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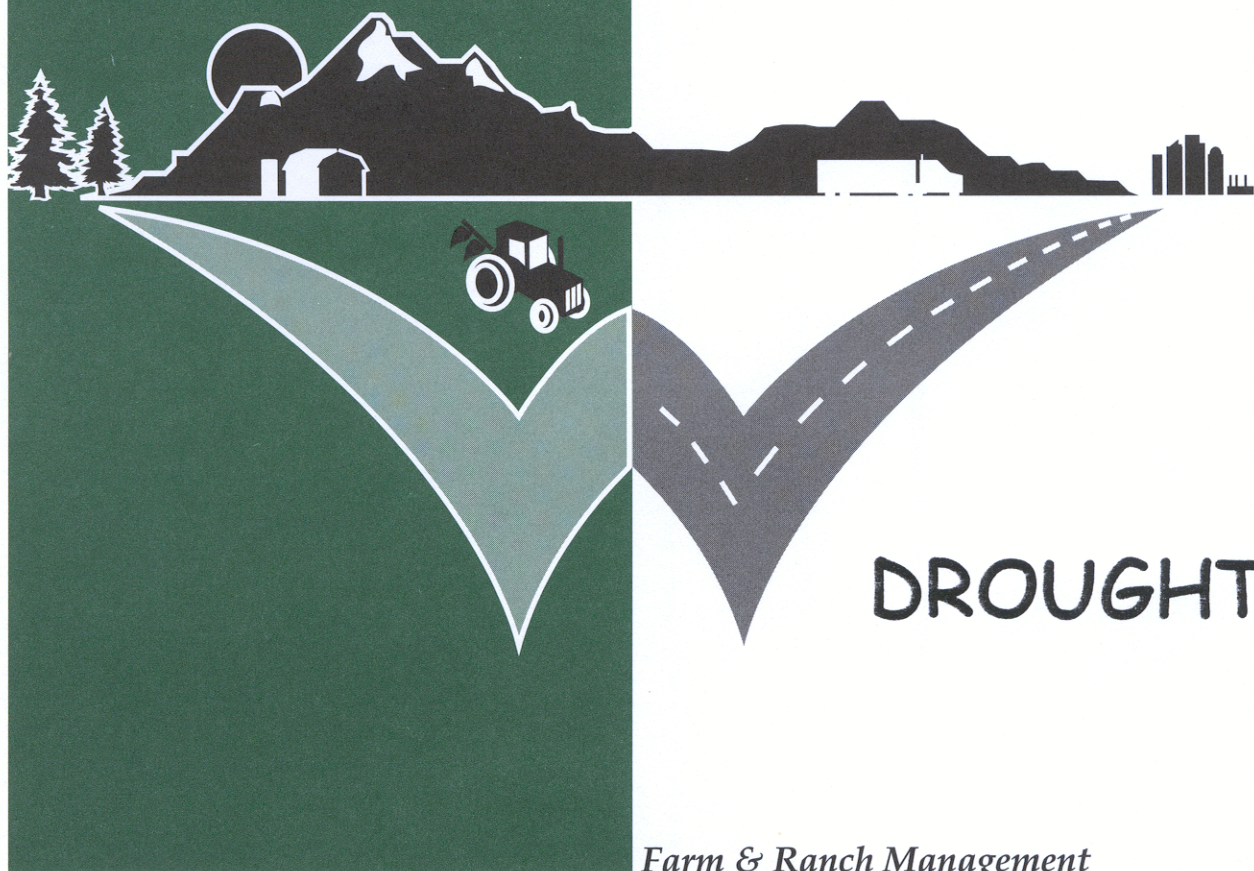
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Impacts of the 2002 Drought on Western Ranches and Public Land Policies

**by
Russell Tronstad and Dillon Feuz¹**

Precipitation received for the 12 months prior to 31 August, 2002 place last year's drought as one of the worst on record since 1885 for much of the West. States that have set records for their driest September to August overall precipitation ever recorded include Arizona, Colorado, Nevada, and Utah while Wyoming recorded its second driest period ever between these months (NOAA, National Climatic Data Center). Areas rated by the US drought monitor as experiencing exceptional drought conditions by this date include northern Arizona and New Mexico; southern Utah; western Kansas, Nebraska, and South Dakota; and large portions of Colorado and Wyoming. The states of California, Oregon, and Washington were also greatly impacted by this drought. Pasture conditions were rated as very poor to poor for 90, 63, and 51 percent of these states' respective grazing lands for the week ending 1 September, 2002 (USDA/NASS).

The objective of this article is to examine how last year's drought has affected cattle ranching in the West. We review beef cow slaughter numbers, where herd liquidations were most intense, the fallout for public land grazing issues, and future management strategies for both public and private landholders. Management strategies to withstand the drought have included reducing stocking rates, purchasing supplemental feeds, weaning calves early, shipping cattle to other areas, and/or grazing pastures more intensely. Management options were more limited for ranchers that rely heavily on using public lands, which significantly altered how some of them will recover from the drought. Restrictions on public lands that resulted from the drought are attributed to bringing an alignment between ranchers in some areas and environmental groups to push for legislation to buyout federal grazing permits. This article discusses how these political movements and the drought will likely impact future cattle numbers and the western range landscape.

Drought Severity in the West

Even though the drought of 2002 was preceded by dry years in 2000 and 1996 for much of the Southwest, the drought of 2002 has a long ways to go to set a duration record if one considers precipitation received for seven or more consecutive years (Brown). One of the first indices established to measure the intensity, duration, and spatial extent of drought was the Palmer Drought Severity Index (PDSI). PDSI values are derived using precipitation, air temperature, and local soil moisture, along with historical values of these measures. PDSI values range from -6.0 (extreme drought) to 6.0 (extreme wet) and are standardized so that comparisons can be made across regions (NOAA, Paleoclimatology Program). Long-term drought conditions are cumulative so that the intensity of a drought is dependent on both current and cumulative weather patterns.

At the turn of the 20th century, drought conditions persisted for over seven years from 1897 to 1904 in the Southwest. The PDSI was never above -3 from 1900 to 1904, whereas the PDSI has been positive for several periods in the West during the last four years. Much of the US was affected by the Dust Bowl drought in the 1930s and drought conditions persisted for up to eight years in some regions of the High Plains (NOAA, Paleoclimatology Program). The 1950s drought was characterized as having both low rainfall and high temperatures, and much of the Plains and Southwest recorded negative PDSI values from 1952 to 1957. Yet paleoclimatology indicates that multi-decade droughts occurred from around 1030 to 1040 and 1145 to 1155 (Cook et al.), and a mega-drought covered the Southwest from around 1550 to 1590 and extended across the continental U.S. in the 1560s (Stahle, et al.). This mega-drought was so severe that it far exceeded any drought of the 20th century and it was probably the most extreme drought in the last 2000 years. Sustained

¹ Authors are associate professors, Department of Agricultural and Resource Economics, University of Arizona, and Department of Agricultural Economics, University of Nebraska.

drought may be the reason that sophisticated cultures of the past have abandoned their homelands, such as the Anasazi people that left their multi-storied dwellings near the Four Corners area.

Public and Private Stocking Decisions

Although the drought of 2002 was not nearly as extensive as preceding droughts, drought intensity and federal land management criteria were such that many ranchers were forced to remove all of their cattle from public lands for the first time since the Forest Service (FS) became a “range regulator” in 1905. For example, roughly 95 percent of all the cattle have been removed from the Tonto National Forest (NF) in central Arizona (Sprinkle). Except for small private or “base properties” of around 20 to 80 acres that are tied to federal grazing permits, ranches in the area depend exclusively on public grazing for their livestock forage. The Tonto NF grazing allotments have elevations that range from 2,000 to 6,000 feet and normally receive 15 to 27.5 inches of rainfall per year, depending on location and elevation. Topography of the area is rolling to mountainous and it is considered good-yearlong cow country since grazing permits allow a yearling carryover.

With hay prices exceeding \$100 per ton for even poor quality hay, and the expectation that partial restocking will not be allowed for several months, or perhaps more than a year, many ranches in the intermountain states were forced to liquidate most if not all of their cow herd. Some intermountain ranchers have secured pasture as far away as Oregon to the west or Missouri to the east so that they can preserve genetics that they have been selecting and developing for decades. Besides retaining genetics suitable for their region, this preserves some cattle that know where the water tanks are and how to navigate trails between pastures is viewed as critical for many mountainous ranches.

While pasture resources were equally limited for many ranches in South Dakota, Nebraska and Kansas, these operations typically had better access to grain and other alternative feed resources such as corn stalks or wheat pastures; and therefore, fewer cattle were liquidated in these areas. Furthermore, the majority of pastureland in these states is privately owned; thus, individual ranchers, rather than governmental agencies made the stocking decisions. Some producers weaned calves earlier than normal and supplemented their cows to reduce grazing pressure and to extend their grazing season. Others may have simply overgrazed their pastures and may be forced to reduce their stocking rates in subsequent years.

The Droughts Impact on the Cattle Cycle and Cow Prices

While federal grazing permits account for a significant share of the beef cow industry for many western states, all federal grazing permits in the US account for only 2.6 percent of the January 2002 beef cow herd inventory. All of the western states account for less than 20 percent of the beef cow herd, or about 3 percent more than what the state of Texas produces. Therefore, given that Texas, the Midwest, and the Southeastern states were not greatly impacted by the drought of 2002, the impact of this drought on total U.S. cattle numbers is rather dampened.

Where did all the cows go that were liquidated from drought stressed pastures this summer and fall? Apparently, they did not go to slaughter. The USDA reports that beef cow slaughter for 2002 through the 23rd of November was down 1.3 percent from 2001 for the same time period. This would imply that many of the cows that were shipped out of the drought stricken areas were purchased by cattle producers in other areas, rather than being sent to slaughter.

While total beef cattle numbers may not have declined due to the drought of 2002, herd growth was likely limited in 2002. This has ramifications for cattle producers throughout the U.S., since it appears that this drought will lengthen the current cattle cycle. The number of beef cows in the U.S. has been declining since

1995. This is a seven-year decline and if numbers are down for 2003 it will be eight years in a row. With most cattle cycles, the herd reduction phase has generally lasted four to six years.

The current stage of the cattle cycle has economic ramifications for ranchers who have been forced to liquidate their cows. It appears that while they have been liquidating cows, other areas of the country have increased cow numbers due to the expectation of higher cattle prices. With past cattle cycles, the highest prices for calves, bred heifers and cows have occurred in the first couple of years of herd re-building. If the drought ends in 2003, and producers in the drought stricken areas begin to restock their ranches in 2004 they will likely be paying higher prices for cows and replacement heifers. Furthermore, by the time these replacement heifers are into their most productive years in another three to five years, cattle numbers may have increased to the point where prices for calves will begin to decline again with another cattle cycle.

Another concern related to the cattle cycle is total beef production. Beef production in 2002 was at a record level. This level of production is not only greater than in 1995 when cattle numbers were at the peak for this cycle, but it is also greater than the mid 1970's when there were 30 percent more cattle in the U.S. than today. Why has beef production increased when cattle numbers have declined? There are several plausible answers, but in general, technological and biological advances have changed how cattle are managed and the industry responds to market signals (Brester and Marsh and Marsh). Fed cattle are being marketed at a younger age (more calves 12 to 16 months and fewer yearlings 18 to 22 months) with heavier carcass weights. Weights have been trending up about 5 pounds per year since the 1970's. The reality of the cattle industry is that today it takes fewer cattle and fewer cowboys to supply the same amount of beef than it took just a few years ago. The implication is that it may not be economically advisable for many of the producers who have liquidated their cows to ever get back into the ranching business.

Political/Policy Responses

The federal government owns and manages about 43 percent of the estimated 770 million acres of rangelands in the US (<http://www.fs.fed.us>; <http://www.blm.gov>; <http://www.publiclandsranching.org>). Several areas of the West are very dependent upon public grazing lands. For example, federal lands account for over 65 percent of Arizona's grazing capacity outside of Indian reservations. Additionally, federal lands make up about 9.5 percent of the 22.25 million animal unit grazing months authorized on Bureau of Land Management (BLM) and FS lands. These two agencies utilize somewhat different criteria to manage rangelands even though both are mandated by law to manage for multiple uses. These multiple uses include, but are not limited to wildlife habitat, recreation, livestock grazing, logging, and watershed values. Permits can be issued for up to a 10-year term and they are renewed if the holder has complied with all permit conditions. Under current law, agency managers are required to transfer grazing permits to new owners of small private land holdings or "base properties." However, in some cases, Congress has authorized permit buyout or eliminated grazing permits on specially designated lands. Given that many ranchers have no cattle left and that they are frustrated with current federal land management policies and administrators, an alliance was formed with environmental and conservation groups and several ranchers last year to propose federal legislation that would retire federal grazing permits.

The National Public Lands Grazing Commission (NPLGC) sent an information letter to about 29,000 ranchers in April of 2002 and some are just calling to see if the voluntary buyout proposal is still alive (Sneller). A similar but more focused proposal is gaining momentum to be introduced in Congress from the NPLGC and Tonto NF area ranchers that would buyout federal grazing permits only in Arizona. This proposal is entitled "Arizona Grazing Permit Buyout Campaign -- A Cooperative Solution to Meet the Changing Needs of Public Lands Grazing." Both documents propose a voluntary buyout of \$175 for the average Animal Unit Months

(AUMs) permitted over the last 10 years to each permit holder to encourage participation. This amounts to \$2,100 per animal unit year permitted. Because around 75 percent of all federal AUMs permitted are currently used, the cost is about \$2,800 per animal unit year on the range.

While the Taylor Grazing Act states that permit holders are not entitled to any “right, title, interest, or estate in or to the lands,” the buyout would “recognize a value of the permit only to extinguish it.” The compensation amount is viewed as above market value for most grazing permits. This is intended to eliminate the need for appraisals, cover a wider range of permit market values, and provide a “transition grant” to help permit holders adjust to a different business and possibly a new residency. The buyout would not include any private property, so ranchers could still operate a dude ranch, bed and breakfast, hunting lodge, or other recreational services from their private land holdings. Water rights associated with spring diversions from federal lands that serve private lands are also not affected. How federal rangelands are faring with no livestock grazing would be evaluated 10 years after the buyout, consistent with current 10-year permit renewals.

The proposal is being sold as a “good deal” for taxpayers by reducing the administrative costs associated with providing grazing permits to ranchers, reducing disaster subsidies paid to livestock producers, and by arguing that it is more important to preserve public lands than the federal treasury. A cash injection to permit holders is also discussed as being important so ranchers can recover their investments without selling off their private lands. The buyout is argued as being affordable since the cost of buying all federal permits would be less than \$4 billion, less than half the recent drought bill legislation and a fraction of the cost of the 2002 Farm Bill.

Future Management Lessons

The drought of 2002 is likely to revive the concept of forage banks or saving pastures for grazing in case of drought as a risk mitigation tool. The Conservation Reserve Program (CRP) has served as a forage bank for many areas because grazing of CRP lands during drought for a reasonable price is generally allowed. However, areas heavily dependent upon public land grazing with little CRP acreage may need to re-examine their risk management practices. A few ranchers in Arizona were able to fight the FS’s ultimatum letter for removing all their livestock this last summer, in large part due to a forest fire that had gone through their area a few years earlier. Although the forage was coarse, grass was still knee-high in places and presented a case for adequate forage availability.

Some ranchers have used geographic diversification to better withstand drought impacts by purchasing multiple ranch operations that are located over 100 miles apart and usually have different seasonal rainfall patterns. Although Arizona had its driest September to August period ever, areas of Southeastern Arizona received some relief through monsoon rains that are known to be spotty, but bring heavy precipitation to some areas in a short amount of time. The importance of having adequate private land holdings to maintain top genetics is also likely to be given closer scrutiny after this year’s drought.

Federally supported livestock reinsurance pilot programs such as the Livestock Risk Protection (price protection for hogs in Iowa) and the Livestock Gross Margin (price of market hogs, corn, and soybean meal in Iowa) programs are available, but they currently offer no protection for production risks and do not cover range livestock. The Adjusted Gross Revenue pilot program is based off an entity’s Schedule F tax form and may not offer substantial protection from the full impacts of drought either, because the program does not account for the cumulative effect of lower drought-induced returns. The Risk Management Agency (RMA) recently approved an alternative computerized model approach for study. The RMA model uses weather, environmental characteristics, and plant growth to determine coverage and losses for pasture and rangelands that could offer substantial drought protection for ranchers in the future (Davidson). Participation and payouts are likely to be high and favorable in the West for any future reinsurance products that cover production risk of drought, if

premiums are subsidized in accordance with crop insurance policies. However, due to the dynamics associated with forced culling decisions, it is unclear how much financial risk protection would be available with a forage-based insurance policy. Disaster assistance has historically followed drought for livestock as well, but the payouts are typically after expenses have been occurred for feed costs. Ranchers from counties that received primary disaster designation were eligible for a cash infusion of \$18 per beef cow this last fall. These drought funds were delivered through the Livestock Compensation Program and the \$750 million program was financed using Section 32 funds.

Last but not least, the drought of 2002 has brought home the importance of having solid income sources besides cattle if one wants to maintain the ranching lifestyle and pass the operation on to the next generation. It appears that most of the ranchers interested in the federal buyout program in Arizona are individuals that depend mainly on ranching as their source of income. Individuals that are less likely to take a buyout option are those that consider ranching as a secondary, or even minor source of their income.

Summary

The drought of 2002 has had varied impacts on western ranches. Ranches that rely heavily on public lands for grazing have likely been the most adversely affected. In many cases, they have had few options other than to liquidate most if not all their cows. Many public land and private ranches are having a difficult time penciling out a profitable restocking plan. A proposed buyout of federal grazing rights for \$175 AUM is viewed as a lucrative alternative compared to restocking for many public land ranches. Ranchers with private land holdings in scenic areas are also questioning whether they should subdivide and sell their land holdings as ranchettes, sell out to someone with adequate capital to buy their entire operation, develop complimentary recreation activities, or switchover from a cow-calf to a stocker operation. Ranches with adequate capital may see this as a time to secure additional land holdings that are nearby as well as located at a distance if the ranch can offer some climatic diversification and strength to withstand another drought.

While the drought of 2002 may not have had a substantial impact on total beef cow numbers in the U.S., it may have garnered strength for changes in federal legislation. The proposed federal grazing permit buyout was in large part initiated due to the severity or opportunity caused from the drought of 2002. This legislation would provide immediate economic relief to ranchers that participate, but some politicians may be reluctant to approve this proposal unless it can be shown that the long-term future of selected rural economies will not be devastated. Federal legislation to subsidize premiums for range forage like RMA does for commodity crop insurance may also have gained momentum from the drought of 2002. Range livestock has already been identified as an “underserved commodity” and last year’s drought will provide ample examples of how finances for the ranching community would have been greatly different if “affordable” forage based insurance products were readily available prior to the drought. A subsidized forage based insurance product would help keep many small cow-calf ranches in the West solvent and more viable.

In spite of federal disaster assistance and potential new legislation, the drought of 2002 may simply have hastened the exodus of ranching that has been gradually giving way to recreational and environmental interests on public and private lands in many areas of the West. In other areas, independent, hardy cowboys may tighten their belt, tighten their cinch, climb in the saddle and ride for another day.

References

- Brester, G.W., and J.M. Marsh. “The Effects of U.S. Meat Packing and Livestock Production Technologies on Marketing Margins and Prices.” *J. Agr. and Resource Econ.* 26(December 2001):431-444.
- Brown, P., Meteorologist, University of Arizona, personal communication, October 2002.

- Cook, E.R., D.M. Meko, D.W. Stahle, and M.K. Cleaveland. "Reconstruction of Past Drought Across the Coterminous United States from a Network of Climatically Sensitive Tree-Ring Data." WDC for Paleoclimatology, available online at <http://www.ngdc.noaa.gov/paleo/usclient2.html>, last accessed October 2002.
- Davidson, R. "Statement Before the House Committee on Agriculture, Subcommittee on General Farm Commodities and Risk Management." administrator Risk Management Agency, US Department of Agriculture, September 18, 2002.
- Marsh, J.M. "U.S. Feeder Cattle Prices: Effects of Finance and Risk, Cow-Calf and Feedlot Technology, and Mexican Feeder Imports." *J. Agr. and Resource Econ.* 26(December 2001):463-477.
- National Drought Mitigation Center. "United States Drought Monitor," joint effort of USDA, Climate Prediction Center, and National Climatic Data Center, available on-line at <http://www.drought.unl.edu/dm/monitor.html>, last accessed October 2002.
- National Oceanic Atmospheric Administration. "Climate of 2002-August U.S. Regional Drought Watch." National Climatic Data Center, available online at <http://lwf.ncdc.noaa.gov/oa/ncdc.html>, last accessed October 2002.
- National Oceanic and Atmospheric Administration. "North American Drought: A Paleo Perspective." Paleoclimatology Program, available online at <http://www.ngdc.noaa.gov/paleo/drought/>, last accessed October 2002.
- Sneller, A.J., Research Assistant, Center for Biological Diversity, personal communication, October 2002.
- Sprinkle, J., Area Livestock Agent, University of Arizona, personal communication, October 2002.
- Stahle, D.W., E.R. Cook, M.K. Cleaveland, M.D. Therrell, D.M. Melo, H.D. Grissino-Mayer, E. Watson. "Tree-Ring Data Document 16th Century MegaDrought over North America." *EOS, Transactions, American Geophysical Union* 81(2000):121,125.
- United States Department of Agriculture. "Agricultural Statistics Data Base -- Cattle & Calves Inventory," National Agricultural Statistics Service, available online at <http://www.nass.usda.gov:81/ipedb/>.