Open Space ♦ Bosque School ♦ EPA ♦ Greater Rio Grande Watershed Alliance ♦ Goodman Family ♦ McKee/Crawford Foundation ♦ Middle Rio Grande Conservancy District ♦ McCune Charitable Foundation ♦ Middle Rio Grande Stormwater Quality Team (AMAFCA; Bernalillo County; City of Albuquerque; CUIDAD Soil & Water Conservation District; NM Dept. of Transportation; SSCAFCA & the Town of Bernalillo) ♦ National Science Foundation's Schoolyard Education Program at UNM's Sevilleta Long Term Ecological Research Site ♦ New Mexico Association of Soil & Water Conservation Districts ♦ New Mexico State Parks ♦ The Nature Conservancy ♦ U.S. Army Corps of Engineers ♦ U.S. Bureau of Reclamation ♦ USDA Forest Service ♦US Fish and Wildlife Service ♦ Valencia Soil and Water Conservation District

BEMP
Bosque Ecosystem Monitoring Program

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.