

Contacts: [Dr. Kris Hulvey](mailto:kris@workinglandsconservation.org) - Lead Scientist, kris@workinglandsconservation.org; C: 408-384-1124
[Dr. Megan Nasto](mailto:megan@workinglandsconservation.org) – Soil Scientist, megan@workinglandsconservation.org
 Website: www.workinglandsconservation.org; Instagram & Twitter: @workinglandsorg



Project Overview:

Working Lands Conservation (WLC) is working with local partners to learn the ecological and economic outcomes of implementation of the Three Creeks Grazing Consolidation Plan across Rich County’s large, multi-stakeholder, watershed-scale landscape.

In 2022, implementation of the Three Creeks Grazing Plan led to changes in grazing management across ~57,000 ha of public-private rangelands. Individual cattle herds were combined into two large herds and these herds are rotated across a landscape previously consisting of 10 separate grazing allotments. The Plan also uses grazing duration (i.e., length of grazing time) and timing (i.e., season of grazing) as management tools to increase the amount of rest and recovery rangelands receive each year. A goal of this Plan is to balance livestock disturbance with the generation of other society-valued rangeland ecosystem services such as clean water, water quantity, riparian habitat for wildlife (e.g., fish and the Greater sage-grouse), plant diversity, erosion control, and soil health and carbon storage to reach management goals on this multi-use landscape.

WLC has collected baseline data across Three Creeks rangelands since 2016 and will continue to monitor ecosystem services to understand how they change due to the shift in grazing management. Findings will allow stakeholders to: (1) understand benefits to riparian and upland areas of implementing this innovative grazing management plan; (2) quantify the economic and social costs/benefits incurred by producers of changing their grazing practices, and (3) use collected data to adaptively manage ongoing grazing so as to balance healthy rangelands with livestock use.

Project partners include WLC, Three Creeks Grazing LLC, Utah Grazing Improvement Program (UGIP), Utah Dept. of Agriculture & Food, the Bureau of Land Management (BLM), Rich County Coordinated Resource Management Group, the Natural Resources Conservation Service (NRCS), Utah Geological Survey, and the USDA National Institute of Food and Agriculture (NIFA).

Treatments – Grazing Presence, Duration & Timing:

Historical differences in duration and timing across the project area include those commonly employed on public rangelands in the West, including: continuous-turnout and deferred-rotation, plus a less commonly employed management strategy – time-controlled rotation (**Table 1**). Time-controlled rotation is used on a nearby private ranch and was implemented across Three Creeks in 2022, replacing historical management. All pastures are grazed with beef cattle cow-calf pairs. Stocking rates are ~2x higher on the private ranch’s time-controlled pastures compared to public land pastures.

Table 1: Historical grazing treatments & their corresponding durations & timings

Grazing treatment	Duration	Timing
Continuous-Turnout	4 Months: May 15 - Sept 15	Entire Season
Deferred-Rotation	2 Months: May 15 - July 15	Early-Season
Deferred-Rotation	2 Months: July 15 - Sept 15	Late Season
Time-Controlled	0.5 Months	Variable
Exclosure	0 Months	NA

Initial Monitoring Results

We are finding that the historical legacy of grazing presence, duration, and timing all affect ecosystem service generation across Three Creeks. These ecosystem services include: water quality, forage production, sage grouse habitat, soil health, and soil carbon sequestration. In particular:

- **Short-duration grazing has many benefits over longer durations.** We are finding shorter grazing durations lead to taller forage, less bare ground along streams throughout the grazing season, and stream water that meets Utah's regulatory thresholds. Areas grazed using short-duration rotation also have the healthiest soils defined as soils with the lowest bulk density, among the fastest rates of infiltration, and the largest stocks of organic carbon. We believe these results stem from the reduced physical disturbance of plants, streambanks, and soils by livestock when the livestock are moved from one pasture to another after shorter grazing durations (compared to longer grazing periods).
- **The timing of grazing is also important for some ecosystem services** including water quality, sage grouse habitat quality, and soil health. The time-controlled short-duration rotation grazing system provides managers with more flexibility to rest pastures during critical timeframes. This might include times that are important for sage-grouse brood rearing, plant growth, or water quality management.

Initial Survey Results

Information gathered in surveys over the past two years (i.e., before the implementation of the new grazing system) indicate that participating ranchers have a variety of expectations for this project. For example:

- 60% of producers expect an economic benefit
- 15% expect a reduced threat of litigation
- 15% expect ecological conditions to improve across rangelands

What's Next

We will continue working with the Rich County community and all research partners now that the Three Creeks Grazing Plan has been implemented. Future work will include monitoring changes to rangeland ecosystem services and examining economic outcomes of Plan implementation.

Funding Sources:

