By Thad Box

Looking Back Toward the Work Ahead

I was asked to discuss, in 25 minutes or less, historical effects of drought and the development of the range management profession, and to speculate on the future at the SRM meeting in Orlando in February. My talk may, or may not, be anything like what I write here.

The drought of the 1950s turned me from would-be rancher to a school teacher. When I was drafted into the army in 1951, Dad and I were struggling would-be ranchers with a small herd of cattle. When I finished my hitch the cattle had been sold, the range was bare, and Dad was working for wages to pay off our debt. I went to college on the GI Bill, joined the American Society for Range Management (now SRM) in 1958, and, with my colleagues, have waged an ongoing war to keep rangelands productive.

Although the drought of the 1950s is personal with me, evidence is found in geological formations and prehistoric bones that drought has long been a recurring condition in the earth's history. Songs of pastoralists without a written language have integrated the results of centuries of drought in their lifestyles. Ancient poems, the Bible, and the Quran tell of droughts in early written records.

In 1967, I was part of a United Nations team that went to Somalia to assess drought damage in a country that had fewer than 75 miles of paved road. To my surprise, people with no written language knew the names and forage value of every plant, could predict stocking rate of land based on soil moisture, and practiced rotation of both numbers and species of livestock. They had a "drought insurance" program of exchanging livestock with pastoralists over 1,000 miles away. Drought management had long been part of their culture.

It wasn't until the mid-19th century that we Americans thought seriously about managing for drought. There have been numerous droughts of a few years' duration in the past two centuries, but four major droughts have molded our thinking, our science, and our public policy: a major drought in the late 1800s, the "Dust Bowl" drought of the 1930s, "my" drought of the 1950s, and the current drought, which has been simmering for a while.

After railroads connected our county in the 1870s, the vast American grasslands became a magnet for investors. Historians wrote that men from all across America and many European countries rushed to get a range right and herds of cows eating free grass to make them rich in a hurry. In the 1880s, record cold and very dry winters caused thousands of cattle to starve. Ranchers asked the government for help. In 1895 agrostologist Jared Smith wrote "the native perennial grasses did not get rain enough to more than keep them alive. The cattle on the breeding grounds of the West and Southwest died by the thousands."¹

In 1897 the first range experiment stations in the United States were established. Soon afterward it rained. In 1898 a meeting of stockmen adopted resolution without a dissenting voice: "Resolved, That none of us know, or care to know, anything about grasses, native or otherwise, outside of the fact that for the present there are lots of them, the best on record, and we are after getting the most out of them while they last."

Scientists of that era, primarily botanists, thought the major reason for the poor condition of the range was overgrazing. Jared Smith wrote in 1895, “The one great mistake in the treatment of cattle ranges, the one which always proves to be the most disastrous from a financial standpoint is overstocking.”² To define carrying capacity, he modified Liebig’s law of the minimum: “The maximum number of cattle that can be safely grazed on any square mile of territory is the number that the land will support during a poor season.” The concept of a carrying capacity became central in the development of a profession to manage grazing lands.

The science of ecology developed in the late 19th century. Plant succession was described in the 1890s. Plant scientists in government labs and in western universities began applying concepts of community change to the overgrazed rangelands throughout the western United States. The US Forest Service used emerging ecological concepts in early range surveys and grazing regulations. Despite the disruption of World War I, a fledgling profession of range management developed by the 1920s. Its primary objective was to get stocking rates within estimated carrying capacity of grazing lands.

Livestock numbers increased as part of the World War I war effort. After the war, stocking rates on both public and private ranges remained high. In the decade after the war thousands of people moved from humid farming areas of the east to semiarid lands of the west. Land promoters and the homestead laws divided much of the short grass plains and semidesert valleys into 160- or 320-acre farms. Farming unsuitable land and overgrazing were widespread when the drought of the 1930s began.

The “Dust Bowl” of the southern Great Plains is the best known example of the landscape changing as a result of improper or overuse of land, but similar devastation occurred throughout America’s rangelands. A classic government report, “The Western Range,” written by early range managers in the US Forest Service, indicated that rangelands in every western state were degraded and needed attention.

The Taylor Grazing Act required grazing of the public domain to be managed, and the Soil Erosion Service (later to become the Soil Conservation Service and today the Natural Resources Conservation Service) provided funds to manage and reclaim lands damaged by drought. These programs required people with knowledge of carrying capacity and erosion processes. Western universities developed curricula in range management with emphasis on managing ranges by manipulating vegetation succession suggested by Clementsian ecology.

The drought of the 1950s was particularly severe in the Southwest. “Climax” vegetation, as described by Clements, died in areas protected from grazing as well as those that were grazed. Bankruptcy claimed historic ranch operations that

survived previous droughts. It became evident that drought management was more than vegetation and land management. Range management was part of a larger biological, social, and economic system.

British ecologist A. G. Tansley coined the term “ecosystem” in 1935. He wrote, “Though the organisms may claim our primary interest, when we are trying to think fundamentally we cannot separate them from their special environment, with which they form one physical system.”⁴ The first paper I was able to find linking the ecosystem concept to range management was in a paper by a graduate student at a Texas Academy of Science meeting in 1958.

Range management today is no longer a “cows and grass” affair. It is a profession that manages ecosystem changes. Our experience tells us that ecosystems constantly change. Drought triggers change. Communities must be sustainable for us humans to reproduce and future generations to succeed. Sustainability depends upon 1) balance and fairness in resource use in the current generation, 2) intergenerational transfer of essential resources to next generation, and 3) long-term stability trumping short-term gain. Each generation must leave options open for future uses.

Much of today’s rangelands are suffering from the most severe drought in recent history. Over 90% of our scientists predict our earth will get hotter and drier as the number of people increases. There are more than seven billion people on our planet today. The population is expected to reach eight billion in the next 30 years. We don’t know what use they will make of rangelands. But we must ensure there is suitable habitat available for future generations. We have come a long way from determining the number of cows a square mile of prairie could carry. We have a new piece of work cut out for us going forward.

Further Reading

1. SMITH, J. G. 1895. Forage conditions of the Prairie Regions. *In: US Department of Agriculture yearbook*. Washington, DC, USA: US Department of Agriculture.
2. BENTLEY, H. L. 1898. Cattle ranges of the southwest: a history of exhaustion of pasturage and suggestions for its restoration. *In: USDA farmer’s bulletin 72*. Washington, DC, USA: US Department of Agriculture.
3. UNITED STATES FOREST SERVICE. 1936. *The Western range*. US Cong. 74th, 2d sess., S. Doc. 199.
4. TANSLEY, A. G. 1935. The use and abuse of vegetational concepts and terms. *Ecology* 16(3):284–307.

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