Bringing Back the Water

Case Study Series

Supported by LOR FOUNDATION

Virtual Fencing for Water and Soil Management

Louie Petrie Ranch with support from with The LOR Foundation and World Wildlife Fund

Snapshot:

Tyrel Obrecht is a 5th generation rancher and manager at Louie Petrie Ranch which raises Black Angus cattle. The Obrecht family manages 16,000 acres near the town of Turner in North Central Montana.

Louie Petrie Ranch undertook a project to utilize radio collars to create virtual fencing for his cattle. The Ranch is supported by the World Wildlife Fund's Sustainable Ranching Initiative. The World Wildlife Fund and the LOR Foundation provided funding for this project. The intention of this project is to improve sustainable land and soil management and allow Tyrel to better manage his herd.

The challenge:

Physical fencing is labor intensive which creates a practical limitation in stock density of the cattle. Increased stock density would allow the ranch to have greater control over the intensity of grazing and trampling in specific areas of the pasture. This increased control would allow the Ranch to more efficiently manage their land and water resources.

Fencing cattle into more concentrated areas allows other areas of the pasture to have more time to rest and for the plantlife to recover. This type of grazing mimics the way that roaming ruminants would naturally interact with this landscape. The Northern Great Plains have a vast capacity for carbon sequestration which can be aided by land management practices that focus on the restoration of the natural ecosystem.

Physical fencing also creates a barrier for wildlife passing through the pasture. The elimination of physical fencing would allow wildlife to move freely through the landscape. Louie Petrie Ranch is located in the migration route of the Pronghorn, whose annual journey across the Northern Great Plains is the second longest in North America.

The project:

Inspiration

Tyrel learned about using collars for his cattle from another rancher in the area and felt like they could be well utilized on his operation.

Keeping cattle off of specific areas would allow those sections of pasture to rest and for vegetation to become more established. Allowing plants more time to rest between grazing means that plants grow taller creating shade for the soil and catching more snow to provide the soil with moisture in Northern Montana's arid climate. More established grasslands also provide habitat for native insects, birds, and other wildlife.

Virtual fencing also improves rancher ability to keep cattle out of creeks helping to prevent erosion of streambeds. Increasing stock density in certain areas would make for more

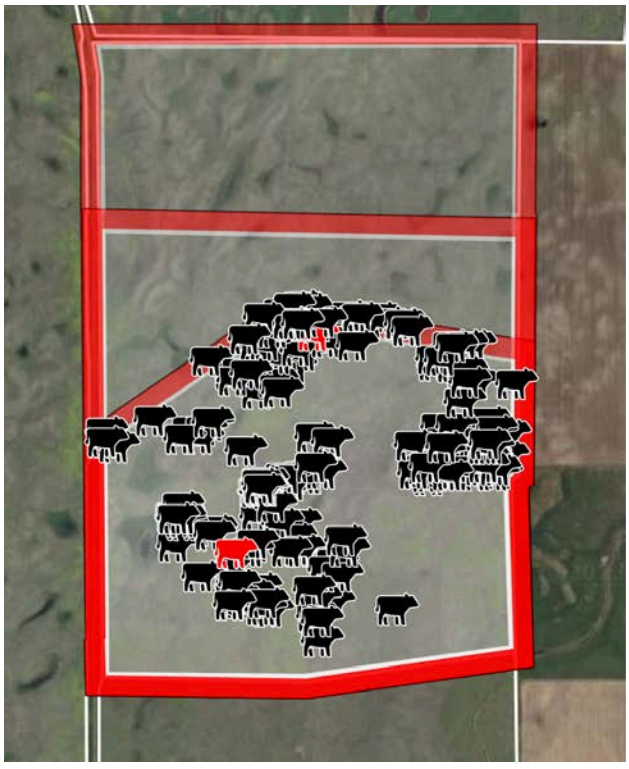
efficient grazing and trampling of biomass residue into the soil. These combined impacts would improve the soil health across the landscape.

Design and Planning

Tyrel purchased the radio towers from Vence Virtual Fencing. The towers cost $10k each, and Tyrel was able to get two of them with financial support from LOR Foundation and World Wildlife Fund. Given the terrain at Louie Petrie Ranch each tower has signal across about a 4 mile radius. The collars were rented for $40 each a year with a $10 per collar battery fee. The virtual fencing works through a computer program that uses satellite imagery to create a pasture map on a herd manager dashboard. The collars emit an electric shock, preceded by a beep which helps cattle to learn to back away from the fence line before getting shocked.

Execution

It took the team at Louie Petrie Ranch with the help of their veterinarian about 4 hours to outfit their cattle with the collars and a total of 4-5 days for the cattle to be trained on the virtual fence. To train the cattle they first set the virtual fence line just inside the bounty of the physical barbed wire fence to teach the herd that getting shocked meant they were approaching the fence line. After a couple of days the sound stimulation of a beep was added so that the cattle began to associate the beep with a shock and the edge of their boundary. A couple of days after adding the sound stimulation they were able to create an entirely virtual boundary to contain the cattle.



Support

Funding and support for this project was provided by the LOR foundation and World Wildlife Fund.

As part of their Sustainable Ranching Initiative The World Wildlife Fund is collecting data from the Ranch Including water infiltration rate and other key soil metrics as well as the vegetation density and species diversity on the landscape. Measurements were taken prior to the implementation of the virtual fencing and will be taken again in the future to determine the impact of this project.

The results:

Evaluation

The World Wildlife Fund will likely return in 2029 to gather additional data to support the success of the project. Virtual fencing did allow the ranch to have increased control over their grazing areas and successfully keep the cattle off of specific pastures allowing those areas to rest.

Louie Petrie Ranch first used virtual fencing in the 2023 grazing season. The collars provided were fastened with a cable zip tie-like mechanism. About 10% of the collars were lost in the first 2 months of use due cattle rubbing. Over the grazing season the zip tie fastening on the collars began to fail at a much higher rate, resulting in the loss of about 90% of the collars by the end of the season. The company has since improved the fastening mechanism to a locking carabiner and is providing Louie Petrie Ranch with collars for the 2024 season at no cost.

Reflections

- Some of the failure of the collars could have been prevented by fencing the cattle away from items that they could rub on.
- As with any new system there is a learning curve for both animals and humans. Patience and careful observation of the cattle will make for a more smooth transition.
- The 4-5 month battery life of the collars makes them ideal for the yearlings which are grazed May-September at Louie Petrie Ranch. Utilizing these collars on their cows, who graze for upwards of 9 months would mean purchasing another battery for each collar.

- Like other types of fencing, this technology has its own applications and limitations and may not be the best solution for all ranches and all situations. Based on his experience, Tyrel suspects that virtual fencing could be most beneficial for ranches in plains landscapes like those in Eastern and Central Montana.
- Tyrel would advise other ranchers looking to implement virtual fencing to ask as many questions as possible up front to ensure that they understand the technology, equipment, and procedure of implementing the fencing.

Support for the Bringing Back the Water case study series was provided by the LOR Foundation. ***About the LOR Foundation****: LOR works with rural communities in the Mountain West to enhance livability and prosperity while preserving the character that makes each community unique.*