Removing Russian Olives on the Yellowstone River at Mission Creek

Photo credit: https://photorator.com/photos/images/paradise-valley-and-the-yellowstone-river-near-livingston-mt--20399.jpg

Project Name

Yellowstone River and Mission Creek Russian Olive Removal and Restoration Project

Project Summary

In 2018, the Park County Cooperative Weed Management Area Group (CWMA), working with American Rivers, Yellowstone River Conservation District Council (YRCDC), Park County Environmental Council (PCEC), National Wild Turkey Federation, and other partners, landowners and residents, removed Russian olive trees within 115 acres along the Yellowstone River near its confluence with Mission Creek in Park County, Montana. The process of restoring the native plant and tree species to improve fish and wildlife habitat and the natural ecology of this national treasure river, and educating and involving the landowners has begun. All participants cooperated and the residents were brought closer together in the process.

Location

Yellowstone River at Mission Creek, East of Livingston, Park County, Montana

Project Description

Introduction: The picture says a thousand words about the beautiful Yellowstone River, filled with clear cold water and native fish, and lined by a beautiful riparian area of willows and cottonwood trees, wildflowers and native grasses. Peace and tranquility reign. But, riparian areas all along this majestic river are slowly being crowded with one species of a thorny tree, the Russian olive (Videos 1-3). Now, imagine heavy equipment, including cutters (Videos 4, 5) and grinders (Videos 6-10) removing those trees!

The nearly 700-mile long Yellowstone River has flowed for eons north out of Yellowstone Lake and northeast out of the famous Yellowstone National Park in Wyoming and across Montana to the Missouri River. Russian olive trees, which are native to western Asia and southern Europe, have been planted in the west since the 1900s, primarily for use in windbreaks and as ornamentals in landscaping. These trees form thorny impenetrable thickets, crowding out the native vegetation, and reducing wildlife species diversity. It's estimated that 3000 acres of the Yellowstone's 100-year floodplain along the length of the river are occupied with Russian olives (Videos 1, 11). The Mission Creek area has the largest Russian olive tree occurrence in Park County. Large populations of the trees exist from Park County to Custer County, with the reach between the Big Horn River to the Powder River having the largest numbers and then tapering off as the river flows downstream to its confluence with the Missouri. (11)

Although some believe they provide good habitat for birds, the Audubon Society, Fish Wildlife and Parks, the state of Montana, and many landowners disagree. For example, Audubon said, "Cavity nesting birds like the American Kestrel lose nest sites if invasive Russian olive and saltcedar replace cottonwoods along our waterways." (12)

"The Russian olive is a horrible, nasty, invasive tree. Anytime that you look at an olive tree, you had better multiply the cost of time, energy and money by three, as that is what it will cost you to get rid of it," said Bob Fleming, Project Manager, chairman of CWMA, and ranch hand. (13)

One of the wonderful restoration stories of 2018 is this project, led by Bob Fleming, working with key partners, Mission Creek Ranch and 8 adjacent landowners, and who accomplished the successful removal of Russian olives within 115 acres, from March to May 2018. It's important, not only because it was successful, but because it shows that when people get together, no matter their status, philosophy, political ideology, or whatever, they can bond together to accomplish something great. Here's how they did it.

Who: The YRCDC Yellowstone River Conservation District Council, which consists of 11 Conservation Districts covering the entire reach of the Yellowstone River, was formed in 1997. It put forward its recommended practices (11) through a major cumulative effects analysis in 2006. Working with American Rivers, the Park County CWMA (13), and experts from Montana State University (MSU) and around the state, a site in Park County was selected and interviews were held with several landowners who own small parcels (10-20 acres) and one large ranch operation within this site. In total, 9 landowners and representatives from 6 agencies were involved.

"Everyone did put their best foot forward and really tried to help each other," said Project Manager, Bob Fleming. "American Rivers, Dan Rostad from Yellowstone River Conservation District Council, Park County Environmental Council, Park County Conservation District, Jane Mangold from MSU and the CWMA all helped me get started. Everyone was extremely important. Park County Environmental Council (PCEC) and Yellowstone River Conservation District Council were incredibly helpful throughout the project. Everyone all played an

important role in this project, especially in their areas of expertise and strengths. I ran into so many barriers from ignorance to lack of ambition. Jane Mangold (MSU) is so knowledgeable in helping us contact other experts and in the giving of suggestions for us to get started. Our extension agent, Tracy Mosley, Park County MSU Extension office, especially helped us set up the fiscal part of this project."

Max Hjortsberg, PCEC's Conservation Director, said PCEC's "aim is to protect and restore native habitat and help set up a healthy diverse ecosystem. The Russian olives are counter to that in that they dominate the area and the vegetation becomes a monoculture. We wanted to help CWMA get rid of the thicket of Russian olives to allow native plants to return to the area and prevent their spread further along the river. I knew that to have this project be a success it would need involvement from beginning to end. So, PCEC mainly helped with the coordination and communication of the project. We called landowners, met with them, explained things and answered questions. It was a pleasure working with CWMA, Bob and the Conservation District and all the landowners were very helpful and great to work with."

Buzz and Nancy Constable are two of the landowners in the project. They bought their property 8 years ago and knew even then that "the Russian olives were the primary vegetation on the property, and we knew they had to go. We started removing them, but for an individual, it is exorbitantly expensive. We saw them on the adjacent ranch and saw that it made it hard for the cows to get through."

Buzz: "We wanted to get these Russian olives removed, so when it was suggested this might happen, we were all in. I even called our neighbors to ask them to be all in."

Buzz: "We are all in this floodplain together and we can work together and we had no animosity before, but this project really bonded us together. That is one of the real wonderful benefits was we have a good relationship with the ranch and with our neighbors. It was a rewarding experience for all the neighborhood."

Nancy: "Now the Russian olives are gone, we are now at the stage of revegetation. In July, we got a bunch of trees planted, more to provide screening from other houses, but with an eye to where the floodway is. The first 25 trees include 4 to 5 Aspens, a lot of Cottonwoods, Junipers, and Chokecherries."

Bob: "There were not Russian olives on all 115 acres, but they were well established within these 115 acres. These acres included roadways, pastures, and lawns around the houses, and the Russian olives were also on an island, in the "common area" just all over. When we first looked at this project, we were naïve. On the first survey of the site, we looked but did not see the whole picture. Trees were hiding other trees. We did not see the sewer line or power line that ran under the olive trees. The trees on the island were seen but no one thought of how are we going to get them off once they were cut down. Fencelines and gates were not noticed, nor were the wet areas. Accesses to the different properties were not taken into consideration. And most of all, there was the gnarly nature of the olive tree. With all of this it made things really tough when you start trying to do add up the costs."

What: The Yellowstone River site in Park County increased from 60 acres, and 4 participants initially to 115 acres and 9 participants after meetings were held with small landowners and the Mission Creek Ranch (which changed hands just as the project was getting underway).

How: The project relied heavily on heavy equipment to pluck or cut the trees. Native plants, including Plains Cottonwood, Rocky Mountain Juniper, Chokecherry, and Aspen are being planted.

Bob Fleming said, “How the project was going to be done (what method), was a huge obstacle for all of us to decide on initially, but it had to be the landowner’s decision, be it cut or pluck. Most of the landowners were envisioning an end game where they could work the land and not worry about the stumps. There was concern about disturbing the banks along the river and other riparian areas – that was another problem. Also, there are gas lines, underground power lines, septic systems, and area covenants, that all posed more questions for us since the Russian olives were growing everywhere.”

Methods Used: Bob shared the costs and pros and cons to the methods used, including the following:

TREATMENT	PROS / CONS	COST
PLUCKING - Large Excavator		$9,775
PROS	Entire tree removed, no stump, spraying more effective	$ 122/ac
CONS	Ground disturbance, remaining roots and resprouting	
CUTTING - Feller-buncher with hot saw		$1,960
PROS	Minimal ground disturbance; good for riparian areas	$ 56/ac
CONS	Stumps were troublesome,	
HAND-CUTTING / REMOVAL - Chainsaw, skidsteer, skidding		$4,355
PROS	Minimal ground and surrounding vegetation disturbance	$ 174/ac
CONS	Slow, dangerous processing; trees unwieldly and thorny	
HERBICIDE - Stumps saturated and small trees sprayed across entire area		$1,000
PROS	Effective and precise, little regrowth	$ 25/ac
CONS	Significant time commitment	
SKIDDING / PILING - Completed for nearly all project acres		$2,840
PROS	Fast and efficient, used both piles and windrows	$40/ac
CONS	More ground disturbance, small branches left behind	
PILING - RANCH (In-kind)		$3,520
GRINDING - Completed for approx. 1/3 of material		$9,625
FEEDING THE GRINDER		$3,520
PROS	Effective, chips easy to utilize in filling low areas, scattered about	$278/ac
CONS	Expensive, dealing with dirt and rocks in root balls Many of the large trees were difficult to feed into grinder	
REPLANTING - Native or desirable trees planted on small acreages		$21,000
PROS	Dresses up final appearance, restores riparian canopy	$ 445/ ac
CONS	Expensive, labor intensive	

Summary: Bob said, "There are numerous bare spots and considerable amounts of weeds present from the machinery traffic and the moving of the piles for burning. There were lots of broken branches and chunks of wood scattered around this area from the piles that were hauled in for grinding. However, the areas that have just down trees that were kind of windrowed and that still need to be piled or hauled off look great. Very little weeds are showing here, and there is thick tall grass. In the root ball holes there is some houndstongue and thistle showing (but very little) and hardly any other weeds. As for Russian olive regrowth, there seems to be little but with the heavy grass growth, it may be too soon to tell.

"If we were to have just windrowed them, it would benefit everyone. It could block wind, give cows and deer and moose more protection. Turkeys and other birds could nest or feed inside these piles or use them for protection. It might be just better to pile them and leave them in windrows as spraying would be easy."

Total project cost: A total of $23K in grant funding was obtained that included a 223 Grant for $17K, $3K that was donated by American Rivers, and another $3K from the National Wildlife Turkey Federation. The Yellowstone Conservation District Council donated $7K. In-kind donations of time and labor were also contributed as well as landowner cash match, totaling approximately $35K. Total project cost was $58K, 115 acres treated, $511/ac avg.

When: The entire project from planning to completion took 2 years. The actual plucking and chopping work was done in 3 months, from March 2018 to May 2018. Blake's Nursery (Big Timber, MT) is currently re-planting the area with native trees and shrubs. Fortunately, the larger property owner (Mission Creek Ranch) in the project accepted all the harvested trees from the smaller acreages so that they could be cleaned up and those areas replanted right away. All of the land owners have now set up some sort of weed control so that the properties will be monitored in the distant future.

Conclusion: Bob said, "This is a beautiful area and I am sure that it will just get better. These are good folks that just needed a little help. The partners came through answering all their questions and fulfilling all their needs."

Max: "There were several lessons learned: (1) This type of project is always going to be much bigger than you thought it would be, so plan ahead knowing that you will encounter obstacles, and remain flexible so you know how to work around those things; and (2) The biggest lesson is to keep all the lines of communication open and continually follow up with everyone involved, and make sure that they are up to speed on what is going on, again and again, and be patient and thorough in explaining things. For example, many people have not had this type of project on their land, and not many of the landowners were aware of what's involved, so be sure there are no surprises along the way. The key thing is communication, is it a vital part of the project, and everyone really needs to thoroughly understand what is going on."

Nancy Constable: "There were issues that we were unaware of when the project got started. For example, the cutter had to be used, instead of the plucker, because there were roots by the stream and we can't degrade the streamside. The grass needs to be mowed and we have 40 stumps we have to mow around. And, this is an industrial operation. You grab the trees or the logs and drag them with heavy trucks and heavy vehicles that tears up the ground. The road became muddy and rutted, but it was worth it."

Bob: "And, finally, the weeds. Since the Russian olives were harvested on the smaller parcels, we have noticed that growths of houndstongue, and thistle and knapweed (all invasive weeds) seems to be heavier wherever the trees had been thicker. Leafy spurge (another invasive weed) had not been seen on some of these parcels but now patches are showing up (not meaning that it was not there; just not seen). Spraying is easier and cheaper now as the trees are out of the way and easy access has been acquired."

There are many areas along the Yellowstone that need similar projects to eradicate the Russian Olives and other invasive weeds, especially areas near the Clarks Fork and Rock Creek, towards Laurel and Billings. It's also getting to be a terrible situation in Sweet Grass County, especially along the Otter Creek confluence with the Yellowstone.

Buzz Constable said, "It should be done for the entire Yellowstone. It can be replicated for the whole Yellowstone flood plain."

Max: "This project did bring people together and we are hoping that it inspires other people to do this in other areas. It is a positive, not only for the people whose land is overrun by Russian olives but a great benefit to the entire community; it may not be directly linked to their livelihood but everyone in this area relies on or enjoys the grandeur of the Yellowstone River, and it is still largely an intact ecosystem with a diversity of wildlife. Keeping that is good for everyone and everyone benefits either directly or indirectly."

Bob concluded: "The coolest thing is, that this can happen! If everybody puts their best foot forward, it can happen! I know people now that I never would have known before. Good people that all shared a common goal. Everybody went over and above what they said they would do. We decided, 'this is what we better do', and it worked! There were no egos in any of this."

The grass that came back where the Russian Olive was so dominant has been phenomenal! Simply windrowing trees or leaving them where they lay, Bob believes is the best long-term solution. It makes good cover from the wind and catches snow in the winter.

Restoration Challenges Addressed: Removal of Russian olive trees, an invasive species

Key partners (public and private)

Park County Cooperative Weed Management Area Group (CWMA)-Larry Stephenson, Tracy Mosley, Clay Williams, Jessica Mayo, Bob Fleming
Park County Environmental Council (PCEC) https://envirocouncil.org/ – Max Hjortsberg
National Wild Turkey Federation
American Rivers
Yellowstone River Conservation District Council (YRCDC)
Park County - Montana State University Extension; Tracy Mosley
Dr Jane Mangold, Associate Professor in MSU's Department of Land Resources and Environmental Sciences
Department of Natural Resource Conservation (Helena and Livingston, MT)
Park County Conservation District, Livingston, MT (obtained 223 grant)

Contractors

Larry Stephenson

Blake's Nursery, Big Timber, under contracts with the landowners

Types of jobs created: Project manager, grant writer, excavator operator, feller-buncher operator, hauler driver, grinder operator, drone flyer, weed sprayer, seeder, native plant restoration nursery, success story writer.

Volunteer hours

Project Manager	80 hours
CWMA	40 hours

PCEC	40 hours
YRCDC	20 hours

Volunteer mileage	
Project Manager	370 miles
CWMA	227 miles
PCEC	650 miles
YRCDC	

Results and Accomplishments (summary): Russian olives on 115 acres of land adjacent to the Yellowstone River in Park County were eradicated and the restoration of the area with the re-planting of native trees, shrubs, forbs, and grasses in the spring/summer of 2018 has begun.

Websites and YouTube Videos (YouTube videos provided by Larry Stephenson)

1. CWMA Russian olives, Mission Crk Ranch, December 2017, https://www.youtube.com/watch?v=PJz9GXYjoMI
2. CWMA Mission Ck Baseline, March 22, 2018, https://www.youtube.com/watch?v=nDjr33ndNMU
3. CWMA MC Common & Pvt Lots March 2, 2018: https://www.youtube.com/watch?v=jy4asz_EQls
4. Cutter March 26, 2018 You Tube: https://www.youtube.com/watch?v=JyH3binjpzo
5. Cutter 30 sec: https://www.youtube.com/watch?v=-PhcyGlmAtY
6. Grinder in operation, May 3, 2018, https://www.youtube.com/watch?v=boh1_WwB9MQ
7. Grinder Up Close May 3, 2018: https://www.youtube.com/watch?v=WNm_3DTCoSo
8. Feeding Grinder, May 3, 2018 You Tube: https://www.youtube.com/watch?v=u_uw7Dsp88g
9. Hughes & Switzer Piles, April 7, 2018: https://www.youtube.com/watch?v=F1oXc4QklAc
10. Grinder Windrows May 3, 2018: https://www.youtube.com/watch?v=XzN3y3wN3Ig

Additional Sources

11. *Yellowstone River Recommended Practices and Position Statements: Practical Applications*, prepared by Warren Kellogg, Stream & Watershed Consulting 38 Hidden Valley Drive, Clancy, MT 59634 March 1, 2016, for Yellowstone River Conservation District Council, p. 31

12. Montana Audubon, Spring 2018, newsletter, Helena, MT, p. 9.

13. Bob Fleming, Project report. Mission Creek Russian Olive Eradication project.