Coyote Willow Mowing Project

Biological Summary Report

Alamosa National Wildlife Refuge

San Luis Valley NWR Complex, CO

April 2016; January 2017

Prepared by: Dean Lee

Photo by Dean Lee, USFWS

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Crew Member(s): **Gabriel Martinez – Alamosa NWR Maintenance Worker**
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Purpose:

The primary goal of the project is to enhance/promote the establishment, growth, spread, and survival of willow species (primarily coyote willow). Many stands/patches of willow habitat on Alamosa NWR have died over the past 14 years. Refuge biologists suspect that changes in hydrologic conditions (i.e., drought, altered hydro-periods and volume of flows in the Rio Grande, and reduced groundwater levels) are the primary causes. Additionally, coyote willow, which is the dominant species in these locations, is a relatively short lived species and many of these stands are old and have simply died. As a result, there are many decadent stands/patches of willow throughout the riparian corridor. Like many vegetation species, when a build-up of decadent vegetation occurs, it restricts the establishment, growth, spread, and overall vigor of young plants. Refuge biologists suspect that the dead willow in these stands are restricting the growth of young plants due to competition for space and light as well as other factors.

Refuge staff decided to mow (using a skid steer with an attached hydro-axe) portions of the riparian habitat with the expectation that this will provide a "release" for existing small plants and will encourage the establishment and spread of new plants. Evidence suggests that mowing and prescribed burning conducted during the appropriate times (e.g., non-growing season) can improve riparian willow habitat conditions (Rea and Gillingham 2007). All mowing activities took place outside the breeding season for Southwestern Willow Flycatchers and Yellow-billed Cuckoo.

Methods:

Refuge staff identified 16 locations on Alamosa NWR which were suitable for mowing efforts. Staff then took photos and GPS coordinates of each site. The mowing operation was conducted during the dormant season by using a mowing/mulching attachment mounted to a Bobcat skid-steer. Mowing levels were at or just slightly below ground/duff layer of willow stand. The intent was to mow down willow stems and to disturb the willow root system enough to stimulate regeneration. Care was given to insure that the mower was not digging too deep into the root system, but not too high as to only be leaving stubbed willow stems. Terrain, duff layer and willow stand density made mowing challenging but the skid-steers maneuverability made it successful.

Photo by Dean Lee, USFWS: RIP 11 pre - mow Mar 2016

Photo by Dean Lee, USFWS: RIP 11 post – mow April 2016

Site Description:

Refuge staff identified up to 9.71 acres in 16 locations on Alamosa NWR which were suitable for mowing efforts. All sites that were selected had a dead to live plant ratio of 60:40 at a minimum. Many of the sites were >75% dead. Priority was assigned to each site in case any time constraints occurred. The following Table shows site # and acres of each site. (See attached map for locations).

ALAMOSA NWR:

North Area			South Area		
Priority	Site #	Acres	Priority	Site #	Acres
1	RIP 1	0.33	1	RIP 13	0.53
2	RIP 3	0.89	2	RIP 15	1.36
3	RIP 4	0.54	3	RIP 12A	0.23
4	RIP 5	0.16	4	RIP 12B	0.15
5	RIP 9	0.7	5	RIP 14	1.79
6	RIP 8	0.41			
7	RIP 6	0.28			
8	RIP 10	0.41			
9	RIP 11	0.1			
10	RIP 7	1.02			
11	RIP 2	0.81	**TOTAL ACRES = 9.71**		

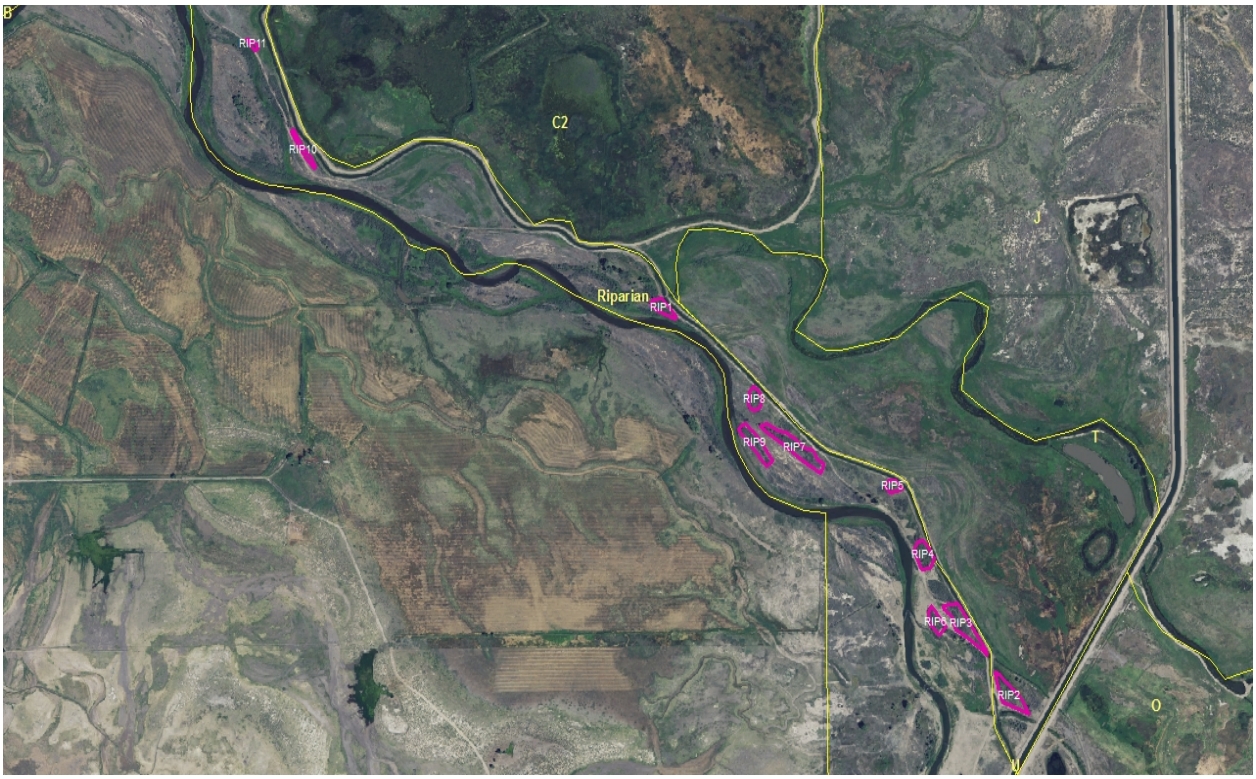

Figure 1: Mow locations RIP 1- 11 on northern part of ANWR

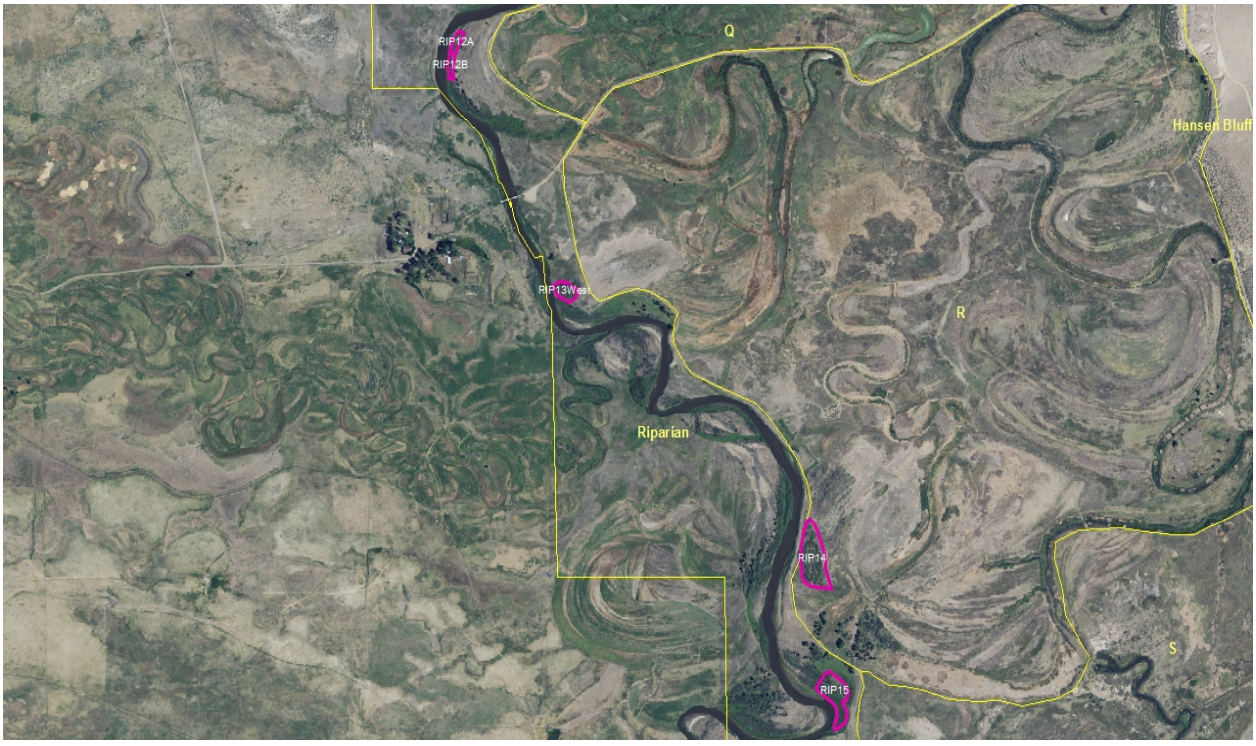

Figure 2: Mow locations RIP 12-15 on southern area of ANWR

Environmental Conditions:

The greatest concern at the beginning of mowing operations, (late March), was irrigation and run-off water flooding the access roads and willow stands directly. The next concern was timing of the spring green-up and the onset of South Western Willow Flycatcher (SWFL) migration… (as well as all other plant and animals that use willow habitat).

Weather was a concern during the second round of mowing due to snow and snow depth. However, due to the rubber tracks and maneuverability of the skid steer, mowing operations continued throughout the winter months.

Results:

Mowing operations was conducted on mow sites RIP 1, 3, 4, 5, 8, 10, and 11, during late March through to the end of April 2016. Mechanical issues, (hydraulic seals and electronic switches), and river debris contributed to significant down time for the mower. Apparently, old tires are not very compatible with mulching mowers! Operations stopped due to timing of the spring season. Mowing operations started up again in November 2016, on through to late January 2017. During this time, mow sites RIP 6, 7, 9, 12, 13, 14, 15 were completed. RIP 2 is the only remaining site.

Discussion:

The willow mowing project turned out to be a great success. There were several pieces of this project that needed to come together and through communication and partnership; we were able achieve our goals. Preliminary observations seem to show the willow responding very vigorously (fig. 3-6).

Figure 3: RIP 4 pre-mowing March 2016 – ANWR **Photo by Dean Lee, USFWS**

Figure 4: RIP 4 post mowing Sept 2016 – ANWR **Photo by Dean Lee, USFWS**

Figure 5: RIP 4 post mowing Sept 2016 – ANWR **Photo by Dean Lee, USFWS**

Figure 6: RIP 4 post mowing Sept 2016 - ANWR **Photo by Dean Lee, USFWS**

Literature Cited:

Rea, Roy V. and Gillingham, Michael P. 2007– Initial Effects of Brush Cutting and Shoot Removal on Willow Browse Quality - Rangeland Ecology & Management 60: 566-573 November 2007 (Rea and Gillingham 2007)