

# Leaving It To Beavers

With Their Extended  
Ranching History on Utah's Dry Rangelands,  
the Tanner Family is Returning to USU for  
Lively Expertise in Holding  
Water Longer

SINCE THE 17TH CENTURY BEAVERS HAVE STRUGGLED TO FIND SAFE PLACES TO BUILD THEIR HOMES. Initially they were trapped extensively because of the popularity of beaver fashions in Europe. Then settlers began moving west and building homes and towns close to streams and rivers. Since beavers were considered annoying neighbors due to their tendency to cause flooding and remove trees, the trapping continued.

But in many areas of the American West, the beavers' 400-year-old struggle is now fading, thanks in large part to their ability to keep water on the land in an inexpensive way.

Throughout the hot, dry western states, landowner attitudes are shifting, leaving beavers increasingly more welcomed. While beavers are starting to be tolerated within city limits, where devices have been installed that prevent them from clogging road culverts or irrigation systems, they are now also being reintroduced in rural areas where the benefits of beaver dams far outweigh the inconveniences.

One such place is the Della Ranches, owned and operated by the Tanner brothers Blaine, Brent '88 and Jay '83 in the northwest corner of Utah. The Tanner family has been ranching in west Box Elder County for six generations. The upcoming generation is preparing to carry on the ranching tradition, too; Jay's son is currently earning a degree in agriculture.





Grouse Creek, Utah, rancher Jay Tanner rides his horse, "Widowmaker," out of narrow river bottoms on family land. Tanner has shared his expertise in sage grouse issues in Washington, D.C., and is now leaning on scientists from his alma mater to possibly reintroduce beavers to improve riparian areas. Jared Thayne photo.

When Jay Tanner '83 saw the potential benefit of beavers, he drove to Utah State University and met with multi-disciplined scientists and researchers who have experienced success in restoring streams with beavers in the west.

The Della Ranches consist of 17,000 private acres and 175,000 acres of state and federal leased land. According to the Leopold Conservation site, "The Tanners are responsible for conservation efforts on 192,000 acres of grazing and farmland."

The ranch is located in a remote part of the state. It has some of the best intact sagebrush habitat in Utah with strong populations of sage grouse and mule deer. Through their conservation efforts the Tanner family hopes to make the land sustainable for ranching, wildlife and native vegetation.

But finding a sustainable water supply is an ongoing concern for the Tanner brothers.

"Annual precipitation (of the Grouse Creek Watershed) is less than 12 inches with the bulk of moisture coming either as snow or as rain during April and May," says the Partners of Conservation website.

In any given year, the effects of climate change may cause the snow to melt earlier and the streams to drain sooner. As things are, once the snow melts and the rain falls, there is no way to prevent the water from flowing off the land.

"Since I married Jay 28 years ago there has been a decrease in water and moisture," says Diane Tanner '79.

With these concerns, the Tanners went searching for ways to provide sustainable irrigation water to their ranch and other ranches in the area. "I have been looking for strategies to hold the water for use later in the season," says Jay Tanner. "I considered building a reservoir or pond but it would be expensive, require quite a bit of maintenance and permits. Beaver dams, on the other hand, are inexpensive, sustainable, and self-maintained."

Kent Sorenson, habitat biologist from the Utah Division of Wildlife Resources (UDWR) described the financial benefit of the beavers, "When beavers manage the dams, our operation and maintenance costs go to zero — they do all the work. They are 24/7, 365-day maintenance crews that don't need a Corps of Engineers 404 permit."

When Jay Tanner saw the potential

benefit of beavers, he drove to Utah State University and met with multi-disciplined scientists and researchers who have experienced success in restoring streams with beavers in the west. “I was surprised how much information they had about the streams on my ranch,” says Jay. “They wanted to do additional research on beaver restoration so the timing seemed right.”

After further discussions with the university, the Tanners entered into a multi-year partnership with USU and UDWR to reintroduce beaver to their range lands.

In the executive summary of the project it says, “The restoration project is unique ... as its aims extend beyond just the local restoration of an individual watershed. The project is aimed at demonstrating how beaver might be used as a restoration agent on working ranch lands and help to restore late-season flows, which in turn support a host of restoration benefits.”

These additional benefits include, “reintroduction of native cutthroat trout, improving brood-rearing habitat for sage grouse, expanding riparian habitats for the benefit of many upland species and improving the forage production.”

“If you live in the desert they tell me these riparian areas along the streams are as biologically diverse as a rainforest. When you think about it, those little streams are pretty important for a whole bunch of species, wild and domestic,” says Jay Tanner. “There are a lot of good reasons to encourage the beaver to come back into the system, so I was encouraged to get in contact with the people at Utah State University.”

During a project like this, the rancher’s support is essential. “One of the most important partners in a riparian restoration project is the livestock permittees,” says Carol Evans, fishery biologist, Bureau of Land Management, who has been working on desert riparian restoration projects for 30 years.

Assessing the physical characteristics of the streams was an initial step in the research.



Kimbell Creek, as it runs through Tanner ranch lands in western Box Elder County, where bringing in beavers could also benefit multiple upland species and improve forage production. Photo courtesy of Scott Shahverdian.



Nick Bouwes, USU Department of Watershed Sciences, champions the use of Beaver Dam Analogues structures to help beavers get started. Photo courtesy of Jeremy Jensen.

“The posts are spaced about one to two feet apart and go all the way across the stream and a short distance into the flood plain. We then weave the posts with willow branches so you eventually have a woven wall. Once the wall is secure, we start to plug the base with large rocks and mud the way a beaver would build a dam.”

—Nick Bouwes

The first time Scott Shahverdian, a researcher from USU’s Fluvial Habitats Center, traveled to the ranch, he came upon Jay Tanner herding cattle on horseback. Jay stopped his work and guided the researchers to areas along the streams he felt may be suitable for beavers.

“Our goal is to lengthen out the streamflow,” says Diane Tanner ’79. “In most of the streams, we never have water all year long even in the best years, but if we could lengthen the flow into June, or later, it would be a great benefit to us.”

Once streamflows dry up in May, or sometimes even April, the Tanners rely on springs to provide water for the livestock.

“It’s not enough to grow crops but it provides what the cattle need,” says Diane Tanner.

After the streams were assessed, the research team began developing the pilot project to help determine why beaver dams would work in some areas and not in others. But the research will be on both perennial streams, which flow all year, and streams that dry up in midsummer. There will be wide streams and shallow streams, streams with large rock bottoms and streams with small rock bottoms, streams with steep bank and streams with very little banks. All these differences play into the outcome of beaver restoration.

“If we have a continuum of different stream types we want to ensure we have a



little bit of each type in the pilot project to see how they behave, says Shahverdian. “If they behave differently, it’s important to know what those differences are for when we begin the larger effort. We are not trying to learn everything, we just want to limit the amount of uncertainty and use that knowledge to temper and manage our expectations of what is and what is not feasible.”

This adaptive management style will be used throughout the research — plan, implement, analyze and adjust when needed.

The successful reintroduction of beavers often takes more effort than simply letting a family of beavers loose on a new stream, especially if the riparian habitat has dramatically changed since beavers were last there. For instance, the stream bank may have downcut to the point where it has steep banks and is no longer level with the floodplain. In situations like this the researchers have to give the



**USU researchers and volunteers construct a beaver dam analogue (BDA) in Blacksmith Fork Canyon. Photo courtesy of Jeremy Jensen.**

beavers a little help to get re-established.

Once an appropriate location on the stream is chosen, the researchers build a Beaver Dam Analogue (BDA) which is a structure similar to a beaver dam.

Researchers from USU's Department of Watershed Sciences did a similar project in Idaho and found the BDAs were essential to get beavers established because deep-water refuge from predators was not found in the small creek or that other physical characteristics of the creek were no longer conducive for beaver dams. "The beavers we released were only found in the ponds created by the BDAs," says Nick Bouwes, adjunct faculty member in the department.

"The structure itself is basically fence posts pounded vertically into the bed of the river using a hydraulic post pounder. The posts are spaced about one to two feet apart and go all the way across the stream and a short distance into the flood plain. We then weave the posts with

willow branches so you eventually have a woven wall. Once the wall is secure we start to plug the base with large rocks and mud the way a beaver would build a dam," says Bouwes.

Another reason the BDAs are necessary is the loss of large trees from the stream system. The beavers no longer have the large materials to build with. If the beavers build dams with small materials, they can be blown out easily. The BDAs give the dam the stability to withstand strong water flows. So the best combination for dam success is a beaver building its home on top of a BDA.

Throughout the summer season of 2016 the research team will be building BDAs on creeks that flow through the Tanner lands.

If the project goes as planned, the first family of beaver will be translocated to the Tanner ranch in the not-so-distant future.

UDWR will capture a few beaver

families, place them in quarantine for a safe amount of time then release the families beside newly built BDAs with the hope that the beavers recognize the BDAs as ideal places to build their new homes.

"It's the conventional practice to move beaver in the fall," says Shahverdian. "That is when they are more likely to build a dam because of their need to prepare for winter. The dam provides habitat, safety and a place to stash food."

Throughout year two, UDWR will continue relocating beavers as needed to develop a self-sustaining population within the treatment areas on the Tanner lands.

Through subsequent years, researchers will continue monitoring the response of the water and riparian habitat from the larger-scale restoration treatments.

Experience has shown patience to be an important component in beaver restoration research. The processes simply may not happen overnight.

"We might see a new beaver dam over





Watch video:  
<http://bit.ly/USUbeaverdams>



Utah State University faculty and students research a large, natural beaver dam at Spawn Creek in Temple Fork Canyon. (Above) Joseph Wheaton, USU Department of Watershed Sciences, explains how beaver dams can help to expand riparian areas. Photos courtesy of Jeremy Jensen.

a short period of time, but the larger objectives we are hoping to influence may take a longer period,” says Shahverdian. “If after one year we don’t see this lush riparian area with a healthy fish community and more water downstream in late summer it doesn’t mean it’s not worth pursuing, we need to keep plugging away. We need to stick with it and not let discouragement get in the way.”

“Members of the Tanner family are enthusiastic partners in this effort and want this project to act as a demonstration project to give other landowners and wildlife managers confidence proceeding with similar efforts. If the demonstration project is successful, the implications are huge for instream and riparian restoration throughout the state of Utah as beavers are potentially an extremely cost-effective form of restoration ...”, wrote Joseph Wheaton, associate professor in Watershed Sciences at USU.

If the results from restoring beavers on the Tanner lands goes as anticipated, within a few years the riparian habitat will widen, the water tables will rise, the forage will increase and — most importantly — the water will be held on the range land for use throughout the late summer and fall.

Nature, then, along with creeks that have been a vital part of Tanner family lands for some six generations, will both be running their course.

— Shauna Leavitt '06