



The Drought Learning
Network
and
Transboundary Drought



1 October 2020
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USDA Southwest Climate Hub

North American Drought Monitor

August 31, 2018
(Released Wednesday, Sep. 12, 2018)

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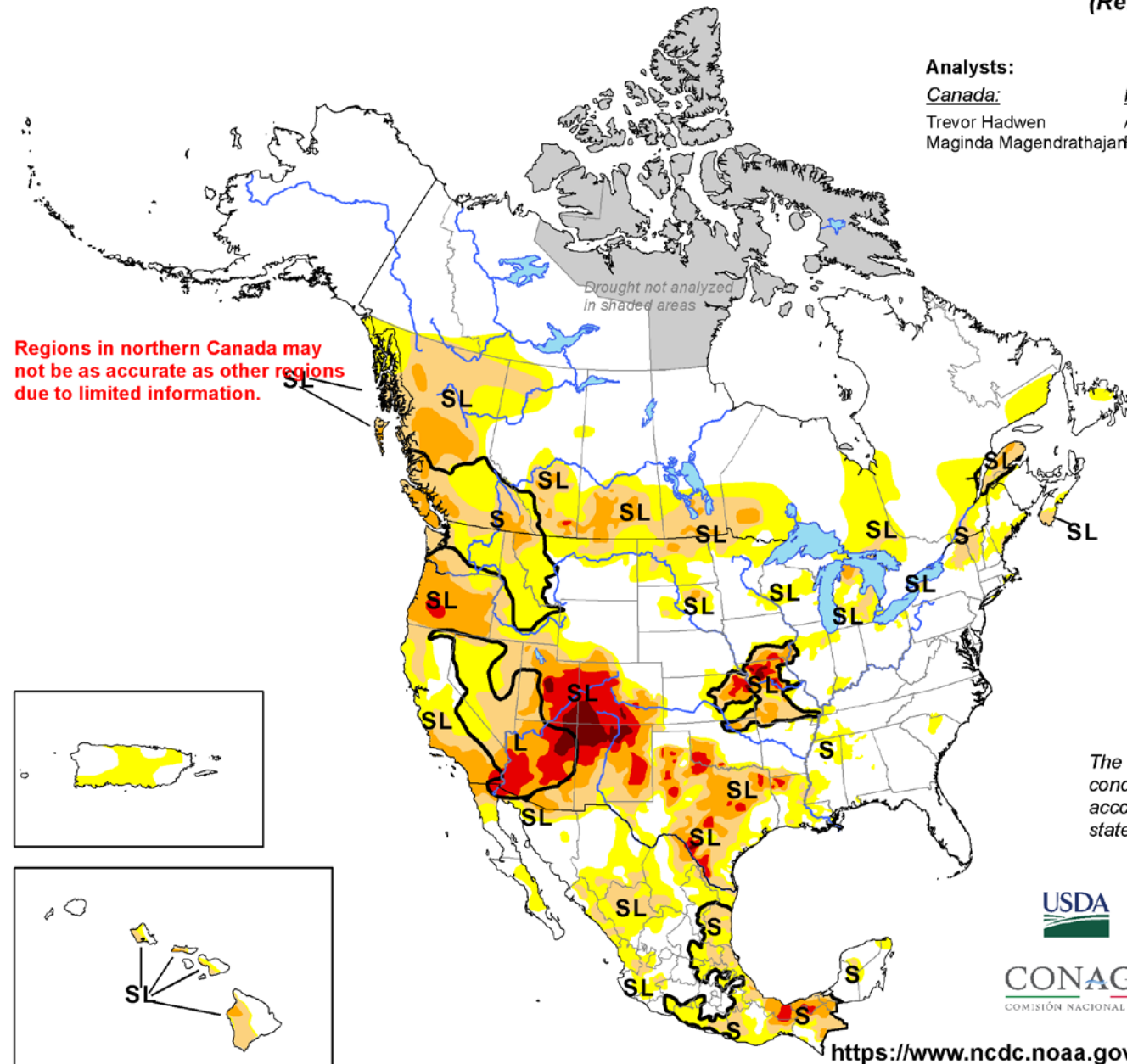
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(* Responsible for collecting analysts' input & assembling the NA-DM map)



Intensity

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

Drought Impact Types:

- ~ Delineates dominant impacts
- S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.



CONAGUA
COMISIÓN NACIONAL DEL AGUA

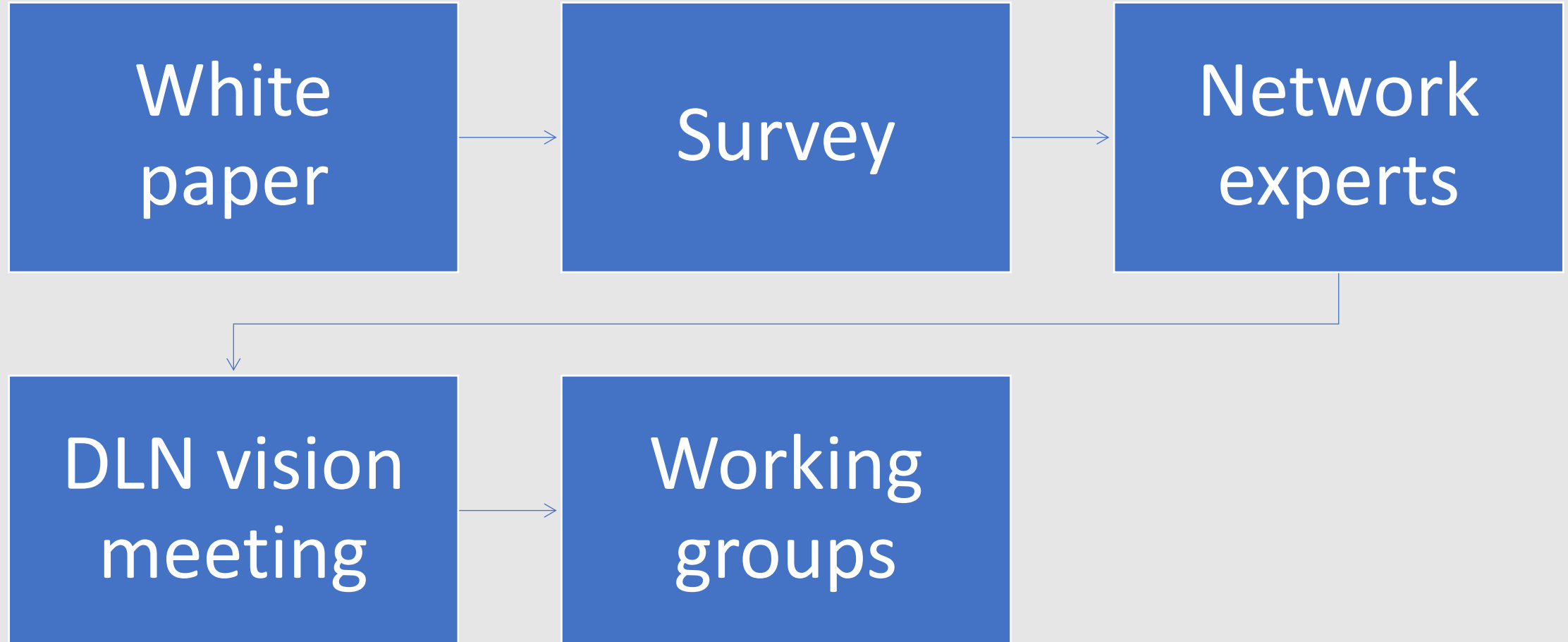


Agriculture and
Agr-Food Canada
Environment and
Climate Change Canada

Agriculture et
Agroalimentaire Canada
Environnement et
Changement climatique Canada

<https://www.ncdc.noaa.gov/temp-and-precip/drought/nadm/>

Development Process



Components to consider

- Case studies: For managers who recently experienced extreme/exceptional drought.
- Resilience reporter for communities and managers: A place for land managers to report efforts structured with specific information, including cost, efficacy and evaluation.
- Hivemind listserv: Ask An Expert forum, with rapid responses from the community, for members of the public and resource managers.
- Impact calendar to schedule knowledge exchange around a particular topic.
- Workshops and webinar presentations and workshop summaries.
- Drought management database.

Survey of Southwest U.S. Natural Resources Managers Administered January 2020 (est. 35% response rate)

About the Respondents (n=60):

75% USDA and 7% Tribal agency

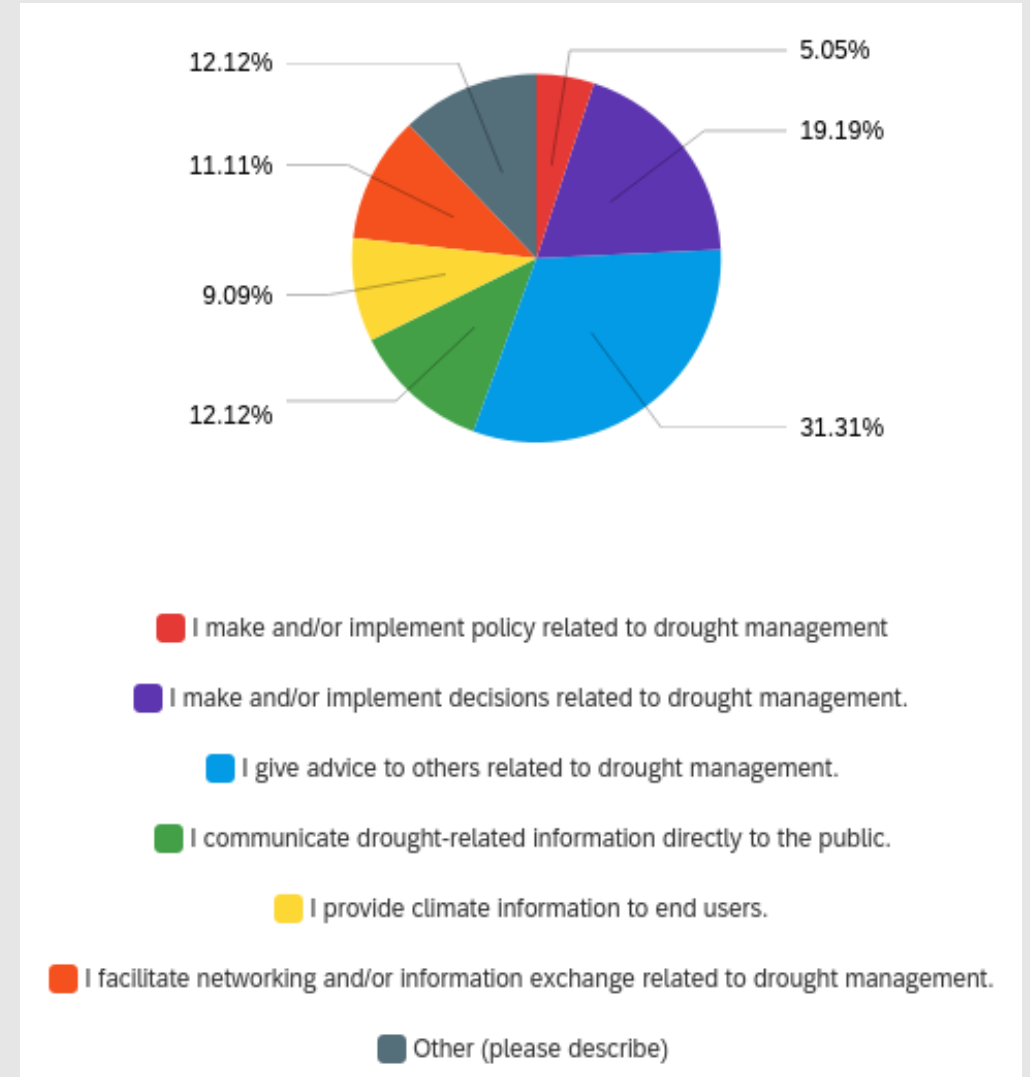
Representing New Mexico & Arizona
(+ some Colorado, Idaho, Nevada etc.)

Average of 18 years' experience (2-40 yrs)

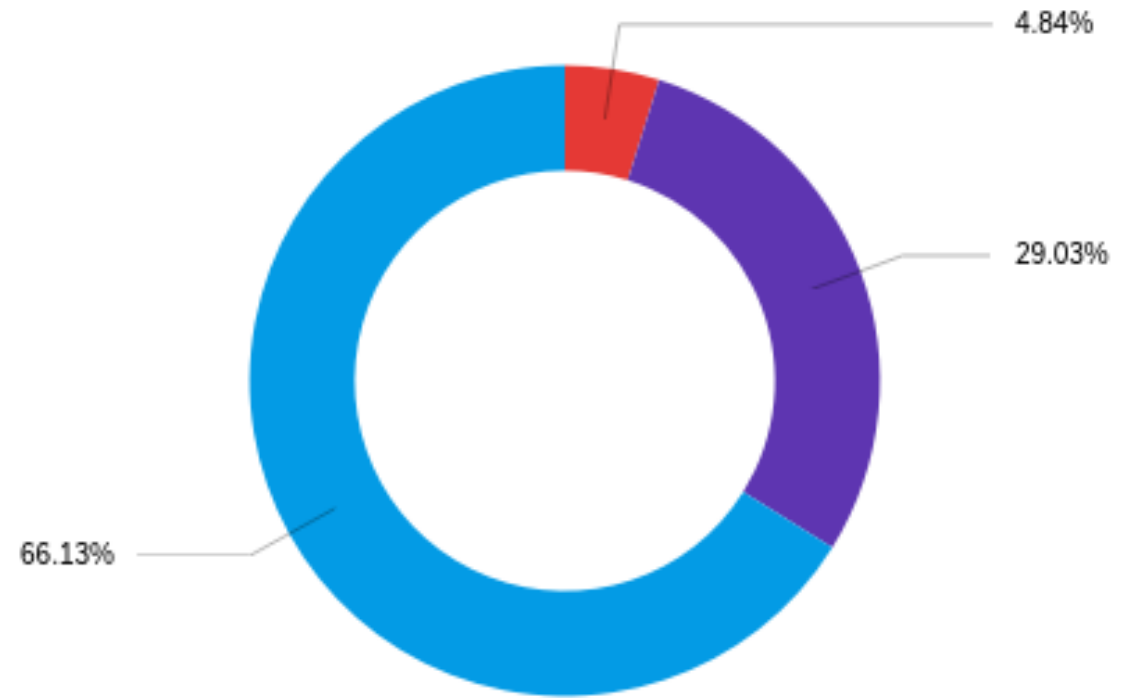
Advice-givers (31%)

Decision-makers (19%)

Communicators (12%)



Interest in accessing information about best practices and lessons learned by other resource managers during recent droughts



Not interested Somewhat interested Very interested

Drought Learning Network Goals

- a) foster knowledge exchange between managers and climate service providers in learning about community and researcher needs, resources, responses and knowledge gaps;
- b) support the creation of self-directed peer-to-peer learning networks;
- c) establish structures that are co-led by users to support the efficient and effective function of DLN to best respond to future drought.

Initial Working Groups

Sharing
projections for
management
decisions

Case studies and
best practices

Weather and
climate resources
for tribes

Beginning farmers
and ranchers

Enhancing drought
response in Utah

Case Studies


- Drought Mitigation through Land Management and Water Distribution for Wild Horses
- Rancher to Rancher: Building a Community for Conservation in Montana
- Heritage Cattle Genetics for Drought Resilience (Raramuri Criollo at the Corta Madera Ranch)
- Rangeland Restoration following Martin Fire in Reno, Nevada
- Decision-Making in Snow-Fed Arid-Land River Systems (Water for the Seasons project)
- Community Resilience to Drought Hazard: An Analysis of Drought Exposure, Impacts, and Adaptation in the South Central U.S.
- Native Waters on Arid Lands project
- Traditional Knowledge to Develop Habitat Restoration Plan (Shoshone Tribe at Boa Ogoi, Utah State U. students)

**COMMUNITY
ENGAGEMENT AND
EDUCATION**


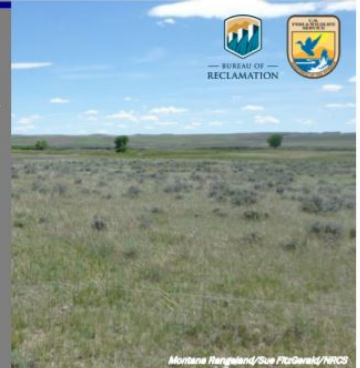
**Rancher to Rancher:
Building a
Community for
Conservation in
Montana**

NRCS
National Resource Conservation Service

Ranchers often work in isolation and with limited support systems. Sparsely populated, eastern Montana lacks the rancher support system necessary to assist adoption of practices recommended by agricultural experts for the area. Regenerative grazing practices in eastern Montana could enhance forage productivity and rancher flexibility in response to their climate. Thus, a support group was created for ranchers to meet regularly, share experiences, and promote mentorship among new and experienced regenerative grazing adopters.



Project Location

Montana Rangeland/Que Floriano/NRCS

KEY ISSUES ADDRESSED


Although regenerative practices appear to be a promising practice in certain locations, transforming from business-as-usual can be a daunting task and requires navigating much uncertainty for ranchers. Regenerative grazing is relatively new to eastern Montana, making those who adopt it unique among the ranching community. Embarking in contemporary ranching practices can be isolating, especially in eastern Montana where the population is sparse. Workshops and other events hosted by Natural Resource Conservation Services frequently bring ranchers together, they don't always foster the consistency in meeting or devotion to social support from which the community might benefit.

PROJECT GOALS


- Create accessible setting for ranchers in eastern Montana to meet regularly
- Facilitate peer-to-peer knowledge exchange
- Increase the number of ranchers using regenerative practices to improve soil conditions, increase forage availability and decrease reliance on purchased hay

RESTORATION


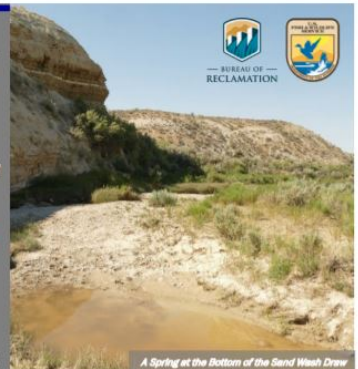
**Drought Mitigation
through Land
Management and
Water Distribution for
Wild Horses**



Situated in northwest Colorado, the Sand Wash Basin constitutes 157,730 acres of high-elevation desert. The Bureau of Land Management (BLM) oversees 154,940 of those acres as public land. Widely distributed ponds in the basin support a variety of wildlife. However, during the drought of 2018, several ponds dried up entirely leaving few remaining watering sources. From July to October, the nonprofit organization Wild Horse Warriors (WHW), in accordance with a Memorandum of Understanding with the BLM, hauled over 3,000 gallons of water per day into the basin to reduce land degradation near overcrowded ponds and to provide water to wild horses and other wildlife.



Project Location

A Spring at the Bottom of the Sand Wash Draw

KEY ISSUES ADDRESSED

Colorado is experiencing more frequent and intense droughts contributing to water scarcity and rapid land degradation. Drought in the Sand Wash Basin contributes to a lack of available water stored in the ponds that dot the Herd Management Area. Vegetation surviving around water sources is continuously impacted when animals concentrate around those that still hold water. While domestic livestock stocking levels can be adjusted, wild horses cannot be removed from the land in times of drought, so the BLM and organizations like the WHW have to come up with alternative solutions to support wild horses while minimizing their impacts on the landscape when it is extremely vulnerable.

PROJECT GOALS

- Maintain healthy partnerships between stakeholders with different goals
- Create sources of water for wildlife in locations with dry ponds
- Prevent land degradation from wildlife around remaining natural water sources



CCAST Case Study Dashboard

Select a category to filter the Case Studies.

Filter Case Studies by...

Topic

None

Stressor

None

Management Strategy

None

Ecosystems

None

Use Tabs to navigate Charts

Remember to deselect/clear filters

86

Total Case Studies

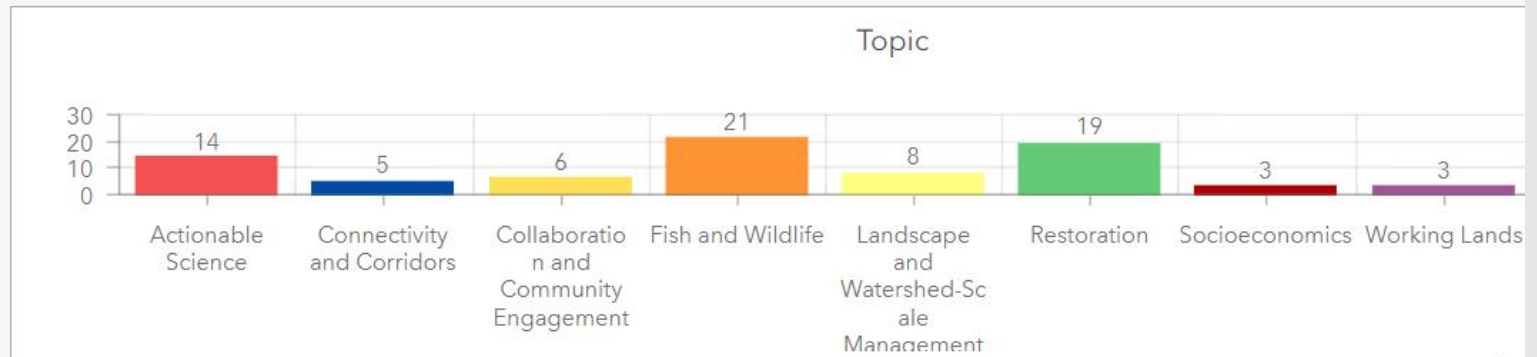
Last update: 2 minutes ago

6

New Case Studies

- Salt and Verde River Reservoir Operations Pilot Study: Using Observed and Projected Climate

Last update: 2 minutes ago



- Topic
- Stressor
- Management Strategy
- Ecosystems
- Major River Basin

2020 Activities

- 1). Projections to people: Fact-finding mission: Who uses drought products? If not, why not? Would people use the data and information if there was a tailor-made app?
- 2). Building a database of case studies and best practices: Build upon an existing case study database to author and deliver lessons learned to support peer-to-peer learning. Eight case studies underway.
- 3). Developing weather and climate resources for Tribes: Support peer-to-peer learning via weather condition webinars (5 webinars; ~300 people) *collaborative
- 4). Supporting beginning farmers and ranchers: Partner with the New Agrarian Program of the Quivira Coalition to host workshops with mentors and mentees on drought tools and planning.
- 5). Enhancing drought response in Utah: Workshop targeted to link rural drought conditions with the Utah Drought Task Force.
- 6). *NEW* - Responding to current drought – Eastern New Mexico- three webinars hosting farmers and ranchers (~344 people attended).
- 7). * NEW * - Monitoring station inventory – Pathways fellow with SC CASC

- Arizona State Climate Office
- Bureau of Indian Affairs
- Center for Climate Adaptation Science and Solutions
- City of Las Cruces
- Colorado Climate Center
- Columbia University
- Cooperative Extension
- Desert Research Institute
- East-West Center, Hawaii
- Fish and Wildlife Service
- Farm Service Agency
- High Plains Grasslands Alliance
- High Water Mark
- National Drought Mitigation Center
- Natural Resources Conservation Service
- Navajo Nation
- Nevada State Climate Office
- New Mexico Climate Center
- New Mexico Department of Agriculture
- New Mexico State University
- NOAA National Integrated Drought Information System
- NOAA National Weather Service
- NOAA RISA CLIMAS
- NOAA RISA Western Water Assessment
- Pueblo of Laguna
- Pueblo of Santa Ana
- Quivira Coalition
- Rio Grande Agricultural Land Trust
- Rio Grande Joint Venture
- South Central Climate Adaptation Science Center
- Southwest Climate Adaptation Science Center
- Texas A&M
- United States Geological Survey
- University of Arizona
- University of Nebraska - Lincoln
- University of Nevada - Reno
- US Army
- USDA California Climate Hub
- USDA Farm Production and Conservation
- USDA Forest Service
- USDA Northern Plains Climate Hub
- USDA Northwest Climate Hub
- USDA Southern Plains Climate Hub
- USDA Southwest Climate Hub
- Western Regional Climate Center

Keys to success and next steps

- Collaborative ethic
- Collaboration software
- Leveraging existing systems
- Working groups with leadership teams
- Flexibility to respond to emerging drought
- Shared ownership
- Quarterly meetings featuring one working group
- Annual meeting

Transboundary Research Collaboration

- Precipitation variability within and across years remains a major challenge for livestock producers in arid and semiarid ecosystems.
- Cattle adapted to harsh desert ecosystems may offer exciting genetic opportunities for optimizing beef production from arid ecosystems.
- A type of Criollo cattle, introduced from the Chinipas region of Chihuahua, Mexico, may provide opportunities to use cattle adapted to arid and semiarid environments that require minimal management yet provide quality beef.

Criollo cattle: Heritage Genetics for Arid Landscapes

By Dean M. Anderson, Rick E. Estell, Alfredo L. Gonzalez, Andres F. Cibils, and L. Allen Torell



Why Raramuri Criollo?

Raramuri Criollo is a *Bos taurus* biotype with characteristics that are showing promise for profitable and sustainable production in the arid US Southwest. Preliminary research suggests that compared with breeds commonly used in the Southwest, Raramuri Criollo travel greater distances from water, spend more time traveling, and appear to experience less heat stress - while maintaining weight and body condition.

Raramuri Criollo is one of 33 known biotypes of heritage Criollo cattle that exist throughout the Americas today. The Tarahumara communities of the Copper Canyon of Chihuahua, Mexico have raised Raramuri Criollo cattle in fairly isolated locations for close to four centuries. These cattle have undergone natural selection to adapt to the harsh and variable environment of the Copper Canyon while receiving minimal modern-day animal husbandry inputs. Their potential to produce beef sustainably in the Southwestern US and elsewhere is being explored by the USDA-NIFA funded Sustainable Southwest Beef Coordinated Agricultural Project. We are also exploring the potential for producing crossbred calves from Criollo dams and British breed sires.

Rancher observation and research suggest that smaller framed and more mobile Raramuri Criollo may have the following characteristics:

- Improved distribution and efficiency during foraging
- Hardy, self-reliant and suited to arid environments
- Lower impact on sensitive soils and vegetation
- Quality carcass from all-forage diet
- Protective mothering styles
- High fertility and longevity
- Mild temperament
- Small calves



What About the Bottom Line?

The USDA Jornada Experimental Range imported Raramuri Criollo cattle from Mexico in 2005. Economists at New Mexico State University conducted a case study to compare economics of production and marketing of the Raramuri Criollo herd (range-finished) vs. Angus-Hereford herd (cow-calf) at the Jornada.

The enterprise budgets were developed using known costs for running a cow/calf ranch with grazing capacity of 150-AUJ (on BLM, state, and private lands) and input costs for raising the two herds at the Jornada. Key inputs to the budgets were the more widespread foraging of the Raramuri Criollo and the documented success in the Southwest grass-fed meat market with positive consumer acceptance of meat quality and flavor.

Potential for Added Grazing Capacity

The NMSU economists found that selection of the production enterprise is a toss-up when 5-year average beef prices were considered. With the budget assumptions, the typical Angus x Hereford enterprise only nets \$1,327 more than the Raramuri Criollo enterprise, a small amount when compared to total livestock sales for the enterprise (\$78,014). Importantly, the improved grazing distribution of Raramuri Criollo cattle would need to add only 17 AUJ (11% increase in carrying capacity) before net returns would be equivalent. Studies on landscape use suggest a 62% increase may be possible. The added grazing capacity from improved livestock distribution is the major benefit of Raramuri Criollo cattle production. Another price factor is the strong demand for Raramuri Criollo breeding animals. More information on enterprise budgets can be found at swbeef.org.

The Ranches



Further research about landscape use, behavior, and production economics of Raramuri Criollo is taking place at five ranches: Evergreen Ranching and Livestock in South Dakota, Dugout Ranch in Utah, Corto Madera Ranch in California, and the Jornada Experimental Range and Chihuahuan Desert Rangeland Research Center in New Mexico.

Permanent Forum of Binational Waters

- a network to integrate collaboration efforts and strengthen their impact across and along the border.

The screenshot shows the homepage of the Permanent Forum of Binational Waters. At the top, there is a navigation bar with four items: 'SCIENCE TALKS' with an icon of two people and a flask, 'SHARED WATERS NEWSLETTER' with a blue circular icon, the 'PERMANENT FORUM OF BINATIONAL WATERS' logo with the tagline 'WATER UNITES US', and 'Coffee Breaks' with a coffee cup icon. Below the navigation bar are four main content tiles: 'Events' (with a photo of green grass), 'Resources' (with a photo of a rocky cliff), 'Facts & Mythbusters' (with a photo of a blue sky and clouds), and 'Our Network' (with a photo of a rocky cliff). At the bottom, there is a large blue banner with the word 'Register' in white, the text 'To be part of our network;', and a blue button labeled 'REGISTER HERE'.

<https://binationalwaters.tamu.edu/>



Invitation:
DLN Quarterly Meeting
30 October at 1-2 MT



DLN Annual Meeting
23-24 Feb 2021
emile.elias@usda.gov