



VIRGIN RIVER ARUNDO DONAX ERADICATION PROJECT

2015 Final Report

American Conservation Experience (ACE)

6/30/2015

Overview

The Virgin River Arundo donax Eradication Project (VRADE) has made great strides in completing crucial treatments spanning across 39 miles of the Virgin River in 2015. The project has seen little plant regrowth in areas treated in previous years and during the spring of 2015. After surveying the Virgin River watershed the main stem of the Virgin River as well as the tributaries have been cleared of Arundo donax and will undergo a final series of retreatments during the fall of 2015. 1,253 Arundo plants were removed in the final phase of treatment during 2015 providing a promising future for the Virgin River watershed and its subsequent ecosystems.

The VRADE Project Leader began working on the project in March 2015. Along with coordinating the VRADE project, the project leader identified areas where the Arundo infestation was greatest and where American Conservation Experience (ACE) conservation corps work crews would be needed the most. The VRADE Project Leader also worked closely with federal, state and county officials to assure regulatory compliance as well as the overall success of the project. Steve Meisner from the Virgin River Program, Christian Edwards from the Utah Department of Natural Resources and Bob Douglas from the Bureau of Land Management assisted the project leader with general project orientation and information, private property contacts, and wildlife information. In an effort to keep other local partners aware and involved, the VRADE Project Leader also presented information about the Arundo donax removal project at the Lower Virgin River Fire Council Meetings on 4/13/15 and 6/8/15.

Hitch	Date	Crew members	Hours worked
1	4/8- 4/15	10	750
2	4/22-4/29	13	870
3	5/5-5/8, 5/26-5/29	9	604
4	6/3-6/10	9	720
Totals		41	2944

Due to the technical and labor intensive nature of removing and treating Arundo, crews of conservation corps volunteers were enlisted to cut, apply herbicide to the cut stumps, and carry cut stalks out of the floodplain. ACE organized four “hitches” of work crews from April to June to assure the removal of Arundo donax from the Virgin River. A “hitch” consisted of crews of 9 to 13 ACE crew members working 8 - 10 hour days. ACE provided hitches on 4/8-4/15, 4/22-4/29, 5/5-5/8 and 5/26-5/29, and 6/3-6/10 (See table 1). The third hitch was split into two, four day hitches in order to work around another project outside of the area.

¹ Cover Photo depicts growth on a treated plant that is being disrupted by the herbicide.



Hitches were led by both the VRADE Project Leader and ACE Crew Leaders. In order to ensure safe and effective herbicide application, the VRADE Project Leader, Crew Leader and an intern for the project were licensed as Commercial Pesticide Applicators. All other crew members had obtained Herbicide Handler's Cards before working on the project. The project leader educated the crews about *Arundo donax*, removal procedures, environmental precautions, safe herbicide use, and other safety measures.

Work crews from the American Conservation Experience began treatments on *Arundo donax* in April of 2015. Crews began treatments in areas that were identified as having the heaviest remaining infestation from La Verkin Creek to the Arizona Border. Crews began treating *Arundo donax* in La Verkin Creek which is thought to be the source of many of the *Arundo* plants located downstream. The crews continued downstream to the confluence of La Verkin Creek and the Virgin River. Once crews began work on the Virgin River, the crews treated *Arundo* by walking through the floodplain treating *Arundo* that was previously surveyed by the project leader as well as treating any *Arundo* plants that had sprouted but had not been previously mapped. This strategy was very effective in both treating known populations as well

¹ Crew from "Hitch 2" standing in front of a partially treated *Arundo donax* stand.

as mapping and treating emerging plants. The conservation corps crews ranged in size from 9 to 13 members and were thus able to spread out and cover the entire flood plain. Having large numbers of crew members on the Virgin River was very beneficial for both a thorough and efficient completion of treatment. In one particular floodplain on the Virgin River, crews were able to remove over 100 small stands of Arundo in a flood plain. Qualified staff allowed crews to break into four smaller groups and spread out to make sure all Arundo plants were treated (See Appendix C and D).

Due to effective treatment efforts in 2012, 2013 and 2014, areas of the Virgin River as it passes through the city of St. George, when surveyed, saw little to no regrowth and any surviving plants were treated. In past years, Arundo donax was removed from the Virgin River up to the property boundaries of the Bureau of Land Management property. Due to the completion of the Virgin River Arundo Eradication Environmental Assessment in July of 2013, crews were able to continue removing Arundo from BLM property (See Appendix H). ACE crews worked downstream from St. George through BLM property and to the Arizona Border. Upon completion of treatment to the Arizona border, crews were then sent back through areas previously treated near St. George and in the areas treated during the first hitch of 2015 to look



² Sawyer removing an Arundo donax stand

for, and treat any plants that showed signs of re-growth or were not identified and treated in previous treatments.



³ Arundo donax before treatment

⁴ Arundo donax after treatment

Methods for Removal

Removal methods were established based on current research as well as previous years' experience treating Arundo in the Virgin River.



The “cut stump” treatment has been the preferred method of removing Arundo donax from the Virgin River in years past and areas previously treated have seen a 95% kill rate. The “cut stump” method consists of cutting stalks down to six inches using chainsaws or loppers depending on the size of the Arundo plant, then applying an herbicide mixture to the cut stalks. The herbicide mixture consisted of a 1:1 ratio of Aquaneat to water. 10 oz of Polaris per gallon was then added to the mixture creating a solution of 46% water, 46% Aquaneat and 8% Polaris. These herbicides were chosen for both their effectiveness and safe use near water.

The active ingredient in Aquaneat is Glyphosate, which is a systemic that attacks the root system of the plants that it is applied to. Additionally, Imazapyr, the active ingredient in Polaris is a growth regulator that interrupts cell growth. This mixture was recommended by Curt Deuser of the Lake Mead National Recreation Area to treat Arundo donax in the Virgin River because of its effectiveness in both damaging the plant's current physiology as well as interrupting its potential for regrowth.

To treat Arundo Donax, ACE crews were split into groups of 3-5 individual conservation corps members. The groups consisted of a “cutter”, “sprayer” and “swampers” (someone who moves cut material from the treatment area). The cutter used a chainsaw or loppers to cut the Arundo stalks, then within a 3 minute window after the stalks were cut, the sprayer would step

⁵ Herbicide being applied to cut Arundo stumps.

in and spray the cut stalks. In the process, the swamper would remove cut material from the treatment area providing space for the cutter and sprayer to continue removing the remaining stalks. The swamper would then establish an appropriate location for cut material and move it there.



After consulting with local project partners the best location for cut material was deemed as the Washington County landfill where cut Arundo would not be tampered with. However, in much of the watershed access to remove cut material was limited and deemed unfeasible. In areas where material could not be removed and hauled to the landfill, crews would take cut stalks out of the 100 year floodplain and create discreet piles where the stalks will be left to dry. Dense, impenetrable stands of tamarisk and steep, unsafe floodplain terraces were two obstacles that prevented crews from moving material out of the 100 year flood plain. In this case cut material was taken to the highest location and as far from the river as possible.

When moving material caution was taken in order to prevent the possibility of cut materials repopulating downstream. Crews worked to avoid transporting cut material across the river. When treating plants near water and crossing the stream was required, tarps were utilized to contain stalks and one

crew member would stand in the water to catch any material that fell into the river.

Handheld GPS devices were another set of critical tools used in the treatment process. Treated plants and cut material piles were marked using a Garmin GPS device. Information was then loaded into the Garmin “Compass” program then converted into a GIS -.SHP file where the information could be stored and distributed to project partners. This step is crucial to the retreatment process as all treated plants will be revisited to check the effectiveness of treatments. Previously treated Arundo will be retreated with a foliar spray. The foliar application will consist of a mixture of 5% glyphosate, 1%imazapyr and 0.5% of a surfactant.

Special Regulations

Work crews were required to follow special guidelines and regulations regarding land use and wildlife habitat. Near the Arizona border the Virgin River passes through the Beaver

⁶ Arundo piles were trailered to the Washington County Landfill for proper disposal.

Dam Mountain Wilderness and therefore ACE crews were required to follow the guidelines of working in a federally designated wilderness area. In this area loppers were the only tools used to cut *Arundo* in order to adhere to these special regulations.

After April 20, ACE crews were also required to prevent disturbing the Southwestern Willow Flycatcher critical nesting habitat. Project management worked closely with Christian Edwards, sensitive species biologist with the Utah Department of Natural Resources to clarify where the nesting areas were located in order to avoid these areas (See Appendix A). Prior to April 20, project management visited several nesting sites where *Arundo* was known to be located. Included was an area called Snipe Pond where ACE crews removed an area of *Arundo donax* over 40 ft in diameter. The plant was cut and removed by trailer from the site. Removing *Arundo donax* is critical to the health of Southwestern Willow Fly Catcher habitat as it directly competes with the native plants that the Southwestern Willow Fly Catcher prefers to nest in.



During the fall of 2015, when the Southwestern Willow Fly Catcher leaves the nesting area these identified sites will be revisited to treat and retreat remaining *Arundo*.

⁷ Crew members standing in a treated stand, over 40ft in diameter.

Private Property

A majority of this year's treatment areas are located on, or alongside private property. The VRADE project manager extended educational materials, technical assistance, as well as the offer to remove Arundo plants to private property owners in the hopes of creating awareness of Arundo donax, while remaining transparent to concerned citizens. In most cases this awareness took the form of a notice posted on the doors of residences that had Arundo identified on their property (see appendix E and F for notice). The notice explained the VRADE project goals and included office contact information for any possible questions. Throughout the treatment phase, project leaders distributed twenty five pamphlets to households of private property owners and spoke with nine landowners on multiple occasions in an attempt to clarify the VRADE project objectives. Although property owners continue to feel skeptical of the project's intentions, this term has shown considerable improvement in communication and understanding.

At the date of this final report approximately 15 untreated Arundo plants are known to exist in the Virgin River Watershed. The removal of these plants are waiting on the approval of the private property owners while a small number of Arundo plants will remain untreated because they are located on private property and the landowners have denied access. These remaining plants have the potential to repopulate the Virgin River System and the efforts of project partners will be enlisted to work with these private property owners to encourage removal.

We are currently collaborating with the Washington County Noxious Weed Board to encourage residents who own and grow Arundo to remove these plants as soon as possible. It has come to the attention of VRADE project management that many properties have old, established Arundo plants that are not directly along the Virgin or Santa Clara Rivers but could still be susceptible to transport via wind or flood. As it is in the interest of the success of the project, we see it fit to encourage authorities to address potential violations identified in the Washington County Noxious Weed Act, in which the selling or distributing of Arundo donax is considered hazardous and illegal.

Outreach

Contact with local partners remains strong as the final phases of the VRADE project begins. However, VRADE project leaders continue to pursue the development of new relationships with youth groups and local conservation organizations in the hopes of providing educational opportunities regarding Arundo donax and other related invasive species. This year ACE worked with a variety of ages including a youth group from Parowan, Utah, Southwest Utah National Conservation Lands Friends (SUNCLF) and several other individuals. Volunteer service consisted of assisting project management with river monitoring and the removal of related invasive species. Volunteers were given information on the ecology of Southern Utah's

native species, including the Sand Bar Willow and its endangered inhabitant, the Southwestern Willow Flycatcher. VRADE project management made a point to draw connections between the destruction dealt to riparian areas by more familiar invasive species, with that of Arundo.

Table 2	
Dumpster Savings	Cost
Drop Off Fee	\$ 60.00
Pick Up Fee	\$ 125.00
Charged Per Ton (29.75 per ton)	2.47 tons=\$73.48
Total Saved	\$ 258.48

Other donated services included the use of a dumpster utilized to transport cut Arundo stalks to be disposed of at the landfill(see table 2). The Streets Department Superintendent from the City of St. George provided a 40 yd. dumpster to help with removal efforts in Confluence Park in La Verkin, Utah. Twice, St. George emptied the full dumpster (a total of 2.47 tons of Arundo) to the Washington County Landfill. Their donated time and facilities saved an estimated costs of \$258.48 in rental fees.

In the coming months we will seek out youth volunteers from college communities, such as that of Dixie State University, and tackle areas along the Virgin River that desperately need rehabilitation and monitoring. Projects will range from waste removal to further treatment on invasive plants at the BLM site, Shinob Kibe. We anticipate some of the aforementioned youth groups will be with us again to contain invasive populations down the road.

Table 3			
Volunteer hours			
Name	Date	Hours	Description
Volunteer 1	26-Mar	5	Monitoring
	3/27/2015	2	Monitoring
	3/30/2015	1.5	Monitoring
	4/1/2015	5	Monitoring and navigating
	4/10/2015	5	monitoring
	4/18/2015	1.5	map and data time
	5/15/2015	3	monitoring Ft. Pierce Wash
Volunteer 2	5/13/2015	3	monitoring
Volunteer 3	5/13/2015	3	Monitoring
City of St. George	8-Apr	5	Dumpster Drop off
St George Streets Superintendent	13-Apr	5	pick up and drop off
	15-Apr	5	pick up
Totals		44	

Table 4	
Partners	Contact Person
American Conservation Experience	Rick Anton
Virgin River Program	Steve Meisner
Bureau of Land Management	Bob Douglas
Red Cliffs Desert Reserve	Bob Sandberg
Washington County	Alan Gardner
Utah State Department of Natural Resources	Christian Edwards
Natural Resources Conservation Service	Casey Burns
City of Washington	Dave Jordan

Table 5	
Outreach Contacts	Contact Person
Nature Conservancy	Elaine York
Southwest Utah National Conservation Lands Friends	Susan Cook
Grafton Heritage Society	Jane Whalen
Utah Native Plants Society	Wayne Padgett
Ash Creek Special Services Districts	Darwin Hall
Red Cliffs Desert Reserve	Bob Sandberg
Lake Mead National Recreation Area	Curt Deuser
Virgin River Property Residents	Varies
Western Rock	Jeremy Leonard

Summary & Future Plans

Thanks to the support of our partners, funding from the Utah Department of Agriculture and Food, the Washington County Flood Authority, and the tireless efforts of ACE conservation corps crew members, we are excited to see that in such a short period of time 1,253 plants were able to be treated and the Virgin River Watershed was cleared of *Arundo Donax* to the extent allowed. However, mounting evidence from the testimonies of property owners along the Virgin River has shown us that many of the larger *Arundo* stands found upstream are decades older than we had previously understood them to be. In one account, a stand just off of the Highway 9 Bridge in Hurricane, wedged amongst a small cliff, was reported to have been rooted there for at least forty years or longer by its property owner. This has led us to believe that increased vigilance is necessary in the future in order to effectively avoid repopulation by the species. Moreover, we feel this approach to quickly treating juvenile plants would be conducive to the project's "early detection and rapid response" clause.

The VRADE project will continue until December 2015 through funding from the National Fish and Wildlife Foundation (NFWF) focusing on multiple invasive species (i.e Tamarisk, Russian Olive, and *Arundo*) and youth engagement. VRADE project leadership will

continue working with partners to put a plan in place to monitor the river and its adjacent flood zones for smaller stands of Arundo with the assistance of volunteers. It is with the continued education of local youths and organizations in Washington County that we can help insure a higher sensitivity to this dangerous plant and increase sighting and elimination of Arundo donax in and outside of the BLM and the Virgin and Santa Clara Rivers.

Table 6	
Treated Waters	Arundo Treated
Virgin River	1162
Santa Clara River	8
La Verkin Creek	82
Fort Pierce Wash	1
Total	1253

Nevertheless, identified Arundo donax populations from the Zion National Park border to the Arizona border, the Santa Clara River, La Verkin Creek and Fort Pierce Wash have been effectively treated and removed, with the exception of roughly 15 Arundo plants still seeking treatment permission from private property owners. Until such a time when permission is received, we will focus our energies on surveying treated areas to assure complete eradication, and establishing a lineup of volunteer service projects to continue invasives monitoring and education from now until December 2015. The VRADE project leadership holds strong in the conviction that working with youth to monitor and clean the flood plain will provide the Virgin River with the extra help it needs to see full rehabilitation in the coming years.

Appendix

- A. SWFL Restoration Priority Sites
- B. Maps
 - a. Project Extents
 - b. Southern Extents Detailed Map
 - c. Northern Extents Detailed Map
- C. Flood Plain Image #1
- D. Flood Plain Image #2
- E. Resident Notification
- F. Arundo Technote 2015
- G. Pesticide Application Record
- H. Virgin River Arundo Eradication Environmental Assessment

A- SWFL Restoration Priority Sites

