

Yellowstone Elk and Bison: A Mid-winter Report

By Paul Schullery

Yellowstone Park natural resource issues are once again in the news. Media attention is now focusing on both the hunter harvest and natural mortality of elk and bison on the park's northern range.

The situation is typically complex, and much reporting is regrettably simplistic. A brief summary of the situation follows. Readers are of course welcome to contact the park for more details.

Since the late 1960s, Yellowstone's wildlife populations have been under experimental management to determine to what extent these populations are "self-regulating," that is to what extent human manipulation of their numbers is necessary. Elk especially have long been the focus of controversy in Yellowstone Park. Both elk and bison were drastically reduced within the park in the 1960s for a variety of reasons, relating especially to contemporary perceptions of the condition of the northern range. Current management seeks to test a series of hypotheses concerning the interrelationships of elk and other ungulates on the northern range, as well as to study the animals' effects on their range.

The 1968 winter census of elk showed 3,172 animals. Without reductions, the elk population grew to a counted 12,607 by 1975, and stayed between 10,000 and 12,000 until the early 1980s. The January, 1982 count was about 16,000. By January of 1988, the herd had increased to a counted 19,000.

There are three bison herds in Yellowstone Park: the Pelican Valley herd, the Mary Mountain herd, and the Lamar herd on the northern range. During bison reductions in the 1960s, in cooperation with a federal brucellosis control program, the NPS reduced the northern herd to fewer than 100 animals. Brucellosis is a bacterium that causes abortions in domestic cattle, and there has long been a fear that Yellowstone bison would infect livestock near the park. Since the conclusion of the 1960s reduction program, the park's bison population has grown to about 2,700 animals.

This winter, 1988-1989, both elk and bison have migrated down the Yellowstone Valley and out of the park in unusually high numbers. Media reports have routinely ascribed these movements to the effects of the fires of 1988, saying that the animals had no unburned range, and thus were forced to leave the park. This is an unfortunately casual interpretation of events.

Elk and bison occupy and use new range in fascinatingly different ways. In summary, while the elk of the northern herd have gradually "niched in" to available range, the bison, because of their gregariousness, are more likely to suddenly move en masse to a different part of the available range. This unpredictability is important to an understanding of the present situation. These are not uniformly stable movements, and one should not have the impression that the bison and elk are engaged in stately, picture-perfect textbook migrations. We are still learning, after all these years of research, just how these things work.

For the past 10 years, Yellowstone's northern range has experienced a series of 10 relatively mild, open winters, allowing high survival rates among animals that normally would have succumbed to winter stress.

The summers of 1983-1987 were unusually wet, providing these survivors with a rich forage base and further bolstering the population. This temporary increase in the northern range's carrying capacity resulted in the elk population increase from 16,000 to more than 19,000, and contributed to the increase of the bison herds to a total of 2,700. The summer of 1988 witnessed one of the most severe droughts in Yellowstone's recorded history. That, coupled with the fires, substantially reduced forage.

Though it is difficult to quantify the effects exactly, it is probable that the drought's effects on the northern range were much more significant than the effects of the fires. As Dr. Mary Meagher, an NPS research biologist, has said, drought affects everything; fire only affects what it burns. Media reports that 34 percent of the northern range burned seemed to stem from a desire to use the most impressive number available. Much of that 34 percent is forested land, not of special concern in trying to assess how much forage is available. Only about 10-11 percent of the primary grazing areas – sage, meadows, and grasslands – on the northern range was affected by fire, and the burned areas were not necessarily the most important to the animals. The winter of 1988-1989 is the first in 10 years on the northern range to approach average severity and snow depths. A decade of mild winters means, among other things, that a large percentage of the elk now living on the northern range have little or no experience with even normal winter conditions.

Thus it was that a complex suite of factors over nearly a decade set up the present situation. As one state of Montana biologist put it, many of these animals were living on borrowed time before this winter began.

The annual late elk hunt, which harvests some portion of the northern herd most years, took 2,351 animals between December 9 and February 20; the hunter success rate was 94.6 percent. In 1985, the state of Montana established a sport hunt to eliminate bison that moved north from the park. The previous winter, 1984-1985, Montana wardens had shot 88 bison to keep them from wandering north down the Yellowstone Valley. Prior to the present winter, hunter harvests were usually a few dozen animals or less. But over the past few years, more and more of the northern herd has learned the migration routes, and these highly gregarious animals have developed a strong urge to move down the range even in mild winters when food was readily available on the upper end of the winter range. This winter, most moved early, and more than ever before left the park. As of Feb. 27, 1989, 515 bison had been taken in the Montana hunt, 448 by hunters and 67 by state wardens. Permits had been issued for another 250, though it seemed unlikely that all the remaining animals in the northern herd would leave the park.

As of February 24, 301 elk carcasses – the result of natural mortality – had been identified on the northern range in the park. Compared to the hunter harvest, that number might seem small, but the time of heaviest winter mortality is just approaching, and scientists, managers, and media are now waiting to see what the remainder of the winter holds. As of that date bison natural mortality was low, no more than 5 carcasses

having been sighted.

It is too early to tell what percentage of these herds will die this winter. The March-April period is critical, and weather conditions could turn favorable to survival or worsen. But at this stage, a few general observations are in order. Sensational headlines aside, Yellowstone's bison and elk are not threatened with doom. They are experiencing one of a multitude of possible winters, just as they have done for centuries. The irony of present concerns is that most of the time the park is criticized for having "too many" of these animals. Even the northern bison herd, which probably will be reduced by hunting to a small fraction of its former numbers, has historically proven its resilience and ability to repopulate park ranges in a matter of years. And visitors will still have numerous opportunities to observe some of the 1,800 bison in the park's other two herds. The ecological effects of suddenly removing most of the northern herd from its range will merit attention, as will the process by which the herd reestablishes itself (and, alas, relearns the migration routes down the valley to the Montana state line).

But there are other concerns than the survival of wildlife populations. The bison is a powerful and emotional American symbol, and the public does not take kindly to television news footage of hunters crippling cow bison 30 yards away. The bison hunt has been very popular among hunters, but has outraged animal rights groups, and has revealed the political inadequacies of current understandings among the various agencies trying to manage these animals.

Humanitarian concerns also may pose a serious threat to park experimental management. Some large segment of the public is uncomfortable with the idea that winter mortality must occur at all. Pressures to feed park animals have so far been resisted, partly because there is an unprecedented unanimity of opinion among agencies and independent observers that feeding would be a bad idea. The state of Montana, the USFS, the NPS, and a special panel of independent ecologists convened in the fall of 1988 to assess just such issues, all agree that feeding would, among other things, short circuit important natural culling processes, concentrate animals on feed grounds and increase risk of disease transmission (elk also carry brucellosis, at lower percentages than bison), and do irreparable harm to numerous scientific research projects that depend on the uninterrupted function of natural processes within the park.

But ecological and scientific issues are not the only ones being dealt with here. This new "Yellowstone problem," coming so close on the heels of the great fire controversies (which are by no means over), again puts Yellowstone Park and its ecological setting in a political and even cultural spotlight, as the public is once again confronted with complex natural resource issues that are not widely understood beyond resource management circles. The stakes are high, and it promises to be an interesting spring and summer.

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