



## INFORMATION BULLETIN

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Northern Range Bison at Yellowstone National Park

### BACKGROUND ON BISON NUMBERS:

...In mid-winter 1988-89 there was an approximate total of 2,700 bison in or near Yellowstone National Park. Between 850-900 of these were on the northern range--some on that part of the range inside the park, some on the part outside the park, in Montana. In addition to this northern range herd, two other subpopulations of bison are found totally within the park.

...An air survey of February 24, 1989 indicated a minimum of 285 bison on the northern range inside the park, most of the northern range herd having moved out of the park. As of April 19, 1989 (the final official count taken by the State of Montana), a total of 569 bison had been killed by Montanans.

...By April 1, all bison of the northern range herd that had gone out of the park and were still alive--between 280 and 330--had returned to their core northern range area which is within the park. The other two subpopulations (with a total of about 1,800 bison) remained in other sections of the park.

### BACKGROUND OF ENVIRONMENT, INCLUDING WEATHER:

...Yellowstone is located along the high plateau of the Northern Rocky Mountains where winters can be severe. For all animals living in the park or other mountainous areas, winter can be characterized as cold and barren, and often leading to death. (The old, diseased, very young, and lame are especially susceptible to death during severe winters. In many wildlife populations, a 10% mortality may be the minimum turnover.)

...The last decade of winters in Yellowstone has been mild relative to the average winter there. This mildness permitted many bison that would have died naturally during a normal or severe winter to survive. Summers during the period of 1983 through 1987 were unusually wet. This condition helped create an abundance of forage for the animals--another factor in promoting longer life for those that would have died under "normal" conditions where there would have been less food. As a result of both factors, there was an approximate 26% increase in the bison's numbers during the five year period 1985-1989.



### WILDLIFE AND VEGETATION DIVISION

National Park Service  
U.S. Department of the Interior



...The current winter of 1988/89 has been a severe one for the bison and other ungulates. It was preceded by extreme drought during the summer of 1988--a drought that broke the dry winter/wet summer cycle in the Greater Yellowstone Area (GYA).

...Summer range forage occurs at higher elevations where the flowering/seeding cycle occurs around mid-August. It thus was significantly affected by the severe summer drought: comparative measurements suggest that 1988 summer forage was reduced by 60-80 percent due to the drought.

... Winter range forage, which grows at lower elevations, was less affected by the drought because it finishes its flowering/seeding cycle about mid-June and was able to benefit from the unusually heavy April and May 1988 rainfalls, which were 155 percent and 181 percent of normal, respectively. Because of this, winter forage estimates were only 22 percent lower than usual. (Actual winter forage reductions may be somewhat greater than this estimate, because measurements of the late season grasses could not be taken. Due to the fire emergency in the park, personnel were not available to take forage measurements.)

...While approximately 32% of the northern range burned during the Yellowstone summer of 1988 fires, only 9% of the grasslands and sage burned. The fact that, as noted above, summer forage losses from drought are estimated at 60-80 percent and winter forage losses from drought at 22 percent or greater, while only 9 percent of the northern range's grasslands and sage were burned in the fires, has led scientists to conclude that, overall, the drought was a more significant factor in forage reduction and subsequent bison movements than were the fires.

#### BACKGROUND ON BISON MOVEMENT INTO MONTANA:

...Historically, bison have been known for their continual movements and migrations.

...Northern range bison have taken long treks to the vicinity of the park's boundary in recent winters, especially near Gardiner, Montana. Major influences of this activity appear to be the animal's use of the plowed road for travel (leading directly to Gardiner), its gregariousness (the well known "herding"), and its acquired knowledge of new areas. This past September, major movements of the bison were predicted by park staff as it concluded that the increase in animal numbers, along with the influences of the summer drought and fire, would cause a larger number of bison than ever to leave the park during the winter. This happened.

...For more than a decade the park staff tested ways to contain the bison so they wouldn't leave the park. Fencing was found impractical as the bison either trample it or go to the end of it (and Yellowstone National Park's northern range boundary is many miles long). As a matter of fact, no means has been found to hold back bison, which are capable of kicking in the sides of boxcars and trekking around any obstacles placed in their paths. Where bison stay behind a fence it is because they want to stay behind that fence; if they want to leave an area, they will leave. More importantly, should anything be

put in place that would affect this boundary, the park would be in serious trouble ecologically, as it would also keep other migratory animals (e.g., elk, pronghorn, mule deer) from moving in and out of the park.

...The National Park Service does not have legal jurisdiction over what happens to bison that leave the park.

#### BACKGROUND ON MONTANA STATE PERMITS FOR HUNTING BISON:

...The State of Montana for some winters has granted permits to hunters in the State to shoot bison that leave the park. The State felt the need to initiate the hunting program mainly because of two reasons. One was that many people in towns near the park--Gardiner, Cooke City, West Yellowstone--were unhappy with having the huge (one ton) animals tromp on their outdoor property and eat their lawns. More importantly, the State of Montana feared the disease, brucellosis, which is endemic (in the disease sense) in the bison, because of its potential for transmission to cattle which constitute an important industry in the State.

#### BRUCELLOSIS DISEASE IN BISON:

...Bison in Yellowstone National Park carry the causative organism, Brucella bacterium, for the disease Brucellosis (undulant fever, Bang's disease). In the Yellowstone bison the disease is endemic--that is, it has been in the bison population for some time. While it may have some individual physiological effects, it does not appear to prevent a full-term pregnancy for female bison, the common and serious effect among some other animals, such as cattle. It was in the late 1960's, when only a very few bison left the park, that the resource managers of the park realized that the organism posed a degree of livestock economic concerns outside the park. At that time, working with only a very small number of bison, they put into effect a boundary control program that was successful. However, since the exceptionally severe winter of 1975-76, when more than 80 bison moved up toward the boundary of the park, and new means of containment were tried with no success, no means of keeping the animal in the park have been found.

...Today there is a lot of concern about the brucellosis issue because Montana is brucellosis-free--an important fact to livestock industry economics. Standard brucellosis eradication measures have been recommended to the NPS: test all animals, remove the positive reactors, and vaccinate calves. These methods work well and are appropriate for livestock, but they would have disastrous effects on Yellowstone bison. And such a level of bison removal would have major ecological effects parkwide. One effect would be that a major food base for dependent meateaters--including the grizzly bear--would disappear on some winter ranges for decades, it is thought. In any case, as the brucellosis causative organism is also present in elk and occasionally other hosts, it is probably unlikely that its total eradication from the area could be accomplished.

#### CURRENT SITUATION:

...This winter, the State of Montana Department's of Fish, Wildlife and Parks issued 250 permits for "hunting" the bison that leave Yellowstone National Park. A permit fee for resident Montanans cost \$200.00 and was obtained through lottery drawings. After the initial 250 animals had been shot, an

additional 250 permits were issued. By February 28, 1989, Montana permit hunters had removed more than half of the estimated 900 early winter northern range bison north of the park's boundary. According to the final count given on April 19, 1989, 569 bison had been killed by Montanans, 73 of these by State game wardens.

...The snow melt in the area began the week of March 6, and by March 10, the bison were returning to the park in large numbers. Therefore, the State of Montana stopped calling in hunters. By April 1, all remaining bison that had moved outside Yellowstone National Park's northern boundary had returned to their core northern range area within the park.

#### THE FUTURE:

...An Ad Hoc Brucellosis Technical Working Committee was recently established to study this difficult issue. Along with technical representatives of the National Park Service, the group is composed of several States' veterinarians, brucellosis researchers, and a wildlife research veterinarian. The group is to recognize both wildlife and livestock values while conducting its study.

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