

Project Year-End Summary Report

Title of Project: Bosque Botanical Population Assessments

Begin answering in the shaded box right beside or below each question and it will expand to accommodate as you type. Use up to a total of two and a half pages for questions 1-8. More detailed presentations, a final report, articles or posters are welcome separately(See final instructions at the end of this form.)*

1. Organization name or Individual who received the grant: Yerba Mansa Project

2. Amount of Grant: \$997.00

4. Was additional outside funding obtained? (check box that applies) Yes No

Other funding source(s) if you checked "yes."

5. Briefly, how was the grant money from the Carter Conservation Fund used?

The funding provided by the Jack and Martha Carter Conservation Fund was used to purchase GPS units and the required ESRI online subscription service to use the data collected from the GPS units.

6. Write an abstract or summary of the activities performed and the progress that was made this year on your project. (Save any conclusions, lessons learned, and benefits achieved for the final sections, 7&8.)

The collection of accurate geospatial data underlies many of the Yerba Mansa Project's goals for community driven bosque restoration and understanding of riparian plant ecology in the Middle Rio Grande. These data are crucial for facilitating and documenting our restoration efforts, as well as in supporting population surveys of at-risk plant species. The GPS antennas in mobile devices like cell phones and tablets, while ubiquitous and convenient, lack the spatial resolution for this type of data collection. They tend to be accurate to around 10 meters, and the inaccuracy is exacerbated when under canopy as most of our sites are. Dedicated GPS devices can achieve accuracies of around 3 meters, striking a balance in terms of cost and accuracy between mobile device GPS and expensive survey-grade equipment.

Since 2015, the Yerba Mansa Project has hosted two community field day events each year, when members of the community and local organizations volunteer to tend the bosque through planting and seeding of native species and removal of invasive non-natives - primarily *Saccharum ravennae* (ravenna grass). All of these activities involve a data collection component. We record the point locations of native plantings, area locations for areas broadcast seeded with a mix of native grasses and forbs, and the locations of ravenna grass removals. These data are used in a number of ways. Our volunteer maintenance team regularly visits new plantings for the first two to three years and precise locations of recent plantings ensures that none of them are missed. Location data also allow for ongoing assessment of success rates for both planted and seeded areas. Quantitative data regarding invasive species removal and native species plantings are also vital for working cooperatively with land management agencies and maintaining funding through grants. Lastly, by recording data on ravenna grass locations and removals over multiple years, we are able to analyze spatial trends in how these populations spread and respond to management practices.

This year, the Yerba Mansa Project also undertook a baseline population survey of *Anemopsis californica* (yerba mansa). An herbaceous, low-growing riparian plant and highly valued medicinal herb, *A. californica* remnant populations are much reduced in comparison to their historical extent. Like other bosque wetland species, *A. californica* is highly vulnerable to land use practices and water management regimes that lower the historical shallow water table. Efforts to protect the species within the Middle Rio Grande have been stymied due to lack of population data. In order to establish a baseline for future population trend analysis, the YMP GIS team surveyed known remnant stands of *A. californica* throughout the Albuquerque reach of the Middle Rio Grande bosque, using GPS devices to record the area of each stand. Additional information was also collected for each stand on associated plant species, stand density and stand health, along with associated photos. These data will provide a baseline for population change studies in the future, in order to better understand how stands respond to environmental stresses and restoration practices.

7. How does your project further a Native Plant Society mission area, namely: *plant or ecological education; conservation/restoration of native plants and/or their habitats; adds to botanical research; promotes appropriate use of native plants to conserve water, land and/or wildlife.*

Research into the plant ecology of southwestern riparian gallery forests (like the Middle Rio Grande bosque) have tended to focus on mid- to upper-canopy tree species - both on the impacts and management of non-native species like *Tamarix chinensis* (saltcedar), *Eleagnus angustifolia* (Russian olive), and *Ulmus pumila* (Siberian elm), and the germination and establishment of native *Populus deltoides wislizenii* (Rio Grande cottonwood) and *Salix gooddingii* (Gooding's willow). Understory and herbaceous vegetation layers are much less studied, and likewise underrepresented in restoration efforts.

Not only are the understory and herbaceous layers the richest in botanical biodiversity, they are also essential to the bosque ecology: providing food and habitat for birds, arthropods, and other native fauna. Many of these plants also continue to be culturally significant food and medicine sources for Indigenous people as well as settlers. YMP's restoration work has therefore generally focused on the protection, restoration and understanding of these overlooked species like *Amorpha fruticosa*, *Ribes aureum*, and *A. californica*.

Given that a major limitation of YMP's data collection capacity has been accurate GPS receivers, the purchase of additional units has allowed for more efficient data collection during restoration events and vegetation surveys such as for *A. californica*. Restoration field days often involve multiple activities (removing ravenna grass, planting shrubs, broadcasting seeds) occurring simultaneously, making data collection difficult with a single GPS unit. For the population survey of *A. californica*, using multiple GPS units allowed the survey group to split up into multiple teams, allowing for a reach-wide survey. With a single GPS unit, the survey would have been limited to a much smaller area, given the limited time availability of the volunteer staff.

8. Any other conclusions., lessons learned, benefits to you, the community or the environment hopefully result from your work as assisted by this grant.

The restoration work of YMP demonstrates the capacity of community led organizations to engage in riparian restoration work, whilst maintaining a rigor in data collection and monitoring

that matches or exceeds the standards of agency-led habitat restoration projects. The combination of relatively inexpensive recreation-grade GPS units with a non-profit license for GIS software allows YMP to collect high quality spatial data for both research and restoration purposes. Volunteers trained in these methods contribute to a community of citizen scientists in Albuquerque and beyond who are impassioned and empowered to tend to their local ecosystems.

Furthermore, these projects present a replicable and scalable model for similar community-led organizations elsewhere to engage in research-grade data collection. Most agency-led habitat restoration projects are created and monitored by practitioners from outside the local community, and monitoring of vegetation development tends to be short-term. There is therefore a distinct need and opportunity for local people to engage with their more-than-human communities through assessing the long-term success and failure of various restoration practices and techniques.

Final Instructions

Please send your completed form in MS Word (not converted to pdf) as an email attachment to cartergrantapps@gmail.com by December 1.

** To remain in good standing for any future funding from the Native Plant Society of New Mexico, we ask that you educate our membership more fully in some way. This could be an article (500-1000 words, illustrations welcome) for our newsletter, **or** a paper or electronic copy or link to a published article connected with the past year's work, **or** by making an educational and visual presentation to one of our chapters. Contact information for our 7 area chapters is found on our website at www.npsnm.org under the Chapters tab.*

What are your intentions in this regard? I intend to provide a newsletter article.

This year end report is submitted by (name) Dara Saville

eMail address dara@albuquerqueherbalism.com

Date November 27, 2022

Please contact us again at cartergrantapps@gmail.com if you have any questions or alternate suggestions.