

Chico Basin Riparian Restoration 2014 Final Report

Implemented by
Wildlands Restoration Volunteers

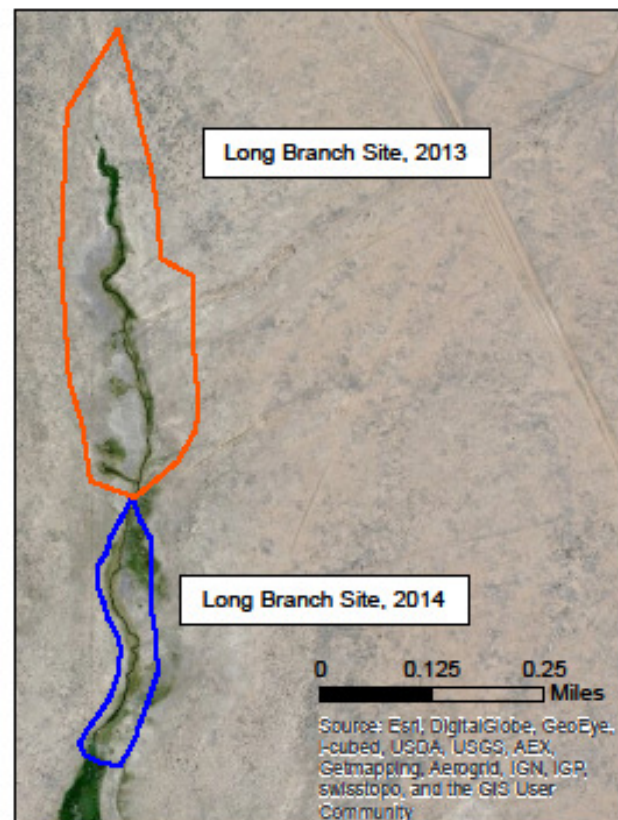
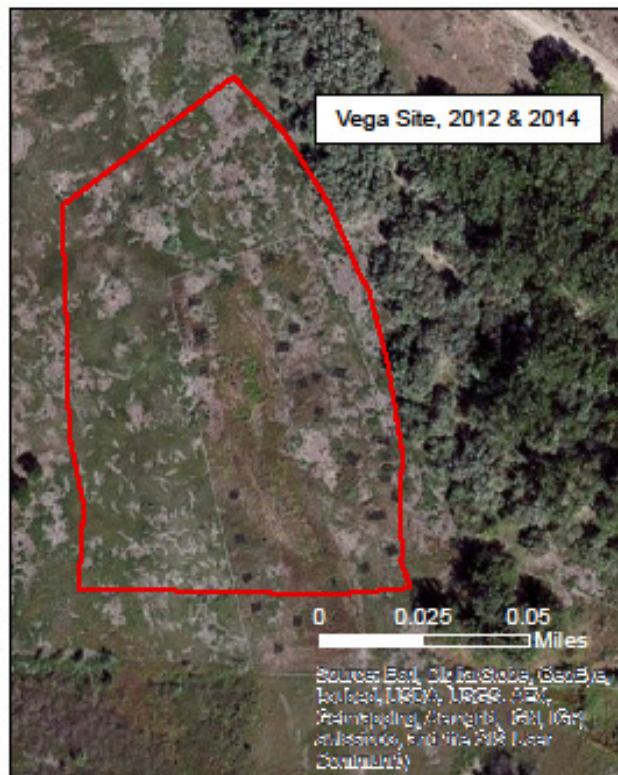


Figure 1: Chico Basin Riparian Restoration Project Sites, 2012 - 2014.

Project Summary

The Chico Basin Ranch Riparian Restoration Project was among many projects approved for implementation by a committee of WRV volunteers in 2013. Committee members were asked to evaluate projects on many levels, including ecological importance, fit with WRV's mission, logistical requirements, available supporting and lead partnerships, leadership needs, financial resources needed and available, number of obstacles to project completion, number of volunteer-days necessary to complete the project, the ability of the project to satisfy volunteers, and how the project would complement others in the WRV project season.

The Chico Basin project was successful due to the existence of a dedicated and knowledgeable partnership, including the Colorado Parks and Wildlife, Chico Basin Ranch, and others, and the fact that conservation is a central driving theme for the ranch.

Project team coordination, logistical planning, and technical design were carried out in the winter of 2013/14, followed by a volunteer project in the early spring. In total, volunteers contributed over 700 hours of work worth over \$15,800, for planning and implementation time towards this project, installing 700 native shrubs and trees along 1,200 feet of Long Branch Draw.

Planning and Implementation Timeline

Project Planning and Project Team Coordinating	-----	December, 2013 – March, 2014
Volunteer Leader Training	-----	March, 2014
Volunteer Recruitment	-----	December, 2013 – March, 2014
Technical Design	-----	February – March, 2013
Materials Acquisition	-----	February- March, 2013
Project Implementation	-----	March, 2014
Project debriefs/evaluation	-----	April, 2014
Monitoring	-----	August, 2014

Background

Chico Basin Ranch is located Approximately 40 miles SE of Colorado Springs in the Chico Creek watershed. Lat-Long: 38.5317°N, -104.4494°W (see location map below). The primary goal of this long-term project is to control Russian olive and tamarisk in a heavily infected riparian area, reduce grazing pressure in key riparian area conservation hotspots on the ranch, and restore a diverse native tree-shrub community along treated and protected areas. In the Vega drainage, which feeds into Chico Creek, over 23 acres of Russian olive have been treated with aerial spraying, 50 acres with hydro axe that has been sprayed twice for regrowth, and at least 60 more acres of Russian olive have been hand-sprayed, which is continuing, and five exclosures have been erected in treated areas by project partners. [Verify statement and relevance to WRV work on ranch] This volunteer restoration project focused on installing site-appropriate native woody shrubs and trees in treated and fenced areas to replace the riparian habitat.

Project Planning

WRV's staff and volunteer project team coordinated closely with all partners to ensure project goals and objectives were clearly understood, and addressed with appropriate technical and logistical plans. Team members attended several site visits, undertaking planning work that resulted in the establishment of one long restoration site (Long Branch Draw; see maps below). Restoration treatments were prescribed for 200-foot work sections along 1200 feet of stream. Detailed technical specifications were prepared for partners and crew leaders. These technical notes reflected data collected and knowledge gained by WRV and partner staff who evaluated similar work implemented on Chico Basin ranch by project partners from 2011-2014.

Baseline photo points were taken prior to project completion in spring, and were repeated this August along with survivorship counts as part of the annual monitoring plan.

Goals and Results

The goal of this project was to install a variety of native riparian shrubs and trees to: (a) replace the specific vertical structure lost by the cleared Russian olive forests in the short term, and (b) create a structurally diverse woody riparian community in the long term. In total, 658 native shrubs and trees were installed in approximately 6 acres of grazing-excluded riparian areas along spring-fed Long Branch Draw. Additional technical details can be found in the methodologies section below.

Overall the project was executed well, no volunteers or staff were injured in the process, and the quality of work was high. Two educational talks were given to volunteers, involving innovative techniques in conservation ranching (Michael Moon, Chico Basin Ranch), as well as ecological perspectives on re-vegetation and restoration and the role of volunteers (Luke McNally, Watershed Restoration Coordinator, WRV).

Partners were very happy with the results and were enthusiastic about working with WRV on similar projects in the future. As a result, WRV is working with project partners to fund and plan one or more possible Chico Basin projects in 2015.

2014 Implementation Project Leadership Team

WRV Staff – John Giordanengo & Luke McNally

Project Leader – Raghavendra Paturi

Technical Advisors – Laura Backus & Nicole Berzins

Assistant Technical Advisors – April Andujar & Greg Hill

Crew Leaders: Eduardo Bone, Phil Dougan, Beverly Gholson, Kurt Janz & Eric Pierson

Chico Basin Ranch Staff: Michael Moon

Lead Cook – Holly Hughes

Cook Team Member – Lynn Morales

2014 Implementation Photos



Top left: Volunteer Assistant Technical Advisor unpacks plants. Top right: WRV staff, volunteer Project Leader, and volunteer Technical Advisor give a morning talk. Middle left: volunteer leaders discuss site map. Middle right: poles soak in creek. Bottom left: volunteers spread across the site. Bottom right: volunteer digs a hole for planting in the riparian zone.



Top left: volunteer dips a bucket of water to water a recent planting. Top right through bottom left: volunteer Crew Leader demonstrates planting methodology for bare root stock, including installation of weed barrier covered by sod. Bottom right: volunteers trim willows after planting.

Additional Project Implementation Photos are available at:

<https://www.wlrv.net/index.php?section=photos&action=eventPhotoList&fwID=1364>

Methodology

Fencing: Before the grazing season begins, exclosures will be installed to keep cattle from entering newly restored sites. This involves electrical fencing, which allows rodents and other small animals to enter, but effectively blocks entry to cattle and horses.

Russian olive removal: On Long-Branch Draw, WRV volunteers removed any remaining Russian olive saplings with weed wrenches, excavating the root system from all specimens encountered in the riparian planting area. Mature trees are not feasible with weed wrenches. Eradication of satellite colonies is continuing through the fall performed by ranch staff and contractors.

Plant species selection: The species listed below were narrowed down from a broader list of potential plains native trees and shrubs appropriate for riparian areas. Shorter stature shrubs such as western snowberry and Wood's rose were removed from the list in favor of shrubs that would provide a higher canopy elevation. The higher elevation shrubs and trees were selected by the partnership team in an attempt to meet an important site-specific goal, which was to provide the tallest average shrub cover, in order to mimic the habitat provided by Russian olive trees that migratory birds have been using at this site for decades. Also, the long-standing bird-banding station is set up next to the re-vegetation area in a Russian olive grove which is much taller than many native riparian shrubs. The plan is to move the banding area into the re-vegetation area as native trees and shrubs mature, and then remove the final Russian olive trees.

Russian olive removal methods: Weed wrenches were used to remove small Russian olives at Long Branch Draw only.

Planting methods: The Long Branch site is one big section, divided into 5 subsections. Teams leapfrogged 200-ft. sections as they finished after consulting with neighboring teams. When finished on the Long Branch site, teams moved to work at the Vega site on the second day. Each work area was marked with a station line, and colored flags used to designate planting zones; section notes were provided to Crew Leaders to indicate precise planting locations and species.

- Cottonwood Poles: Cottonwood poles were planted in hand-augured holes 8-16 feet apart in damp soil. Pre-trimmed cottonwood poles were planted with 3-5 feet above ground, but did not trim tops. Holes were back-filled with a soil and water slurry.
- Chokecherries: Planted at 30-36 inch random spacing in moist hand-dug holes which did not seep water when dug. Planted with crown and stems above ground.
- Red-osier dogwood: Planted at 4 foot random spacing in damp ground.
- Peach-leaf and coyote/sandbar willow: Volunteers harvested willow cuttings ½ to ¾ inches in diameter and 6 feet long with a diagonal cut at the bottom and trimmed lateral branches and terminal bud after installation. Cuttings were installed using a willow probe at 2- to 3-foot random spacing in damp to moist soils at the edge of the soggy wetland areas, with about 2 feet of the stake above the ground, and holes back-filled with slurry.

- Bare root species included chokecherry, red-osier dogwood, and peachleaf willow. They arrived packed in sawdust, were soaked in a bucket of 12-18 inches of water mixed with a shovelful of soil. A circle of sod extending beyond the dripline of each installed shrub was removed before plant installation. After plant installation, the sod was used to anchor a dense weed fabric over the top of the planting hole. One to two staples were used in addition to the anchoring sod in order to keep the weed fabric firmly anchored to the ground. All installed plants were watered thoroughly (both in the planting hole, and above the installed plant).

Monitoring

Chico Basin Ranch has been monitoring transects since 2002 to make better management decisions and to analyze grazing management programs and their outcomes. These transects can be viewed on line at: www.landekg.com; User name: duke, Password: ranchdata. Areas on Vega creek have been fenced completely to create control areas to better analyze the effects of prescription management strategies. To further understand the impacts of grazing in riparian areas, and the effects of riparian restoration treatments, as well as the interactions of grazing on these treatments, Chico Basin has and will continue to install a complex of exclosures in the riparian areas along Vega Creek that allow for no livestock grazing. These areas will aid in understanding the impact of management decisions in riparian corridors. The exclosures were designed and built in consultation with CPW and NRCS personnel, at a variety of distances from pools of water and areas where young woody plants are beginning to respond to the rest and grazing management.

In addition to ranch monitoring efforts, WRV has tracked areas of plant installation, and has established baseline photos of each site that received restoration treatments. Follow-up monitoring will be conducted 2015 and 2016 to determine survivorship of plants installed in 2014 and to assess the condition of restored sites relative to the baseline condition.

Continued monitoring (5-10 years) is necessary to evaluate long-term success, and determine if the desired shrub cover and architecture is being achieved. Such long-term monitoring will require a collaborative effort by all project partners involved to make sure that project goals were met. If monitoring results indicate that goals were not met, project partners will need to understand why and develop appropriate restoration treatments to address the shortcomings.

August 28, 2014 Monitoring Results

Monitoring Team: Tim Seastedt, Jackie Ramaley, Susan Sherrod, Laura Backus, Rob Pudim

Prefatory note: On 15 August, 2014 the above group met at the Chico Basin Ranch Campground. We first did a qualitative assessment of a planting adjacent to the campground (the Vega), followed by a quantitative assessment of the 2014 spring planting at Long Branch Draw. We then finished with a qualitative assessment of the 2013 planting done above the 2014 effort. The Long Branch Draw had experienced a recent high flow event, with plantings acting to catch plant debris. This debris was removed as part of the monitoring activity.

Surviving Woody Plantings at Long Branch Draw

Planting at Long Branch Draw was conducted on March 29 and 30, 2014. Although the shortgrass prairie is now very green, according to ranch manager Michael Moon, April, May, June, and the first half of July were dry. Several moderate rains occurred during the last two weeks of July. So far in August the total rainfall has been 5", including one measurement of 2.8" in 45 minutes. Michael has more rainfall data that he can provide to WRV.

We conducted monitoring of species survival and made observations of site conditions influencing survival of plantings.

Species	Common Name	Bare root or Cutting / Pole	Total Planted March 29 and 30, 2014	Total Living August 15, 2013	% Survival
<i>Populus deltoides</i>	Plains cottonwood	Cutting/Pole	180	15	~9
<i>Prunus virginia</i>	Chokecherry	BR	84	3	>1
<i>Salix amygdaloides</i>	Peach-leaf willow	BR	90	40	44
<i>Salix exigua</i>	Sandbar willow	Cutting	Approx. 250	171	68
<i>Swidia sericea</i>	Dogwood	BR	54	3	>1

Observations on 2014 Plantings

- Sandbar willow and peach-leaf willow had the highest survivorships. For chokecherry, and dogwood, survivorship was less than 1%. Plains cottonwood had about 9% survivorship.
- Surviving cottonwoods and sandbar willow were nearly all at the edge of the creek. The lowest area of sandbar willow survival was the wet meadow adjacent to the creek.
- Several surviving cottonwoods had dead planting stems, but regrowth from the roots.
- Peach-leaf willow survived in a variety of planting sites. Some peach-leaf willow had leaves damaged by insects.
- The few surviving dogwood were vigorous.
- Weed barriers were effective in preventing growth of competing grasses and forbs.
- Plantings did not survive in the bare, salty areas adjacent to the creek. However, these sites were being colonized by saltgrass.
- Caging of lower cottonwood stems appeared to make no difference in survival rates.
- Flood debris from overbanking creek flows was present throughout the reach. The debris had half-buried or completely buried a number of plantings. These were rescued.
- Many sapling Russian olive are present and must be removed to protect the new plantings from competition.
- The 3 1/2 months of spring and early summer drought probably greatly reduced survivorship, but our results show that individual species varied in their ability to persist through the drought.



Surviving sandbar willow just right of center

Cottonwood re-sprouting from roots. Note site greenness, flood debris, and Russian olive.



Observations of Long Branch Draw Previous Plantings

We walked up stream and observed the previous (2013) WRV project plantings between the electric fence and the barbed wire fence to the north. Surviving plantings included cottonwood, peach-leaf willow, and sandbar willow. The plantings which were dead or in very poor condition have been girdled at the base by small mammals. Canada thistle is crowding out the good, native wetland vegetation on the banks, and Russian-olives are present. Weed control is essential for good development of this riparian area.



Surviving cottonwoods observed along upper creek.



Canada thistle and Russian olive in riparian area.

Surviving Woody Plantings at the Vega

We did not conduct quantitative data collection at the Vega, but noted conditions of previous plantings and general site condition. Planting at this site has been conducted by WRV as well as previous groups.

Species	Bare root or Cutting / Pole	Total Planted April 13 & 14, 2014	Observations August 15, 2013
<i>Populus deltoides</i>	Cutting/Pole	?	Some vigorous survivors
<i>Prunus virginia</i>	BR	21	Many survivors/volunteers
<i>Salix amygdaloides</i>	BR	22	Many survivors/volunteers
<i>Salix exigua</i>	Cutting	?	Approx. 10-15% survivorship. Problems included gnawing by animals, tops not trimmed.
<i>Swidia cerisia</i>	BR	24	Not observed

The Vega is green and densely vegetated. *Juncus* and *Carex* are growing well, indicating a high water table. The site would benefit from control of Canada thistle.

Thoughts for Future Projects

- Omit caging during the first planting season. After the mortality of the first growing season is past, cage the surviving cottonwoods to prevent girdling by small mammals. Other species might also benefit from caging.
- Conduct woody plantings in two stages:
 1. a spring planting of sandbar and peach-leaf willows plus possibly cottonwood.
 2. depending on weather patterns, a mid-July to early August planting of chokecherry, dogwood, and other native shrubs so that the new plantings have a month or more of monsoon rains prior to fall dormancy.
 3. Given monitoring data on species survivability, a switch from cottonwood poles to containerized stock from the new WRV nursery should be implemented and subsequently monitored. While percent survivability for willow species was typical, the addition of containerized stock may aid in surviving the areas inherent dry conditions and has been suggested for next year's projects. The success of all containerized stock would in turn be evaluated by future monitoring.
- The near total failure of chokecherry at one site but not at the other suggests some subtle factors affecting the success of this species that merits attention. Until we know the mechanism, one might 'hedge your bets' by varying the planting distance from open water, as well as (should sufficient material be available) experimenting with different rooting depths?

CONTACT INFORMATION

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