



**Sustainable
Southwest Beef**
knowledge and tools for ranch and
rangeland resilience

Sustainable Southwest Beef CAP Newsletter June 2023

A Message From The Leadership

Our project's communications often focus on research activities and findings, extension events and products shared with producers and other stakeholders, curricula shared with teachers and students, students mentored, and knowledge co-production with our rancher network. These are all important contributions that move us toward our project goals of supporting sustainable rangelands, ranches, and ranching communities in the Southwest.

After four years of work together, our project team is now applying project innovations to diverse landscapes of the Southwest. We are proud that our rancher partners are developing new enterprises and land management agencies partners are piloting the use of our precision technologies. These activities have the potential to institutionalize the strategies we're testing into the ranching industry.

Rancho Corta Madera, in southern California under the leadership of Jeremy and Suzanne Walker, is establishing a purebred Raramuri Criollo herd to produce animals to meet their needs for replacement cows, and the needs of other ranchers who seek to purchase Raramuri Criollo. This will help fill a significant product gap for ranchers who think that the breed may work on their ranches.

Additionally, Cindy Tolle of Evergreen Ranching and colleagues in Arizona and Mexico who have a lot of experience with producing and marketing Raramuri Criollo cattle and beef are exploring establishment of a breed association. Success in this endeavor will draw from our [research](#) that characterized Raramuri Criollo phenotypes as well as future research on Raramuri Criollo genetics relative to other Criollo cattle and other common breeds. Again, this effort is in early stages, but has the potential to support future increase of heritage herds to meet growing demands.

The innovative precision ranching systems developed by our project are

garnering a lot of attention. Recently the USDA National Institute of Food and Agriculture has funded a pilot project (USDA/NIFA #2023-68016-38885) to evaluate the use of virtual fencing to allow grazing-permit holders to return cattle to land impacted by wildfires in western New Mexico. If successful, this could promote the use of precision technologies to meet a wide range of public land management goals, such as protecting sensitive areas from tramping and defoliation while continuing to support grazing. We applaud Craig Gifford and Santiago Utsumi for leading their team in this high-risk project with potentially very high value benefit to public land managers as well as ranchers.

While we continue to focus on our research, extension, and education goals, let's celebrate these examples of how our efforts are poised to make a big difference to a sustainable Southwest ranching industry.

Farewell

Well Wishes to Shelemia Nyamuryekung's who has taken a job in Norway.

Kudos

Congratulations to Micah Funk for graduating with his Master's degree in May 2023. Micah is still around assisting the Precision Ranching team.

Congratulations to Craig Gifford and team who have been invited by NIFA, based on a successful Letter of Intent, to submit a full proposal for an Extension-Climate Hub partnership grant.

Rancho Corta Madera Field Day



On May 4th, 2023, Jeremy Walker and Rob Paulin from Rancho Corta Madera in Pine Valley, CA hosted an On-Ranch Demonstration organized by the Sustainable Southwest Beef Project's extension team. The event's purpose was to share information about the Raramuri Criollo cattle, precision ranching technologies, and other sustainability-focused research and restoration projects taking place on the ranch. Though the weather was chilly, windy, rainy, and a thick layer of mist blanketed the ranch for much of the day, 54 people came out to hear the information being shared. Those in attendance included researchers, students, government agency officials, educators, and local producers.

The day began with a welcome to the Corta Madera Ranch and brief overview of its history from the ranch managers Rob Paulin and Jeremy Walker. Project co-PI Sheri Spiegel (USDA-ARS/Jornada) gave an overview of the Sustainable Southwest Beef Project and then presented on tools for ranch and rangeland resilience and relative sustainability of supply chains originating on southwestern ranches. Presentations throughout the day included project co-PI Glenn Duff (NMSU) who presented on breed comparison research using heritage Raramuri Criollo, Santiago Utsumi (NMSU) who presented on technologies for ranch management, Craig Gifford (NMSU) who presented a case study on the application of virtual fence technology after wildfire, Lance Criley (USFS) who presented on USFS grazing permits and using cattle for fire fuel control, James Bartolome (UC Berkeley) who presented on the San Diego regional grazing management plan, and Skye Aney (NMSU) who presented on digital tools for decision-making on the ranch. In addition to presentations in the barn there were also multiple opportunities to go out into the pastures nearby to see the Raramuri Criollo cattle and local vegetation up close, along with engaging discussions about what it's like to ranch Criollo on a large scale.

Overall, the event was a success, even with less than stellar weather. It was great to get out and see the ranch, and there were some terrific discussions,

thought provoking questions, and relationship building. Mark your calendars for the next On-Ranch Demonstration in South Dakota, June 4th, 2024!



5th Graders Investigate Virtual Fencing Technology

“This is the most fun thing we’ve done all year!” said a 5th-grade student to an Asombro educator at the end of their class’s participation in “Where’s The Fence?” a one-hour classroom lesson on virtual fencing.

Asombro developed “Where’s the Fence?” to introduce students to virtual fences and how scientists and ranchers in the Sustainable Southwest Beef Project are studying them. The lesson is aligned with a 5th-grade science standard that asks students to “obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.”

The lesson starts with an engaging activity where students role-play as cows moving around a ranch to find grass while staying close to water. Then they use metal trays and magnets to simulate the building of traditional fences to control cattle movements; they quickly recognize some of the drawbacks of traditional fences, such as the inability to quickly move the fences to adapt to changing ranch conditions. Students then learn about virtual fences and solve the same challenge, comparing traditional and virtual fencing.

At the end of the lesson, students put their new knowledge into action by participating in a mock trade show where they try to convince their classmates to adopt either traditional or virtual fencing.

On anonymous evaluations after the lesson, teachers were overwhelmingly positive about the lesson, writing comments such as:

- “Lesson is easily connected to real-world examples.”
- “Excellent hands-on and excellent engagement.”

“Where’s the Fence?” is one of the 11 lessons developed by the Asombro Institute for Science Education for this project. Lessons span 1st grade through high school and show that it’s never too early to introduce students to current agricultural research using hands-on, engaging, and standards-aligned lessons.



Precision Ranching

We had the privilege to host Dr. Dean Anderson, Emeritus Animal Scientist USDA-ARS, JER, and “Father of Virtual Fencing Technology” in the US and the world. Dr. Anderson visited with the team to share ideas for research in areas of Precision Livestock Farming and virtual fencing.



Past events

Jean Steiner and Emile Elias attended the All-Authors Meeting for the Fifth National Climate Assessment in Washington, DC, in April. The final report will be released this fall.

Jean Steiner and Joel Brown served as speakers and panel members at a Soil and Water Conservation Society Webinar on Climate Change Impacts on Soil, Water, and Biodiversity Conservation on April 24, 2023. They will

also participate in a related Symposium at the SWCS Annual Conference in August in Des Moines, IA.

Upcoming events

WSASAS Beef Symposium: Climate Adaptation Strategies for the Beef Industry of the Great Plains and Western US; July 16, 2023 – ASAS Annual Meeting

Publications and Links

José P. Castaño-Sánchez, C. Alan Rotz, Matthew M. McIntosh, Cindy Tolle, Craig A. Gifford, Glenn C. Duff, Sheri A. Spiegel “Grass finishing of Criollo cattle can provide an environmentally preferred and cost effective meat supply chain from United States drylands” *Agricultural Systems*, August 2023.

<https://doi.org/10.1016/j.agry.2023.103694>

Sheri Spiegel, Rick E. Estell, Andres F. Cibils, Eileen Armstrong, Lisandro J. Blanco, Brandon T. Bestelmeyer “Can heritage Criollo cattle promote sustainability in a changing world?” *Journal of Arid Environments*, September 2023.

<https://doi.org/10.1016/j.jaridenv.2023.104980>

Danielle M. Duni, Matthew M. McIntosh, Shelemia Nyamuryekung’e, Andres F. Cibils, Michael C. Duniway, Richard E. Estell, Sheri A. Spiegel, Alfredo L. Gonzalez, Melakeneh G. Gedefaw, Matthew Redd, Robert Paulin, Caitriana M. Steele, Santiago A. Utsumi, Andres R. Perea “Foraging behavior of Raramuri Criollo vs. Angus cattle grazing California Chaparral and Colorado Plateau shrublands” *Journal of Arid Environments*, June 2023.

<https://doi.org/10.1016/j.jaridenv.2023.104975>

Craig A. Gifford, Keegan M. Taylor, Sheri Spiegel, Glenn C. Duff, Skye Aney, Emile Elias, Jean L. Steiner, Rick Estell, Zach D. McFarlane, Tracy K. Schohr, Kasey L. DeAtley, Megan R. Banwarth “Factors important for bull purchasing decisions and management in extensive rangeland production systems of New Mexico: a producer survey” *Translational Animal Science*, January 2023.

<https://doi.org/10.1093/tas/txac167>

Steiner, J.L., Xiaomao Lin, Nancy Cavallaro, Gretchen Sassenrath. 2023. Climate Change Impacts on Soil and Water Conservation. *J. Soil Water Conserv.* 78:27A-32A.

<https://doi.org/10.2489/jswc.2023.0208A>

Steiner, J. L. 2023. Viewpoint: The urgent need for action. J. Soil Water Conserv.78:52A.

<https://doi.org/10.2489/jswc.2023.0218A>



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