

# Animal Identification



WEMC FS#10-04 • Fall 2004

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## Challenges of Animal Identification in the West

### Overview

The diverse geographic terrain and fragmented structure of livestock production in the United States is such that the challenges associated with implementing an animal identification system differ by region and production-management methods. Livestock operations in the West<sup>1</sup> operate on vast, rugged terrain where geography, land ownership, and people/culture challenges are probably the greatest of all regions to overcome for meeting animal identification goals. This fact sheet provides an overview of these challenges that are somewhat unique to the West.

### Origins of Commercial Livestock in the West

Cattle and sheep production are long established land uses in the West with origins tracing back to the 16<sup>th</sup> century Spanish explorations in New Mexico and Arizona. In 1849, Congress passed a bill assigning the Department of Interior (DOI) to take charge of the United States' "internal affairs." Initially, the DOI was only indirectly involved in land management until late in the 19<sup>th</sup> century when the first national parks, forests, and wildlife refuges were created. This bill became a turning point in federal land policy because instead of using public lands to promote settlement, Congress decided that these lands should be held in public ownership for their resource value to all citizens.

The early roots of livestock production in the West and the glamour of cattle drives and roundups in western movies are reasons why ranching is often associated with the rugged and vast open spaces found in the region. Yet most of the beef calf production in the United States occurs between the 100<sup>th</sup> meridian (the western border of Oklahoma, excluding the panhandle) and the Mississippi River (Golan et al., 2004). Using January 2004 inventory numbers (USDA/NASS), the West accounted for 18.7% of the United States' 32.8 million beef calf crop. The six great plain states (i.e., ND, SD, NE, KS, OK, and TX) accounted for 13.5 million head or 41.1% of the calf production.

<sup>1</sup> The eleven western contiguous states (CA, OR, WA, ID, NV, AZ, NM, CO, UT, WY, MT)



## Western Land Settlement and Management

Many of the challenges associated with premise and individual animal identification (ID) for the West can be traced to early settlement, grazing, and land use patterns. After the Civil War, the cattle industry exploded in the West. From 1870 to 1884, cattle numbers in the 17 western and great plains states increased about eight-fold in only 14 years, growing from 4.6 million to an estimated 35 to 40 million (Wildeman and Brock, 2000). The 1884 numbers for the West are impressive because they exceed the total current beef cow inventory in the United States and are almost double the number of beef cows that currently reside in these 17 states (19.6 million). Millions of sheep were also located in the West in the late 1800s. The presence of large numbers of miners, loggers, railroaders, and pioneer settlers, together with the ability to drive Longhorn cattle over long stretches where no water existed, created a demand for grazing resources in the West to support livestock numbers and to address the demand for meat from these groups.

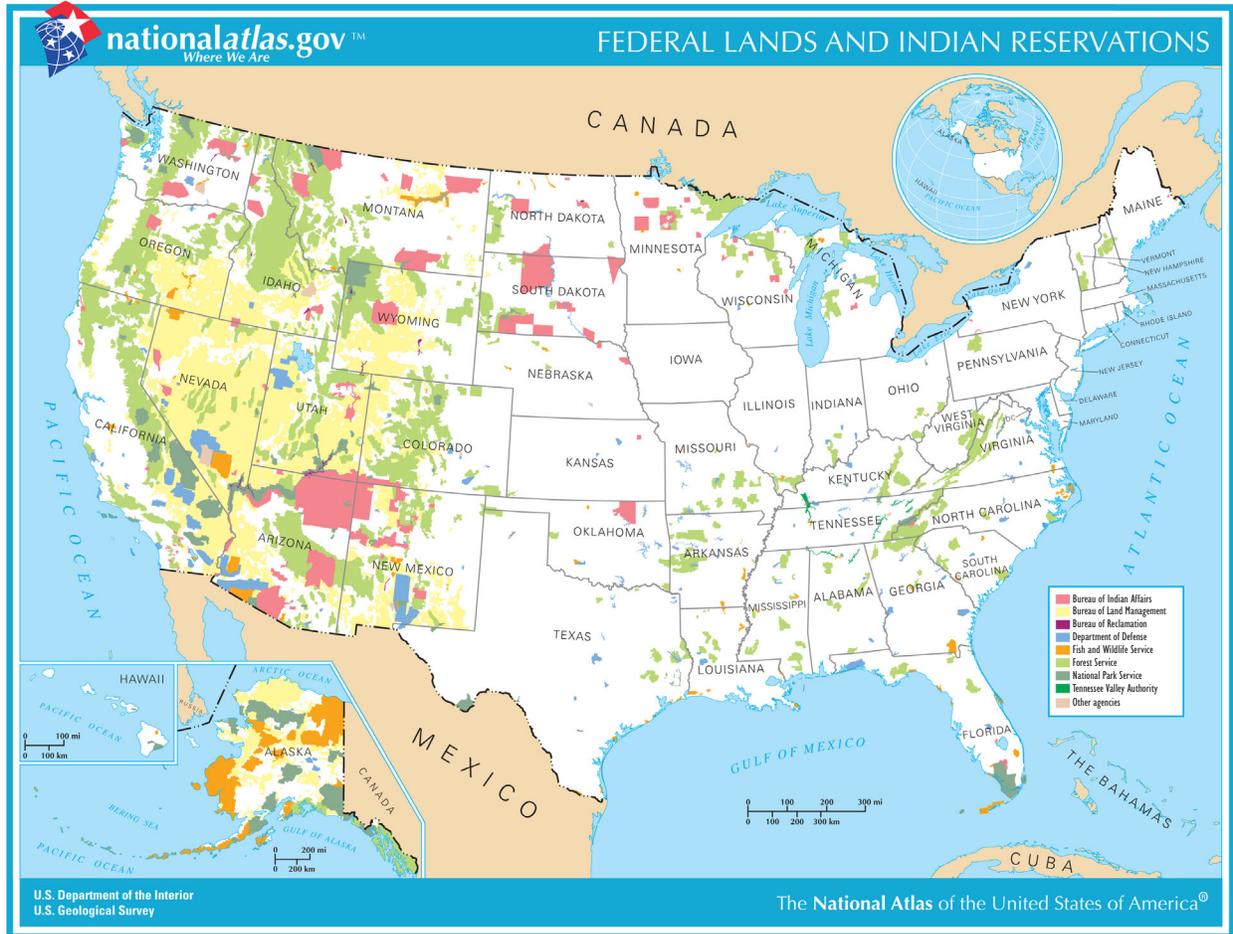
During this period, Congress passed the Timber Culture Act (1873), the Desert Land Act, (1877), and the Stone and Timber Act (1878) (Foss, 1960; Ferguson and Ferguson, 1983). These acts enabled settlers to obtain deeded property for a home or ranch and a small quantity of better quality ranch land, typically around a previously appropriated water source. Thus, the remaining lands claimed by the federal government were generally the less productive lands, in terms of

crop production, that were left after private individuals appropriated the land. Because the quantity of land deeded to homesteaders was typically insufficient to sustain a family operation, the deeded area was supplemented by grazing on public lands like it does for much of the West today, only at that time public lands were essentially open range.

Barbed wire was invented in 1874, and as fences crossed the landscape, the large cattle drives from Texas were essentially halted by the mid-1880s. But range resources were already severely exploited, and a hot, dry summer followed by one of the most severe winters on record in 1885-86 resulted in devastating cattle losses. Schickedanz (1980) estimates that up to 85% of the cattle were lost in many areas during this period. Charlie Russell's famous drawing, "Last of the 5,000" refers to this massive die-off. Due to severe range exploitation and environmental degradation, the federal government created forest reserves out of public domain lands in 1891. These lands were then passed on to the newly created Forest Service in 1905, and the first fees charged for grazing on public lands occurred in 1906.

The DOI has oversight for managing other federal or non-forest lands through the Bureau of Land Management (BLM), Fish and Wildlife Service, National Park Service, Bureau of Reclamation, and Bureau of Indian Affairs (BIA). The DOI manages lands that account for about one-fifth of the geographic area of the United States, or 507 million acres. A little over half of this acreage is managed by BLM (262 million acres). BLM acres are almost all located in the West (including

Figure 10-1. Federal Lands and Indian Reservations in the United States



Source: United States Department of the Interior / United States Geological Survey

Alaska and Hawaii), and comprise some of the most rugged, harsh, and beautiful terrain in the country. The Fish and Wildlife Service (96 million acres), National Park Service (84.4 million acres), BIA (55.7 million acres), and the Bureau of Reclamation (8.7 million acres) manage the remaining lands of the DOI. Forest Service and DOI lands total about 652.6 million acres, so 28.7% of the land area in the United States is federally managed (Figure 10-1). In the West, an average of 47.0% of the land is federally managed, but

the percentage varies widely by state. Many states in the West also have a significant percentage of state owned land managed by the respective state for the public.

### Geographic Challenges

While a beef cow raised outside of the West is typically confined to a single farm or ranch premise within a relatively small county for its entire life, cattle in the West regularly traverse large distances between winter and summer ranges. Higher elevations in the

mountains are used for summer range, while lower valley, mesa, plain, semi-desert, and desert regions are typically used for forage during winter months. It is common for cattle to travel on hoof more than 20 miles and over 4,000 feet in elevation between their winter and summer ranges. Cattle are often moved on public roads or across the range of neighboring ranches to move from one season of range forage to the next. This movement of cattle often results in the intermingling of a few head of neighboring cattle along the way and herd contact of neighboring cattle across fence lines.

Geographic and economic challenges associated with fencing and keeping cattle contained on a premise are much different for the West than the rest of the United States. Annual carrying capacity may be as low as three to five cows per section (640 acres) or one animal per 212 acres for many parts of the West, whereas the plains and midwestern states may be stocked as densely as one cow for every two to three acres. The vast size and rugged terrain of pastures in the West make it quite costly and difficult to maintain and monitor fence lines compared to the rest of the United States. Mayer (1999) estimates a cost of about \$4,400/mile to install barbed wire fencing in Iowa, and this is similar to the \$3,500/mile cost estimated for Southeast Arizona by Teegerstrom and Tronstad (2000). But Teegerstrom and Tronstad also estimate fence installation costs for the more rugged terrain of the Central Mountain region of Arizona at \$9,000/mile. Higher fence installation costs also translate into higher upkeep and monitoring costs due to terrain that is

more difficult to access and drive a fence post in the ground.

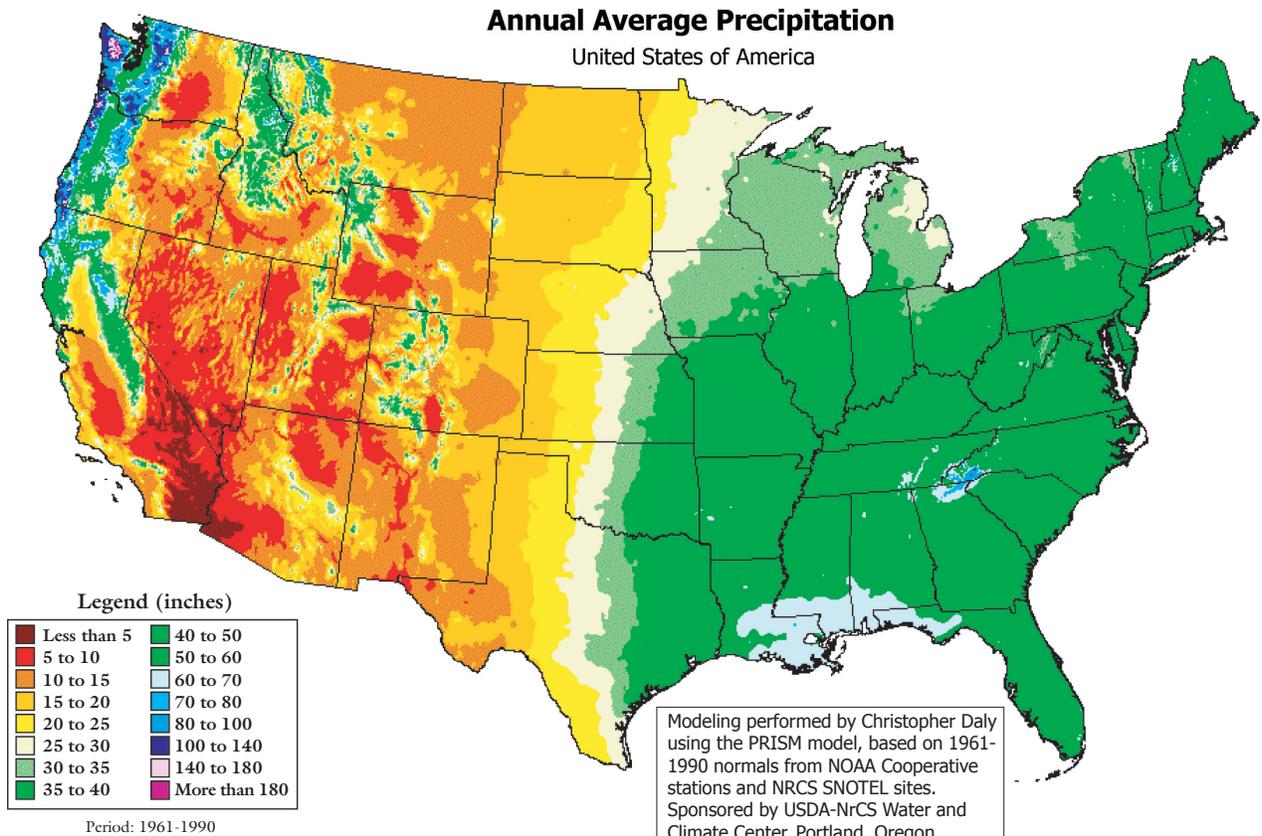
Big game animals such as elk and antelope reside on many ranches in the West. Elk are particularly known for damaging fence lines to the point that the fence is ineffective for cattle. Furthermore, elk and other wildlife may also serve as a transmitter of some diseases with domestic livestock (McCorquodale and DiGiamcomo, 1985). Some federal and tribal lands are so rugged that maverick cattle and horses that are just as wild as elk that reside on the land. Thus, animal ID objectives associated with isolating disease outbreaks at the producer level could become quite complex for some areas of the West.

Brush and chaparral country can be so thick in some parts of the West that a cow can disappear from the sight of a cowboy within just a few steps. This type of country is notorious for losing ear tags. However, some ranchers who have range conditions like this and have already placed Radio Frequency Identified (RFI) ear tags in their cows report that if the buttons are placed on the inside of the ear, the number of tag losses is much less compared to placing the button on the outside of the ear.

Although the West is generally classed as a semi-arid or arid region frequently plagued with drought conditions, rainfall patterns vary greatly in the West mainly due to topography. Conversely, the rest of the contiguous states have a much more uniform precipitation pattern as described in Figure 10-2. This variation in precipitation greatly impacts the movement of livestock within the West. Some individuals in the West have bought multiple



Figure 10-2. Annual Average Precipitation for the United States, 1960-1991



Source: Spatial Climate Analysis Service, Chris Daly, and Oregon Climate Service at Oregon State University, George Taylor (<http://nationalatlas.gov/prisimm.html>).

ranches located over 100 miles apart to reduce the risk of receiving inadequate moisture and forage. If one ranch has more forage than another, they can shift cattle among different ranches to ease grazing pressure where forage is most scarce. After the widespread, severe drought conditions in 2002, some regions in the West were forced to remove all their cattle from public lands (Tronstad and Feuz, 2002). While some ranchers were able to relocate their cattle to other states such as Oregon, Kansas, and Oklahoma, many sold their herds.

These ranches will likely bring in replacements from outside the West to rebuild herds. Many of these sales occur directly between ranch operators. Thus, variation in precipitation results in frequent movement of cattle within the region as well as new cattle coming into the West from outside the region. Tracking the origin, movement, and potential disease exposure of cattle in the West will require buy-in and a conscious effort of many individuals to achieve traceability objectives.

## Ownership Challenges

Although a pasture in the West may be very vast with hundreds of cattle contained inside the boundary fence, the cattle may be owned by hundreds of individuals, particularly on tribal lands. For example, one tribal herd in Arizona has a normal carrying capacity of about 3,500 head with over 1,000 individual owners. To complicate matters, 15 to 20 individuals could have a stake in the calf sales of a given cow, and any one of these individuals or someone else can replace a cow in the name(s) of the individual(s) if the cow dies or is sold. Tracking this kind of ownership and replacement will require cooperation from both the parties who own a “slot in the herd,” and the presently unidentified individual(s) who may purchase a cow in their name(s).

Grazing associations exist in the West where multiple ranchers pool their cattle together for summer grazing. This practice reduces fencing and caretaking costs, but increases the intermingling and disease exposure compared to cattle moved from one pasture to the next. Flexibility is needed in an animal ID system so that one owner is not restricted to just one premise ID, and multiple ownership of one animal is possible.

Large pastures, rough terrain, and the intermingling of animals with different owners in the same pasture are some of the reasons that brand laws and records exist for all western states. Branding and brand inspection is currently required for many states, and some have advocated that brands and brand inspections be used to trace animals. Several shortcomings and problems exist with utilizing brands as a replacement for animal identifica-

tion. First, not all states require branding so in some states, cattle can move from the cow-calf operation to the feedlot and to slaughter without ever receiving a brand or having any type of individual animal identification. Secondly, brand inspections are usually done for groups of animals rather than individual animals. If a cow tests positive for BSE at slaughter, how could one readily identify where the other cows are that were commingled with the BSE cow at different brand inspections? Lastly, brands are only unique for each state. Thus, two calves could have the same brand at the feedlot level and be from two different states.

## People Challenges

Sparse population density and several miles between different ranch headquarters in the West give individuals a sense of independence and a feeling that how they manage their livestock and operation is only their business. The isolation of these operations gives a sense of freedom from any government agency. This is one reason why individuals in the West will probably be more reluctant to accept changes associated with animal ID, especially mandatory animal ID, than individuals in other regions.

The suspicion of a government tracking system and policy that will backlash against producers is probably greater for small Native American producers than anyone else. In part, this may be because one diseased animal from a tribal ranch has the potential to label all animals from all the tribes or reservations in that state as diseased. The reputation of the



federal government is not stellar among Native Americans. For example, prior to 1990, Indian reservations were considered collective land that U.S. Department of Agriculture (USDA) regarded as one big farm. Thus, it was not until after the 1990 Farm Bill that individual producers on reservations were eligible for all USDA programs.

The Advisory Committee on Agricultural Statistics is recommending that USDA redo the 2002 Agricultural Census because it excludes thousands of American Indian producers. Edmund Gomez, who directs New Mexico State University's Rural Agricultural Improvement and Public Affairs Project, believes that "the latest Agricultural Census grossly underestimates the number of tribal producers." The 2002 census only reports 430 Indian farms in New Mexico, while Gomez believes that there are at least 7,500 individual farms and ranches with agricultural sales over \$1,000 (Robinson-Avila, 2004). Moore (2004) reports that over 12,000 livestock grazing permits are issued for the Navajo Nation.

Part of this undercounting problem is that USDA does not conduct direct surveys on reservations; rather, they provide census forms to tribal administrators or offices to conduct their own count. This form of administration and response also suggests that skepticism exists among some Native Americans about providing information to the federal government. If USDA has this much difficulty in identifying the total number of Native American farmers from a region, it seems rather heroic to believe that every cow on a reservation will be traceable to even a site premise in

the near future. The West is unlike most of the United States where small farms have a mix of crop and livestock activities and every farm already has a designated Farm Service Agency number from receiving some form of government payment in the past.

Establishing an animal ID system with encryption that maintains the regional identity of animals will likely be crucial for addressing rancher skepticism. For example, some tribal producers envision that if some cattle grade poorly from a tribe, all cattle from that tribe will be put into the same discount class. While some of this discrimination could already occur, the degree to which it occurs would be much greater if tags are not encrypted.

In spite of all these community disagreements, the challenge associated with convincing people that they should devote their most scarce resource—time—to adopt animal ID practices may be one of the most difficult to overcome. Most operations in the West have limited windows when cattle are in pastures with working facilities where they can brand, wean, and service the health of their herd. Labor has a high opportunity cost at roundups for health care, culling, sorting, and other record-keeping activities that can provide an immediate, direct return to the producer. In addition, holding pastures around working facilities may only have enough forage and water to maintain the herd for a day or two. Thus, logistics for implementing an animal ID system will need to compliment existing herd management activities at roundups for most ranches in the West.



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