

BEMP Vegetation 2012

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We've completed another year of vegetation monitoring at 25 sites within the Rio Grande bosque. As always we try to illustrate a few observations, especially noting any shifts in the bosque flora. One change that is occurring along the river is the spread of the saltcedar leaf beetle, an exotic species released to control saltcedar (*Tamarix* spp.). There have been releases of this beetle, *Diorhabda* spp. in New Mexico and neighboring states. We observed leaf damage on *Tamarix* across from the Santo Domingo BEMP site this year for the first time, before and after photos on next page. The following are some of the sites that come up through a Google search with information on this biological control:

http://www.tamariskcoalition.org/PDF/posters/K_Gardner.pdf

<http://twri.tamu.edu/publications/conservation-matters/2012/august/saltcedar-beetles/>

http://www.isatexas.com/images/bugs_disease/BeetlemaniaSummer-Fall%202012%20Vol%204%20no%202.pdf

<http://www.sciencedirect.com/science/article/pii/S1049964403000033>

The beetles appear to be approaching from the north, possibly making their way down from the 2011 Moab, Utah release. While we didn't observe them at our northernmost site, Ohkay Owingeh, they do appear to be active at Santo Domingo Pueblo, about 33 miles north of Albuquerque. In the photos below, you can see the difference in the color of the salt cedars opposite the Santo Domingo BEMP site between 2011 and 2012. The first Rio Grande sightings that I know of were in 2012 (David Lightfoot, pers. comm., 26 March 2013)

It is unclear what the long-term effect of this biological control on salt cedar and the bosque will be, but it does appear to be here and is already affecting the leaves of the target trees. *Diorhabda* spp. can have two generations per summer, and this causes considerable stress on the salt cedars. Over time the stress could kill the trees. The first generation corresponds with the flowering period of *Tamarix* spp. and may decrease the amount of viable seed produced by the trees. The main concern with biological controls is that they often switch to non-target native species. I don't know of any biological controls that haven't had some unwanted result, so it will be interesting to see what happens with the saltcedar leaf beetle in the coming years.



Kewa, or Santo Domingo Pueblo. 10 August 2012



Kewa, or Santo Domingo Pueblo. 19 August 2011

Similarly, at several sites the Siberian elms (*Ulmus pumila*) are being defoliated, by what appears to be elm leaf beetle (*Xanthogallerucae luteola*). In inquiring about the elm leaf beetle, I learned that it may have also been the target of a biological control. I couldn't find any publication so I'll leave the names out of this. What's known for sure is that in the early 1990s Siberian elms in this area were commonly defoliated by the elm leaf beetle. Sometime in the mid-1990s elm leaf beetle populations crashed (Dave Lightfoot, pers. comm., 26 March 2013) and the trees in the Albuquerque area started to maintain their

foliage. The elm leaf beetle skeletonizes the foliage of its host plants and may make it more susceptible to disease. This beetle is also implicated in the spread of Dutch elm disease (*Ophiostoma ulmi*), devastating to the American elm (*Ulmus americana*).

There appears to have been a 1990s release of a micro-parasitoid wasp, possibly *Oomyzus gallerucae*, from New Mexico State University. *Oomyzus gallerucae* is very small egg parasite that was the likely agent that spread through the Rio Grande valley.

More information about the elm leaf beetle and biological controls:

http://aces.nmsu.edu/pubs/_circulars/CR-607/welcome.html

http://cirs.ucr.edu/elm_leaf_beetle.html



Defoliated Siberian elm in the background, behind the Russian olive (*Elaeagnus angustifolia*) at the Route 66 site. Leaf damage was consistent with that produced by the elm leaf beetle.

At the Harrison BEMP site there has been a different kind of disturbance at play. Here, there's been a steady increase in vegetation since part of the site was lowered and channelized in early 2012. If we were going to choose the best time to see disturbance we chose perfectly. If we were choosing the worst time to read the vegetation transects at this site we also chose perfectly. It is interesting to see how quickly things change in the bosque. Surface flooding is not something that one often sees in a controlled river system. As you can see in the photos and graph below, the river rose quickly from rains in the Galisteo Creek basin.



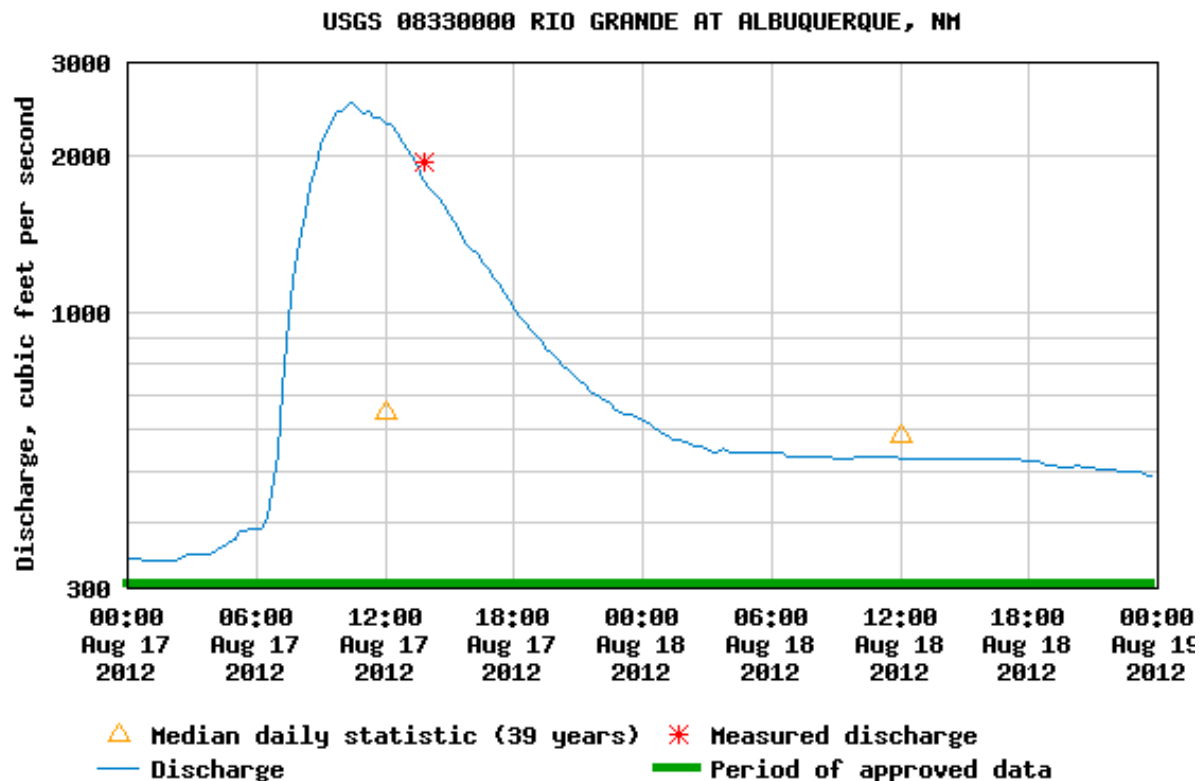
Harrison Site, Line B, 17 August 2012, 10:09 a.m. Channel dry, with a few puddles.



Harrison Site, Line B, 17 August 2012, 11:52 a.m. Channel flooded.



Harrison Site, 17 August 2012, 12:39 p.m. Overbank flooding.



Albuquerque flow graph for the Rio Grande, August 17 – August 19.

When the new channel brought water to Harrison it brought with it many seeds to colonize the bare soils. We noted two new species for the BEMP plant list. The first one is a *Cyperus* that we can't identify at present, photo below. It first showed up at the Crawford site the first year that was lowered. Several botanists have collected it but we have yet to identify it. We are sending duplicate material to Arizona State University and to Gordon Tucker, the genus expert at Eastern Illinois University, for determination. Another species new to BEMP that we did identify is *Ammania coccinea* (photo below the *Cyperus*).



Cyperus sp. at the Harrison site. Also observed at Crawford after initial flooding there.



Ammania coccinea, valley redstem, at the Harrison site.

At the Lemitar site we observed a bee we don't see very often, *Protoxaea gloriosa*. These bees are not abundant for several years and then suddenly they're present in high numbers when conditions are right. For more information on this species:

<http://digitallibrary.amnh.org/dspace/bitstream/handle/2246/2716/v2/dspace/ingest/pdfSource/nov/N2509.pdf?sequence=1>



Protoxaea gloriosa on broom dalea (*Psoralea scoparius*) at the Lemitar site.

For a few years there has been an increase in the purple loosestrife (*Lythrum salicaria*) just off of line A at the Ohkay Owingeh site. This year it seems to have spread again and is recorded on the datasheets for this site. This is an introduced, wetland species that is difficult to eliminate once it gets established in a wetland. It has only been collected a few times in New Mexico. It's been found at Lake Roberts on the Gila National Forest, a spring near Tijeras, and was first documented at Ohkay Owingeh in 2004 (SOUTHWEST ENVIRONMENTAL INFORMATION NETWORK, SEINet. 2013. Accessed on March 27):

<http://swbiodiversity.org/seinet/index.php>

For control of this invasive species, it is always best to try hand-pulling before introducing chemical or biological agents:

<http://www.dnr.state.mn.us/invasives/aquaticplants/purpleloosestrife/control.html>



Purple loosestrife (*Lythrum salicaria*), just north of Line A, along ditch bank, Ohkay Owingeh site.

As always we were grateful for the opportunity to work in the bosque. It is a worthwhile endeavor and we're happy to be part of the expanding BEMP community. Just as there are mysterious connections between the elements of the bosque, being part of this human component is always intricate and rewarding. We have several generations now with ties to this program and I find I have to recall and convey what the acronym stands for fewer times each year. It is enriching to see outdoor education get a considerable foothold in our community.