Share with Wildlife Final Report 2019

Creating the Next Generation of Riparian Habitat Stewards

for New Mexico Department of Game and Fish and Truchas Chapter of Trout Unlimited

Creating the Next Generation of Riparian Habitat Stewards increases the awareness of the value of healthy riparian areas and good land management along rivers for the benefit of the wildlife dependent on them. Youth improve stewardship ethics and knowledge about riparian areas through repeat field experiences involving hands-on data collection and research on Species of Greatest Conservation Need (SGCN).

During the spring and fall of 2019, we engaged with 132 students to conduct research and learn the importance of riparian habitats. The three focal schools include El Dorado, Santa Fe Indian School, and Peñasco High School. Students at Cochiti and Santo Domingo Schools also engaged in riparian habitat stewardship experiences. The goals for the project were to provide students the tools to monitor riparian habitat and help student learn about the importance of animals that are SGCN, and how to analyze and draw conclusions from data.

Student from the focus schools received in-class instruction to teach them the important aspects they will be studying during subsequent field trips. Student learned concepts on monitoring water quality, sampling aquatic invertebrates, identifying riparian plants, performing a riparian health assessment, identifying and researching SGCN animals, and capturing data using iNaturalist, trail cameras, drone aerial imagery, and GPS units. Students got experience in writing research papers and making public presentations.

Page 5 presents a table showing all of the dates, activities and number of participants in the project.

During field trips, students monitored 5 different watersheds at 8 different locations including: Pecos, Galisteo, Santa Fe, Rio Santa Barbara, and Rio del Pueblo. Trail cameras were set up in pairs at 5 monitoring locations. Drone flights were performed at most locations except those by the Santa Fe airport. iNaturalist monitoring was taught and utilized at most monitoring sites as well. Students were also asked to do a research paper about a New Mexico State-listed SGCN or keystone species.

Students enjoyed doing field work and gaining an understanding of wetlands. Several students said they'd never had experienced studying rivers and riparian areas. A few students expressed an interest in pursuing a career in biology and environmental science including Natasha Sanchez from Santa Fe Indian School, who did her senior honors projects on the riparian areas of Santo Domingo Pueblo and then enrolled at NM State University in rangeland ecology.

Students monitored a wide range if riparian habitats from the high mountains next to the Pecos Wilderness on the Rio Santa Barbara and La Junta Creek upstream from Sipapu all the way down to riparian wetlands on the Santa Fe River and the Rio Grande cottonwood forest in the Village of Galisteo. The health of these riparian areas varies widely with the conditions in the sites furthest upstream being generally the best. The sites that tended to be most degraded or impacted by land use occurred at lower elevations due to increased human use and/or impacts.

River Source staff tested using the iNaturalist application to teach students how to georeference photographs of wildlife sign. Several students added the application to their personal devices during the field trips. Camera traps were deployed during field trips and were placed along trails, riparian corridors and wetlands and the resulting images of animals were shared with students.

River Source will adapt the existing riparian curriculum in 2020 to add new guidance for students and teachers to utilize the iNaturalist application for their own ecological studies.

The camera traps provided observations of several different species including elk, turkeys, coyotes, ducks, bobcats and racoons. Drone imagery helped students gain a different understanding of the riparian areas as seen from above, which helped them understand how land management and use, such as the proximity of roads and campgrounds, has an impact on the riparian health. Utilizing technology such as smart phones and the drone helped students develop new skills and understand practical application of these tools.

The drone imagery was processed into videos and shared via YouTube and also for direct download with teachers to share with students. Links to several of the videos can be accessed below.

Galisteo Creek monitoring by El Dorado School 8th grade Nov. 1, 2019- https://youtu.be/ucZkgzzkjWo

Peñasco High on La Junta Creek May 3, 2019 - https://youtu.be/EkKgQOBkuMo

Peñasco High on Rio Santa Barbara April 26 2019 - https://youtu.be/KKUfQVLb4us

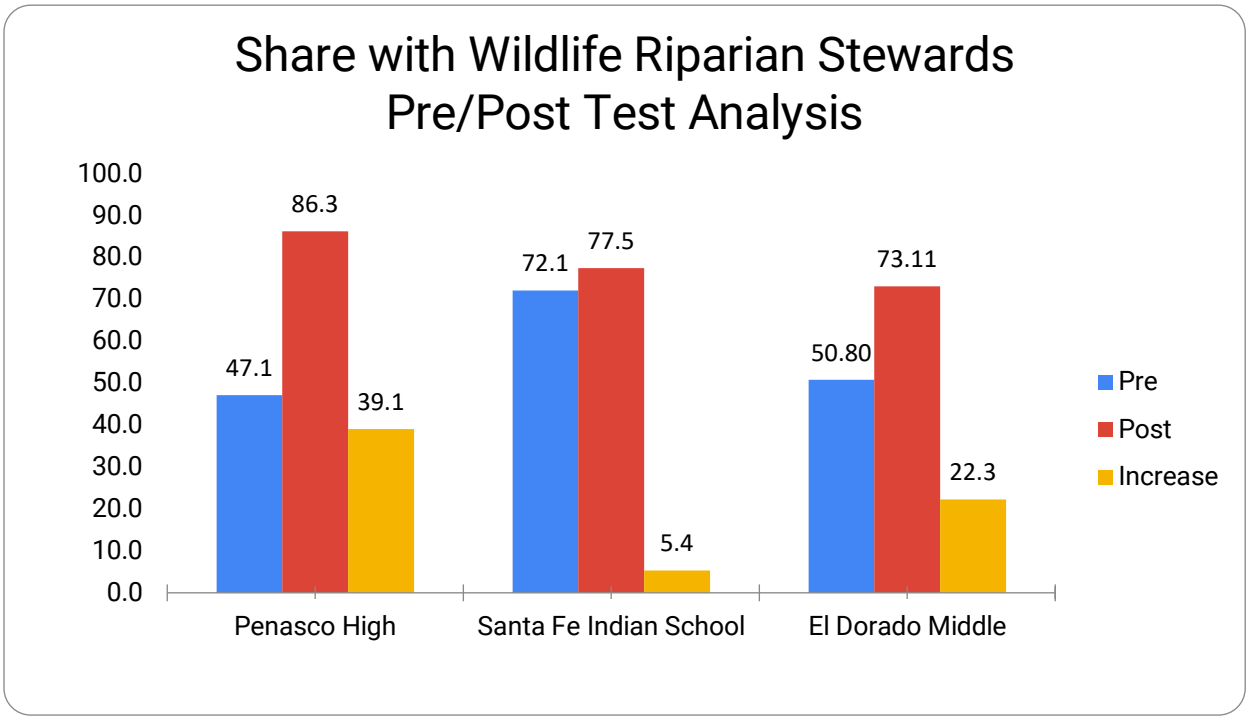
Students were encouraged to research a keystone species or animal that is a New Mexico SGCN and a write paper for consideration in a competition with other students at their school. Fourteen students completed research papers and the best was selected for each school to receive the best research paper award. A $100 award was given to winners using private funds from River Source. Peñasco High School had a tied score so that two students were given an award. A total of $400 was awarded to students in May 2019.

Assessment of student learning and perceptions about riparian areas

One way River Source gauged the success of the project was by giving students a pre and post test. A total of 73 students took the test at the 3 schools with El Dorado providing 52 results, Peñasco providing 14 results, and Santa Fe Indian School returning 7 results. Not all participating students took the pre-post tests as only students who were involved in all activities took both tests (classroom and field trips). The pre-post tests were given only for the spring 2019 semester.

On average we saw a 22% increase from the beginning to the end of the spring 2019 semester. The greatest increase and overall highest scores was at Peñasco High School. The Santa Fe Indian School had the smallest change in score at 5.4 %, though these students started at a high level of knowledge. Santa Fe Indian School students already had covered riparian areas with their teacher prior to their involvement in the project and many have a strong connection to the natural environment. The younger students from El Dorado had a 22% increase, suggesting that even at the middle school level they were able to gain a good understanding of the riparian concepts and curriculum.

A major factor for success at all three schools depends on having a very motivated teacher that was active in adopting the riparian stewards curriculum and doing hands-on activities with their students in the field. River Source was fortunate to have engaged such teachers and the test results reflect their qualities.



Learning Activities for Creating the Next Generation of Riparian Stewards
Share with Wildlife, New Mexico Department of Game and Fish

Date	Project Activity description (trips funded by Share with Wildlife have *)	# participants
11/5/2018	Rio Galisteo riparian habitat assessment & fisheries monitoring at Village of Galisteo with El Dorado 8th grade	70
11/28/2018	Riparian restoration education for Santa Fe Indian School students with USFWS	23
2/26/2019	Riparian restoration with revegetation of native cottonwoods and willows and other riparian obligate plants with Cochiti MESA students on the Santa Fe River	24
3/14/2019	Riparian restoration with revegetation of native cottonwoods and willows and other riparian obligate plants with Santo Domingo students on the Santa Fe River	29
3/18/2019	Riparian restoration with revegetation of native cottonwoods and willows and other riparian obligate plants with SFIS students on the Santa Fe River	12
3/25/2019	*Classroom presentation on riparian area concepts and pre-test with SFIS at school	11
3/27/2019	*Field research with SFIS students at Santa Fe River	9
4/10/2019	*Field research with SFIS students at Santa Fe River	8
4/18/2019	Classroom presentation on riparian area concepts and pre-test with El Dorado 8th grade at school	70
4/22/2019	Field experience to introduce riparian areas and aquatic organisms for El Dorado 7th grade at Leonora Curtain Wetland Preserve	76
4/22/2019	*Work with El Dorado 8th grade students on poster presentation at TU Banquet	5
4/26/2019	*Classroom introduction to riparian and field research at Rio Santa Barbara near Pecos Wilderness with Peñasco High students	16
4/27/2019	El Dorado students present to the Truchas Chapter of Trout Unlimited Banquet	5
5/1/2019	Field research with El Dorado 8th grade students at Pecos River Terrero and Rio Mora campgrounds along with several parents	75
5/3/2019	*Field research with Peñasco High students on La Junta Creek in Carson National Forest	14
5/8/2019	* Classroom session with Peñasco High students	14
10/11/2019	* Field research with Peñasco High students on Rio del Pueblo	41
10/30/2019	*Classroom presentation with Santa Fe Indian School students	13
11/1/2019	*Rio Galisteo riparian habitat assessment & fisheries monitoring at Village of Galisteo with El Dorado 8th grade	75
11/7/2019	*Field research with SFIS students at Santa Fe River	11
11/11/2019	*Field research with SFIS students at Santa Fe River	13
12/3/2019	*Field research with Peñasco High students	26
12/4/2019	*Classroom presentation with El Dorado 8th grade students focused on riparian stewardship and SGCN research	6
12/6/2019	*Classroom presentation with El Dorado 8th grade students to review and give feedback SGCN research papers	7

* = shows the activities covered by costs from Share with Wildlife funds from New Mexico Department of Game and Fish