

age during the short period that they are at their prime, but at the most they can only provide feed for three or four months of the year. The ranchman makes a marked distinction between the annual and perennial grasses. He aptly designates the annual as "seed grasses" and the perennial as "root grasses." The seed grasses soon become worthless, their bleached, short culms are broken and beaten into the sand by storm and wind. The root grasses retain their vitality and remain green for the greater portion of the year. Even when dry, their harder, stronger and larger culms contain as much nutrition as well-cured hay, and are, or rather used to be, the valuable winter forage of the West.

In conclusion, there is a limit beyond which no range can be profitably stocked. If we exceed this limit it will not only be

detrimental to the permanency of the range, but in the end will be disastrous to the stock as well. It is but natural that a growth of top is necessary to a growth of root, therefore if the tops be continually cropped to the ground, the roots will finally perish. This is especially true of grasses of arid regions, growing in bunches or scattered about here and there a few culms in a place. The range is frequently fed so close that few of the better grasses mature seeds, while many others are tramped out by horses and cattle. During the past few years the effect of over-stocking has shown itself in the inferiority of the cattle when compared with those of former years. They are poorer as a consequence of their increased number and the resulting deterioration of the range.

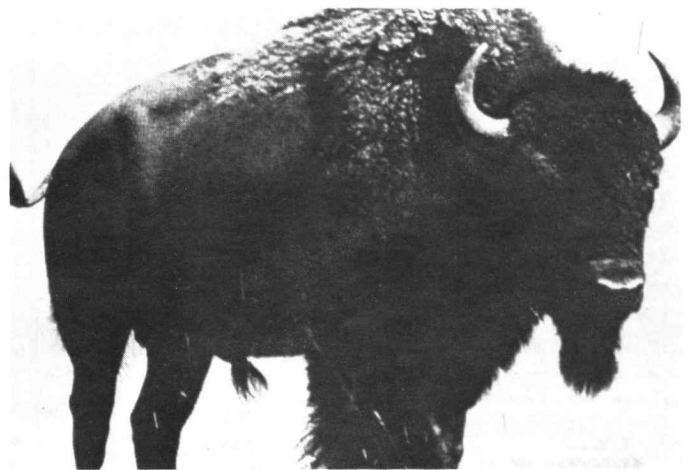
The North American Bison

Dave Arthun and Jerry L. Holechek

No other indigenous animal, except perhaps the beaver, influenced the pages of history in the Old West as did the bison. The bison's demise wrote the final chapter for the Indian and opened the West to the white man and civilization. The soil-grass-buffalo-Indian relationship had developed over thousands of years. The bison was the essential factor in the plains Indian's existence, and when the herds were destroyed, the Indian was easily subdued by the white man.

The bison belongs to the family Bovidae. This is the family to which muskox and our domestic cattle, sheep, and goats belong. Members have true horns, which are never shed. Horns are present in both sexes. The Latin or scientific name is *Bison bison*, inferring it is not a true buffalo like the Asian and African buffalo. The true buffalo possess no hump and belong to the genus *Bubalus*. Local vernacular for the American bison has included buffalo, Mexican bull, shaggies, and Indian cattle. The bison were the largest native herbivore on the plains of the West. Weight ranges from 800 pounds to 2,000 pounds. Bison are diurnal in nature, as opposed to nocturnal (active at night). They are gregarious, forming family groups or herds. Their life span may range up to 30 years, but normally 15-20 years is average. Females usually calve as two- or three-year-olds. The breeding season or rut is from midsummer to dog days (July to October). Gestation is 9 months long. Calves are born in the spring from April to June. At birth, calves weigh from 25-40 pounds and are yellowish-red in color.

Like domestic sheep and cattle, the bison is a ruminant. Its high rumen volume to body weight ratio gives the bison a high degree of adaptability to the prairie. Recent students have shown it can use high fiber forages more efficiently than cattle; its flesh has a higher protein content.



Bison were the largest herbivore on the plains of North America. Adult males weighed up to 2,000 pounds.

Bison have poor eyesight, but are highly mobile and possess a keen sense of smell. Due to the bison's enormous size and its gregarious nature, it is thought that it was not greatly affected by predation. Predators did, however, take bison from time to time particularly the old, the weak, and the lame. Predators of the bison under pristine conditions included the wolf, grizzly bear, and mountain lion or cougar. Of the three mentioned, wolves were probably the predominant predator, especially on young calves in the spring and solitary senile adults during the late winter. Estimated losses due to wolves may have been as high as one-third of the yearly calf crop according to different authorities. These losses were necessary to maintain stability of herd numbers under lightly hunted conditions.

Historical Perspective

Prior to the white man's arrival on the North American continent, bison were the most numerous of all grazing animals. Estimates of their numbers are only speculative, but may have ranged from 30,000,000 to 75,000,000.

Bison were very adaptable and had a large domain. Almost every state supported bison, as well as northern Mexico and western Canada. The core concentrations, however, were on the prairies east of the Rockies in Alberta, Saskatchewan, eastern Montana, North Dakota, South Dakota, Nebraska, eastern Wyoming, eastern Colorado, Kansas, Oklahoma, eastern New Mexico, and Texas.

About 200,000 years ago, an ancient species of bison roamed present-day America. These bison were later replaced by a smaller Asian bison (about 40,000 years ago) which came by way of the Bering Strait. The present-day bison is the descendant of this Asian bison.

The first Europeans to see the bison were probably the Spanish explorers. Cortez' men in 1521 called them the "Mexican bull." The Spanish made efforts to domesticate the bison, but their attempts were unsuccessful.

By 1819 almost all the bison were extirpated east of the Mississippi. In the 1830's following the decimation of the beaver, the American Fur Company and the Hudson Bay Company switched from purchasing beaver pelts to bison robes. These two fur companies used New Orleans as a shipping point for their European markets. Hunting along the Mississippi and upper Missouri, they found more than enough bison to fill their orders. By 1840, most of the bison had disappeared west of the Rocky Mountains. It was not, however, until the 1850's that the massive slaughter of the plains bison began.

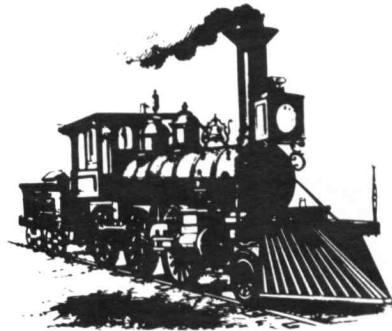
The post-Civil War era brought a huge influx of people into the West. The promise of a new life, free land, and lure of gold and plenty of adventure was more than enough reason. Cow towns such as Dodge City, Kans., sprang up, which soon became the capital for bison hunters. Initially, bison hunting was done only by locals and the meat was used locally. However, one event occurred which changed the history of the Old West and spelled the beginning of the end for the bison. The railroad linking East and West was the most important factor contributing to the buffalo's demise because it opened up the West to large numbers of people. Further, it allowed free exchange of agricultural and manufactured products and natural resources between the East and West.

The bison provided the meat source for the early settlers in the West. After the Civil War bison meat became popular in the East, which made bison hunting a very lucrative business. In the early 1870's a new tanning process was deve-

loped, and hunting bison solely for hides became very profitable. In 1872, 2,000,000 bison were killed just for their hides, which sold for about \$3.50 a piece. W.T. Hornaday in 1914 speculated, probably realistically, that the meat wasted during the great period of slaughter in the 1870's would have been sufficient for the needs of more than a million people (Durward Allen, 1974, *Our Wildlife Legacy*).

Between 1868 and 1881 an estimated 31,000,000 bison were killed. This estimate is based on the amount of bones shipped on the railroads. It took 100 skeletons to make a ton of bones. A ton of bones sold on the average of \$8.00. Between 1868 and 1881 several million dollars were paid for bones in Kansas alone. They were used as a refining agent in sugar processing, for fertilizer, and for fine bone china.

Although never a stated objective, another factor contributing to the zealous slaughter of the bison was its role in subjugating the Indians. General Sheridan said, in reference to the bison hunters: "These men have done in the last two years, and will do in the next year, more to settle the vexed Indian question than the entire regular army has done in the last 30 years." Sitting Bull, the Sioux chief who defeated



Custer, stated: "A cold wind blew across the prairie when the last buffalo fell . . . a death-wind for my people." By 1889, there were fewer than 1,000 bison left in the United States.

Efforts to Save the Bison

In 1880, New Mexico passed a protection law but by that time, the bison were already gone. In 1886, the Smithsonian Institute sent S.T. Hornaday, a taxidermist, out West to obtain a bison for preservation purposes. Hornaday finally found some bison north of Miles City, Mon. He was so aghast at the low numbers he started a movement back East to save the bison. In 1905, the American Bison Society was formed with Hornaday as its President and Teddy Roosevelt as its Honorary President. In 1894, it became illegal to kill bison in Yellowstone Park. In 1897, the Royal Mounted Police started patrolling bison herds in Western Canada. In 1908, the National Bison Range was established in Moise, Mon. The National Bison range was 20,000 acres and stocked with 400 bison.

It was the efforts of far-sighted people with conservation ideals that saved the bison from extinction. In 1886, such a man was C.J. "Buffalo" Jones, who put 13 bison calves on his private ranch in Kansas. In 1888, Jones bought 86 bison in Canada. In 1895, Jones sold most of his bison to Michel Pablo in Montana.

Pablo entered the bison business in the early 1870's. In 1872, Walking Coyote, a Flathead Indian, went from the Mission Mountains to the Milk River and while hunting he found several motherless (orphan) bison calves. He took



Bison are gregarious animals that form large groups or herds.

them back to the Flathead country nursing them on the way by lactating horses. Walking Coyote later sold them to Michel Pablo. By 1906, Pablo had 600 bison. In 1908, the herd was dispersed and provided the seed stock for the National Bison Range at Moise. Banff National Park in British Columbia and Yellowstone Park also received bison from Pablo.

Bison Impacts on the Prairie

The impact of the bison on the ecology of the prairie was tremendous. As mentioned before, the bone count between 1868 and 1881 indicates that 31 million bison were killed. However, this does not allow for natural recruitment during the period of slaughter (and bone accumulation) which occurred over at least 50 years.

Although some ecologists have held the view that bison naturally rotated themselves so that excessive range use did not occur, this is not substantiated by old accounts. Journals of the Hudson Bay Fur Company provide strong evidence that the Northern Great Plains bison used the same area year after year until the forage was completely depleted and then of necessity moved to other areas.

R.E. England and A. De Vos (JRM, 22:87-93) reviewed considerable information suggesting that the bison did overgraze the prairies at least in some areas. They reported that several journals of the old fur trappers mention high populations of bison and then allude to poor range conditions. Records of the Hudson Bay Fur Company described overgrazing in western Canada to the point there existed no forage for their horses. Paul Kane described that range condition around Edmonton, Alta., in 1846. He stated bison numbers were so high the dust nearly choked him to death. Ranges in this part of Alberta presently support a lush stand of mid grasses. M. Lewis, in his 1814 account of the Lewis and Clark expedition, described large cactus patches so thick that travel was impeded in many parts of the Montana prairie country. He also mentioned traveling through large areas dominated by thick stands of big sagebrush. Both species are associated with severely overgrazed range in the area discussed. L. Kirsch and D. Kruse (Tall Timbers Wildl. Conf. 12:289-303) reviewed substantial information indicating that bison may have heavily overgrazed some parts of the prairie country of Kansas. However, our examination of available literature does suggest that once the bison left an

area, they did not return for several years, which gave the range time to recover. Considerable evidence was evaluated by Kirsch and Kruse that prairie grouse and waterfowl populations were kept at low levels because of the lack of cover where heavy overgrazing by the bison occurred. It is important to recognize that prairie grouse, waterfowl, and bison evolved together. Therefore, it is unlikely that bison caused any long-term or permanent damage to these species.

Bison grazing apparently benefited the pronghorn antelope. Several studies have shown pronghorns are primarily forb and shrub feeders while bison feed almost exclusively on grasses. Heavy grazing by the bison apparently maintained a low vegetation with a high forb and shrub component preferred by the pronghorn. The fact that large populations of bison and pronghorn existed together under pristine conditions suggests that at least moderate overgrazing by the bison made conditions more suitable for the pronghorn. Very little information is available concerning the impacts of bison on other ungulates such as deer or elk. Because of their rubbing activities, bison may have retarded tree establishment on the prairies. This could have been detrimental to deer and possibly elk. Conversely they may have benefited deer by changing vegetation composition from grasses to forbs and shrubs. Some evidence is available that the bison maintained conditions more suitable for many small mammals such as prairie dogs and ground squirrels. However, so few accounts are available regarding these animals that no real conclusions can be drawn.

Present Status

Currently there are probably around 5,000 to 6,000 bison in the United States, and populations are increasing. There are many privately owned herds in various parts of the United States. Yellowstone National Park in Wyoming, the Moise National Bison Range in Montana, and Wichita Mountains National Wildlife Refuge in Oklahoma are the primary populations in government ownership in the United States. The Wood Buffalo National Park in the Northwest Territories supports the primary bison population in Canada. The Wichita National Wildlife Refuge in Oklahoma provides the spectator with the best opportunity to view bison as they occurred under pristine conditions on the North American prairie.

July Ranch Management Field Day

July 13 will be a red letter day for the Hills Simmental Ranch at Mankato, Kansas. The family owned and operated ranch will host the KS-NE Ranch Management Field Day. Helping co-sponsor the field day will be the Kansas Chapter and Nebraska Section SRM.

Paul Ohlenbusch, field day chairman, called the July 13th affair "a unique effort and a unique opportunity."

Ohlenbusch, extension range and pasture management specialist, Kansas State University, knows of no similar event that has drawn upon the resources of two states. Since the idea of a two-state field day was proposed a couple of years ago, 18 local and state agencies and organizations interested in grassland management and cattle production have agreed to help plan for, participate in and support the field day.

Ohlenbusch calls the Hills "Innovators who aren't afraid of trying new ideas and of taking risks. Many of the things done on the ranch are usually read or heard about but not seen."

Tour topics will include seeded and native range managed together, wildlife and recreation, timber stand improvement, cool season pastures, limited irrigation for silage crops, replacement heifer development, cow herd help, performance testing, working corrals, forage sorghum and corn varieties for silage, and specialized fencing/daytime calving.

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