Bosque Ecosystem Monitoring Program

Black Institute for Environmental Studies at Bosque School

www.bosqueschool.org/bemp.aspx

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UNM Summer Interns

Two local High School students have a summer to remember!



Matt and Tess help with our summer groundwater chemistry collection along the Rio Grande. Samples are taken from the 5 BEMP wells, the nearby ditch and river.



Matt, Tess and Kristen Weil take a break in the new bird blind at the far west Tingley Beach ponds after a morning of BEMPin'.

By: Matt Amato, La Cueva HS graduate and soon-to-be NMSU student

My summer, I can say with certainty, has been BEMP'ed up! This summer I came to know the distinctive crisp smell of the bosque as I conducted the routine monthly monitoring. Pitfall traps and leaf litter tubs became my bread and butter. I found it interesting to visit the different sites and witness firsthand the effects that overban's flooding, drought, and other different anthropological impacts can have on the Middle Rio Grande environment.

I got comfortable working with insects... with the exception of the Jerusalem cricket (but don't let Science Coordinator Jennifer Schuetz know I said that). ⁽²⁾ With Jennifer and Kristen Weil's (Field Assistant) help, I became an expert in beeping wells and counting arthropods. The people of BEMP made every day a good day. Nobody can keep a straight face when Kimi Scheerer (Education Coordinator) is present; the BEMP staff really did their part at making me feel a part of the team.

The jackrabbit survey would have to be my favorite research I helped with. Spotting jackrabbits with a floodlight, identifying numerous other critters, as well as listening to some late night bagpiping across the Sevilleta landscape should be something everyone gets to experience. Overall, BEMP has been very rewarding with all of the opportunities it has provided me with in the lab or out in the field.

By: Tess DeSerisy, La Cueva HS graduate and soon-to-be Eckerd College (in Florida) student

I can honestly say working for BEMP has changed my life in more ways than one. This internship taught me more than any regular science class ever did about the environment and the changes occurring in my "neck of the woods." It has opened my eyes to be more water conscious and to be a part of the change we strive to see in the world around us. I gained a new mindset from this internship, one that allows me to just stop and see all of the wonderful creatures that few regular passersby of the bosque might see. On top of all of this, I could not have asked for a more accepting and truly passionate group of staff members who guided me during this job opportunity.

My favorite part of this internship was most definitely the laughs that came along on the job. I will never again be able to drive by Tingley Beach and not think of the cottonwoods that were dyed blue to ward off the 'vicious' beaver population. In my mind there will never be a more scientific piece of equipment than cup on a stick (used for bailing water during my very first week on the job). And who could forget all those days in the lab counting thousands on thousands of *Armadillidium vulgare* (roly polies)!

This internship has shaped what I plan to do in the future and has allowed me so many incredible opportunities I would not have gotten otherwise. I could not be more grateful to have been a part of BEMP staff this summer. Thank you for this experience. It was truly once in a lifetime.

BEMP Focus Groups: Summer 2013

BEMP hosted our 2nd annual focus groups in late June! The first focused on our education programming with a first draft of **BEMP education activities correlated to our state's Common Core standards**. Look for updates and web posting update in our *next* newsletter.

The second, brought together over 30 data users from around the Middle Rio Grande Valley, presented a BEMP data overview which highlighted the **effects of disturbances on bosque understory and canopy growth**. The summary table below can currently be found on our Data Sets & Forms website - <u>www.bosqueschool.org/Data_Sets_Forms.aspx</u>. Additional questions or concerns can go to BEMP Co-Director Kim Eichhorst PhD at <u>kimde@unm.edu</u>.



Summary Table: Effects of Bosque Disturbances on Exotic Understory, Native Understory, Exotic Canopy and Native Canopy

disturbance	exotic understory	native understory	exotic canopy	native canopy	what next?
		understory			
fire, no flooding	exotic understory increases after fire, especially in areas that were previously bare or covered with plant litter	native understory recovers quickly after fire	saltcedar recovers quickly after fire, regaining height within 6 months; Russian olive recovers moderately well after fire	cottonwoods recover poorly or not at all after moderate and hot fires; resprout survival depends on depth to groundwater and presence of herbivores. Willow responds moderately well after fire	if there is no possibility of flooding after fire, seeding and long-stem pole plants should be considered in areas where native vegetation was not previously present. Areas with natives recovering should be left alone (minimal disturbance brings in minimal exotic understory)
fire, followed by flooding	exotic understory increases slightly	native understory dominates	exotic canopy recovers quickly	native canopy dominates	
mowing or bulldozing	exotic understory increases	native understory recovers, may decline	exotic canopy recovers quickly	coyote willows recover quickly in most areas	not recommended in dry areas
clearing (thin layer to no wood chips)	exotic understory establishes in bare, disturbed areas; often declines over time	native understory recovers quickly, may decline, more often increases	exotic canopy usually recovers quickly (esp. Russian olive) without retreatment; exotics cleared in summer through fall tend to resprout; exotics cleared in fall and winter do not recover as well	damage is minimal or native canopy recovers	allow native areas to recover and reestablish; retreat without heavy machinery or wood chipping. Removal of downed wood from site is recommended. Bare areas can be seeded, or long-stem poles planted. Upland plant species should be considered in areas where flooding or strong connection to the water table is unlikely.
clearing with moderate or thick wood chips	exotic understory increases	native understory suppressed, declines	exotic canopy usually recovers quickly (esp. Russian olive) without retreatment	native canopy often reduced after clearing, recovers	not recommended
overbank flooding	exotic understory low	native understory dominates	exotic canopy outcompeted by natives	native canopy dominates	



BEMP loves an International Experience

By: Kristen Weil, BEMP Field Assistant

Nine international visitors and two translators came out to BEMP sites near Alameda bridge on July 6th for a morning of bosque fun with BEMP college staff Madeleine Carey and Kristen Weil. The visitors were from all over the Middle East, including: Egypt, Morocco, Yemen, Iraq and Saudi Arabia. Most of them are professionals in water-related government agencies in their countries and came to New Mexico on a quest to learn about how we deal with our water issues. The group visited both our Diversion and Badger BEMP sites where we discussed data collection, the San Juan Chama

Drinking Water dam and the effects it has on the bosque, played some bosque bingo, and taught each other how to say "beaver" in three different languages! We had a great and informative time! A big BEMP **THANKS** to the **Albuquerque Council for International Visitors** (ACIV) for including BEMP in their North American adventure.

Eco-Science over the Summer



Javier finds a woodhouse toad at Bosque School during *Weird and Wacky Wildlife*.



Summer programmers create a sidewalk chalk mural of the Rio Grande and its riverside forest, the bosque.

BEMP eco-science summer camps were a blast again this year! With three one-week camps back to back in June, it was non-stop fun and education... with some madness mixed in too. *Weird and Wacky Wildlife* was the first program to kick off the summer and despite the bosque closures we were still able to explore the fuzzy, scaly, slimy, feathery and downright strange critters of our beautiful riverside forest. The week ended with a trip to see New Mexico's native fauna at the Wildlife West nature preserve in Edgewood, NM.

Bosque Biology Bonanza focused on ecology and anthropology with a look into how the bosque used to be before modern day influences. We traveled to the Petroglyphs National Monument and the Albuquerque Open Space Visitor center pueblo site where we found pieces of pottery and ancient arrowhead flakes. We collected data in the bosque and took a tour of the south side wastewater treatment plant.

The last week of camps, *Spunky Science*, was a little of this and a little of that... each day was spent exploring a different field of science: astronomy, physics, marine science, ecology and geology. Students viewed sunspots, dropped eggs out of a 20 story window, watched a shark feeding at the aquarium, touched an endangered grey banded king snake and found ancient sea shells at the top of the Sandias. All in all, BEMPin' it UP over the summer was an adventuresome success. Keep your eyes out next spring for a chance to participate in our 2014 Summer Camps experiences based out of Bosque School!

By: Kim Fike, BEMP Educator



BEMP Science Coordinator Jennifer Schuetz has been posting interesting, fun, wacky and bosque relevant things on our BEMP facebook page. Make sure to friend us and join in the mix; we'd love to share **your bosque experiences** with our BEMP network! ^(C)



OUR MISSION

The mission of the <u>B</u>osque <u>E</u>cosystem <u>M</u>onitoring <u>P</u>rogram (BEMP) is collaborative **long-term** ecological monitoring of key abiotic and biotic processes and characteristics to promote continued education, understanding and stewardship of the riparian ecosystem to scientists, teachers, students, policy makers and the public.



AMAFCA, Stormwater Quality Team ◆ Albuquerque Community
Foundation ◆ Bernalillo County Open Space ◆ Bosque School
◆ Educational Foundation of America ◆ Goodman Family ◆
LANL Foundation ◆ McKee/Crawford Foundation ◆ Messengers of Healing Winds Foundation ◆ Middle Rio Grande Bosque Initiative/U.S. Fish and Wildlife Service ◆ Middle Rio Grande Conservancy District ◆ National Science Foundation's
Schoolyard Education Program at UNM's Sevilleta Long Term Ecological Research Site ◆ New Mexico Association of Soil &
Water Conservation Districts ◆ Norcross Foundation ◆ PNM Inc.
◆ Sandoval County ◆ U.S. Army Corps of Engineers ◆ U.S. Bureau of Reclamation ◆ USDA Forest Service ◆ 7 Bar

Foundation

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BEMP Tamarisk Beetle Update By: Rowan Converse, BEMP College Intern Rising Senior at Wesleyan University

Background: The Tamarisk leaf beetle (Diorhabha spp.), which was introduced in Colorado and Texas in order to control invasive populations of saltcedar has since migrated into surrounding states, including Utah, Arizona, and now New Mexico. This summer, BEMP started tracking the presence and absence of tamarisk leaf beetles at the twenty-two sites with saltcedar populations. *Methodology:* Five trees per site were chosen with sweep nets used to shake any arthropods out of the leaves. The contents of each tree are placed into plastic bags and photographs are taken of the trees to track defoliation over time. The samples are then processed in the lab using a dissecting scope. The numbers of spiders, ants, leafhoppers, and splendid tamarisk weevils are counted in addition to the tamarisk leaf beetles. Why: We do this monitoring to get a better picture of how the leaf beetle responds to the presence of competitors and predators in the bosque, both native and introduced.

Results: In our May and June sampling, tamarisk beetles were found at very few sites: only 10 sites out of 22 monitored had even one adult beetle per tree (with Santo Domingo leading the pack with 11 adults total between the two months). While processing for July isn't yet complete, the beetle population has increased dramatically at many of the Albuquerque city sites (especially at Diversion, Montano and Savannah). While these 3 sites combined had 5 adult beetles in May and June, in July they had 534 adult beetles combined! Conclusions: There are many factors that could account for this increase-the migration from Colorado might have moved farther south, the beetles may have been responding to the increase in moisture in July—it's difficult to tell with only three months' worth of data. As time goes on, BEMP will have a better picture of how the introduction of this beetle is affecting the bosque.

