

# Impacts of Federal Land Livestock Reductions on Nevada's Economy

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If you want to start a heated discussion, bring up the topic of public land grazing. Such public land conversations are often emotionalized and are often not based on fact. People's views can be extremely polarized. A sensitive topic related to this subject is the reduction of livestock numbers. Views on public land grazing vary; there are those who wish to see livestock removed from public lands; there are others whose livelihoods depend on livestock grazing on public lands. However, there is no doubt that livestock numbers on Nevada's public land have been reduced over the last thirty years.

Many rural communities in the Western United States depend on a healthy agricultural economic base to prosper. Livestock operations, primarily sheep and beef cattle, are a major contributing agriculture enterprise in western states like Nevada. Numerous livestock producers rely on public land grazing for continued successful ranching operations. The rural communities have strong ties to the livestock industry. This helps to provide economic stability and a fulfilling rural lifestyle to many families.

Federal land management agencies' (Bureau of Land Management (BLM), US Forest Service (USFS), and National Parks) policy decisions over the past several decades have resulted in a consistent downward trend in the amount of authorized public land grazing in Nevada. Livestock producers are well aware of how previous, and on-going, grazing reductions have influenced their individual operations. However, little information is available to identify cumulative economic effects resulting from this trend to the local communities, rural counties, or throughout the

State. The general public typically are unaware of how livestock reductions on public lands impact livestock producers, and associated rural economies.

Six Nevada counties (Eureka, Humboldt, Lander, Lincoln, Nye, and White Pine) and three Nevada State Grazing Boards (N-2, N-4, and N-6) initiated research to evaluate the impacts of reducing public land grazing in their respective areas. Resource Concepts, Incorporated (RCI) of Carson City, Nevada in cooperation with the University of Nevada, Reno, Applied Economics and Statistics Department conducted the research (Resource Concepts, Inc. 1998a, 1998b, and 1997).

This article summarizes Nevada public land livestock reductions and the resulting economic impacts to the above regions (Figure 1).

## Methods

### Conversion of Animal-Unit-Months

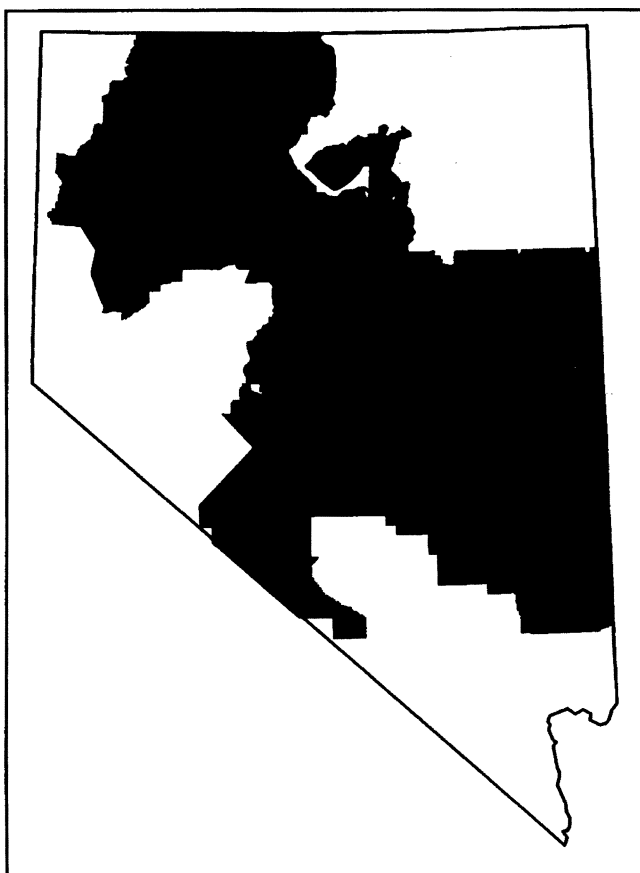
The various land management agencies in Nevada use different units to designate grazing intensities. All grazing records were converted to a common unit, animal-unit-months (AUM).

### Bureau of Land Management Data Collection

The BLM's National Applied Resource Center in Denver, Colorado provided a digital copy of the Grazing Authorization and Billing System (GABS) database for every Nevada BLM allotment. Grazing permit information was collected and combined at the allotment

level to create the Nevada Grazing Statistics database.

This database was expanded to include the active and suspended grazing for each permittee as of 1980. This



**Figure 1.** Map showing the portion of Nevada covered in the grazing analysis

reflected all the adjudicated (period during 1950s–1960s when the size and extent of grazing permits were established) and post adjudication actions that had occurred prior to that year. Through a series of meetings and conversations with BLM staff the updated database was corrected to include decisions and changes that had occurred since 1994 (Resource Concepts, Inc., 1994). Maps provided by the BLM Nevada State Office were used as a primary source of graphically delineating allotment boundaries

### U.S. Forest Service Data Collection

The USFS Ranger Districts' staff provided grazing permit information for the period of record from 1980 to 1997. The existing permit information was combined with the regional USFS Range Management Information System (RAMIS) database. Through a series of meetings and conversations with USFS staff the Nevada Grazing Statistics database was updated. Maps provided by the Ranger District Offices were the primary source of graphically delineating USFS grazing unit boundaries.

### National Park Service

Unlike most other National Parks, grazing is permitted within the Great Basin National Park. The Park was contacted in 1998 and provided information for allotments under their management.

### Economic Analysis

Potential estimated economic impacts to rural Nevada resulting from livestock reductions, were calculated using the Micro IMPLAN model developed by the U.S. Forest Service. The model estimates sector and regional impacts of alternative forest management scenarios (Alward et al., 1989). The IMPLAN model has been revised by the University of Minnesota to accommodate other impacts, such as grazing reductions. Secondary data were integrated into the model using the Regional Purchase Coefficient Procedure developed by Stevens et al. (1983). Primary data were collected and put into the input-output models for impact assessment (Stoddard et al., 1995a, 1995b).

The input-output model relates how sectors of the economy interact to one another. The modeling procedure uses output multipliers to demonstrate the effect a change within one sector has on total economy. Alternate scenarios are considered to evaluate the changes in economic activity, household income, and total employment.

Direct economic impacts to the livestock sector from past livestock reductions were based on total reductions valued at 1990 gross market value. The 1990 adjusted IMPLAN model then quantified the livestock reductions economic impacts to the region. Industries such as range livestock, crops, construction, manufacturing, transportation, communication, utilities, and trade and services were included in the IMPLAN model. Assumptions for the economic analysis include:

Permitted grazing within the studied Nevada USFS Ranger Districts decreased by 33,266 AUMs between 1980 and 1997. Grazing on specified BLM lands decreased by 309,184 AUMs for the same period. Under National Park management there was a 135 AUM reduction.

The gross market value of livestock per AUM is constant and equal to \$21 per AUM. This is the typical value estimated for a 1990 cow-calf enterprise in Elko County, Nevada (Torrell and Myer 1990), and for southern Idaho by Smathers et al. (1990).

No substitution between input variables was allowed. A constant, proportionate share of production factors was assumed.

All cattle sold were exported from the State at the time of sale.

Grazing permits have a market value which is eliminated without compensation whenever allowable grazing reductions are made. The current market value of Nevada grazing permits averaged \$37 per AUM for BLM permits and \$42 per AUM for USFS permits (U.S. Department of Interior 1993).

### Results

There was a reduction in licensed livestock grazing of 342,585 animal-unit-months (AUMs) on Nevada's public lands between 1980 and 1997. Among the BLM, USFS, and Great Basin National Park there were 1,760,408 AUMs in 1980, 1,480,886 in 1995, and 1,417,823 AUMs in 1997. This reduction is estimated to result in a total annual monetary loss of \$12.3 million in the affected economies, including rural communities. The economic loss to the agriculture sector is about \$7.2 million (Resource Concepts, Inc. 1997, 1998a, 1998b).

The following three sections summarize specific economic impacts to the northwestern, central, and eastern regions of Nevada. Animal Unit Month (AUM) changes in Nevada by region are summarized in Table 1.

### Northwestern Nevada Impacts

Economic analysis of the impact of the BLM and Forest Service livestock grazing reductions to the livestock sector shows a potential annual loss of \$2,051,364 within the Northwestern Region. When other economic sectors are included in the analysis, then the estimate of the negative impact to the region is \$3,697,460 annually. The estimated market value of impacted ranches in the area decreased by \$3,632,038 between 1980 and 1997. These economic impacts affect both the county and state tax bases.

### Eastern Nevada Impacts

The impact of the BLM, USFS, and Great Basin National Park livestock grazing reductions to the livestock sector shows a potential annual loss of \$1,853,733 to local economies within the Eastern Region. When other economic sectors are included in the analysis, the

Table 1. Livestock Reductions on Federal Lands by Region in Nevada

Year	Northwestern Nevada Reductions		Eastern Nevada Reductions			Central Nevada Reductions	
	BLM	Forest Service	BLM	Forest Service	Great Basin National Park	BLM	Forest Service
1980-97 Percent decrease	23	6	15	22	NA	21	39
1980-97 AUMs decrease	94,138	3,546	88,237	9,128	137	126,773	20,592

impact to the region is a negative \$3,040,122 annually. The estimated market value of impacted ranches has decreased by \$3,266,101 between 1980 and 1997 affecting both the county and state tax bases.

### Central Nevada Impacts

The livestock grazing reductions to the livestock sector within the central Nevada Region shows a potential annual loss of \$3,094,665. With a total negative impact to the region of \$5,199,037 annually. Once more, these economic impacts affect both the county and state tax bases.

### Summary

The livestock sector contributes significantly toward the economic well being of Nevada's rural lifestyle. Livestock operations provide a stable long-term economic base for many agriculture based communities. Public land grazing is a vital component of Nevada's rural communities, counties, and the entire state.

The public typically view a reduction in livestock numbers for a Federal land grazing permittee as an isolated incident with few repercussions. However, there are many other individuals and sectors that feel the economic impacts. This is especially true when evaluating statewide public land livestock reductions.

Cumulative impacts from reductions in public land grazing demonstrate serious negative consequences to rural communities, counties, and to the grazing permittees. The estimated potential annual loss to rural economies resulting from livestock reductions on public lands, in northwestern, eastern, and central Nevada since 1980 is \$12.3 million

Efforts are underway in Nevada to develop a statewide impact analysis of livestock grazing reductions on public lands. Evaluation of other public land states would likely demonstrate many similar impacts. This information is important for legislators, state government, and other policy makers responsible to the citizens of Nevada and the West.

If the lifestyle of rural Nevada residents is to continue, it is important for the public to understand the contribution livestock production provides to rural economies. The loss of livestock grazing in rural Nevada will signifi-

cantly reduce the opportunities for rural residents. It is imperative to seek critical scientific review and timely oversight of the methodology applied to carry out grazing reductions, and to evaluate the necessity and propriety of livestock reductions on public lands in Nevada, and elsewhere in the West.

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