

**THE DOCUMENTARY RECORD OF WOLVES AND RELATED
WILDLIFE SPECIES IN THE YELLOWSTONE NATIONAL PARK AREA
PRIOR TO 1882**

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The extracted report is followed by an addenda of additional historical material and a short errata note section, starting on page A-1.

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Abstract: Since early in this century, there has been disagreement over the extent to which the large mammals now inhabiting Yellowstone National Park were present in the park area prehistorically. This issue has special relevance in the wolf restoration dialogues, because some opponents of wolf restoration propose that neither wolves nor their prey were common in present park area prehistorically. Evidence of wolf presence is sought in these investigations, but evidence of prey abundance is recognized as an important indicator that wolves were also present. Investigators in numerous disciplines have examined the late Holocene (paleontological and archeological) and early historical record of faunal conditions in the Yellowstone National Park area, but have only lightly exploited the available historical literature from the period prior to 1880. Previous investigators relied on 25 or fewer accounts prior to about 1880 for their information base. The present paper makes use of 168 sources in the period between 1806 and 1881, many of which supplement, complement, corroborate, and even contradict the previously used sources. The evidence is not of sufficient resolution to allow more than general statements about the abundance of most species of wildlife then as compared to now. However, the presence and relative abundance of wolves, elk, bison, mule deer, bighorn sheep, and pronghorn is demonstrated; these species were common and widely distributed through the present park area and the Greater Yellowstone ecosystem. The evidence provided in these 168 sources demonstrates the following: (1) Wolves were residents of the area and were distributed throughout the Greater Yellowstone Ecosystem; (2) A variety of other predators and scavengers, including grizzly bear, black bear, mountain lion, wolverine, coyote, fox, and smaller species were also present and widely distributed, though in some cases their relative abundance appears to have changed; (3) More than 90% (51 of 56 statements) of all observers who commented one way or the other on the abundance of game in the park area expressed the belief that it was very abundant; (4) Elk, bison, mule deer, bighorn sheep, pronghorn, and moose were common in appropriate habitats in the Greater Yellowstone Ecosystem in this early historical period; (5) The present park area served as winter range, apparently for large numbers of elk; (6) Extensive killing of park wildlife, both predators and herbivores, in the 1870's may have had more far-reaching effects on subsequent ecological conditions than has previously been suggested. Additional comments are provided on the historiographical utility of the material analyzed.

Key words: ungulates, gray wolf, beaver, Yellowstone National Park, ecological history.

INTRODUCTION

Since early in this century, numerous opinions have been expressed about the abundance of large mammals in the park and surrounding areas, now known as the Greater Yellowstone Ecosystem (Fig. 1). More recently, public dialogue has focused more specifically on whether or not wolves and their prey, especially ungulates were abundant or even present prior to the establishment of the park in 1872. This paper briefly reviews the paleoecological and archeological record of large mammal presence, and exhaustively reviews the historical record of mammal presence and abundance prior to 1882.

This analysis will concentrate on the documentary record of wolves, other predators, and large mammal prey species, especially elk, in the period between the first recorded EuroAmerican visits to the Yellowstone area and 1882, the year before hunting became illegal in Yellowstone National Park. The record for wolves is provided to clarify the history of this predator in the Yellowstone area. The record for prey species is provided because it is generally believed in the scientific community that if prey were abundant, so were predators, including the wolf (Keith 1983).

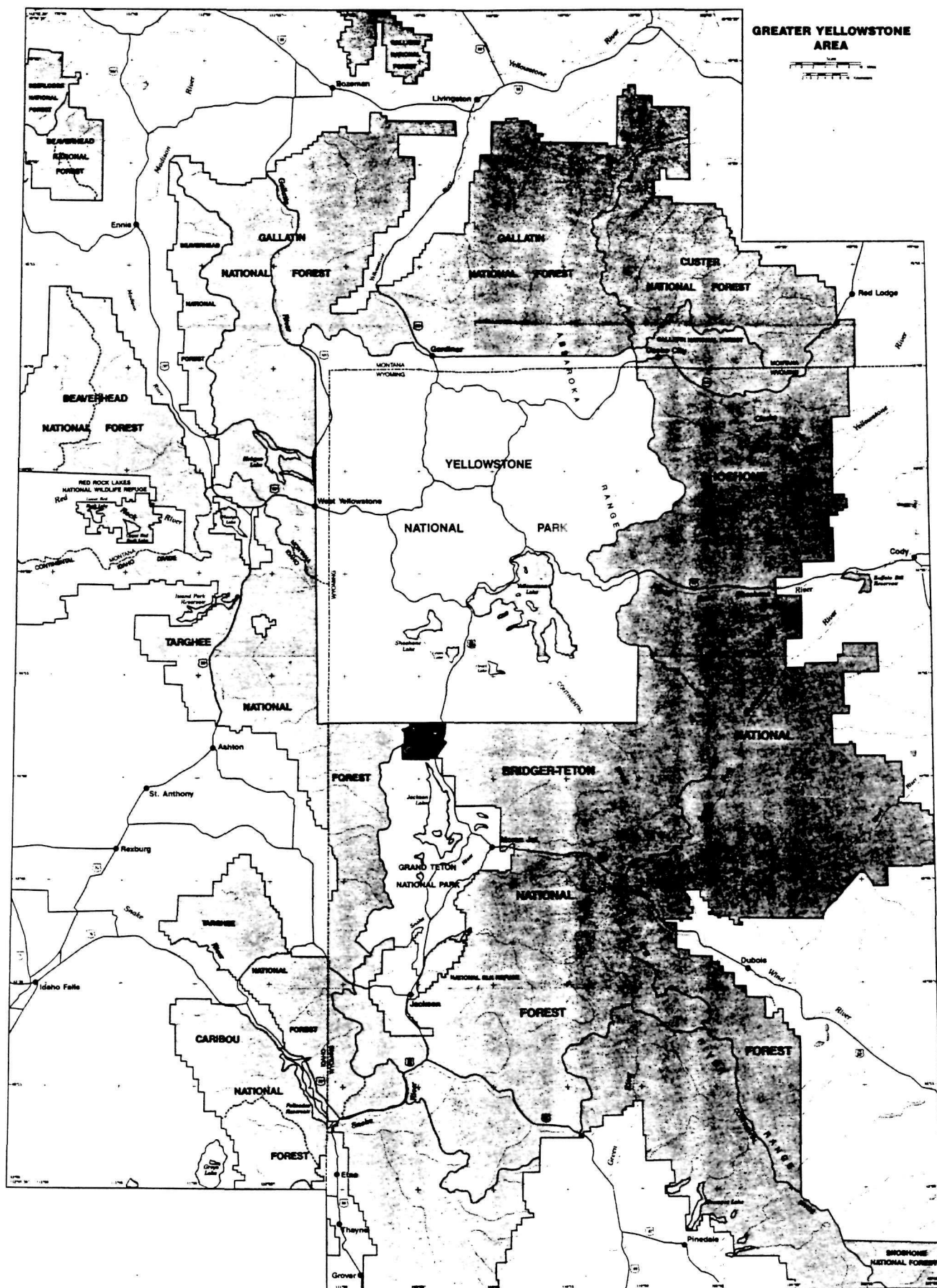


Fig. 1. The Greater Yellowstone Area. Greater Yellowstone Coordinating Committee.

The scope of the analysis is restricted to the years before 1882 rather than 1900 or 1930 or some later year, partly in the interest of keeping the narrative to a manageable size, but more because this early period is of greatest interest. Past attempts to establish a clearer idea of the numbers of wolves and elk have concentrated on the years prior to 1880, the period when the least was published about park mammals.

It is our fondest hope that the work we have begun here, in gathering as large as possible an informational resource on early Yellowstone fauna (and flora, for that matter), can continue. A work several times the length of this one is necessary in order to fully explicate the reported conditions of the park in its earliest documented times.

We thank Norm Bishop, Wayne Brewster, Mark Johnson, John Mack, Mary Meagher, Tom Tankersley, and John Varley of the National Park Service in Yellowstone National Park for help with specific questions. As usual in our historical research, Beverly Whitman and Barbara Zafft, of the Yellowstone Park Research Library, helped in many ways. Christina MacIntosh translated the Sequin account from the French. The manuscript was read and commented on by Wayne Brewster, National Park Service, Yellowstone, Douglas Houston, National Park Service, Olympic National Park, Kenneth Cannon, National Park Service Midwest Archeological Center, Dan Flores, Texas Tech University, and Susan Rhoades Neel, Montana State University. Their many comments and suggestions significantly improved not only this paper, but our sense of direction for the greater work that we hope will grow from this one. Sarah Broadbent, National Park Service, Yellowstone, materially improved the presentation of this paper with her attention to countless editorial details.

Previous Analyses of the Prehistoric Fauna

Previous investigators have approached the subject of the early faunal distribution and abundance in the Yellowstone area from several directions. Hadly (1990), reporting on the first mammal-related paleoecological investigation in Yellowstone National Park (Lamar Cave, on the Northern Range), presented evidence to refute the argument that elk were not prehistorically abundant in the park area before the late nineteenth century:

This argument is refuted by evidence from Lamar Cave. Elk occur in 7 of 10 levels from the cave, both above and below a level date 960 ± 60 yr. B.P. Elk is also the most common ungulate in the Lamar Cave faunal assemblage. The occurrence of elk in the Lamar Cave fauna establishes its presence in Yellowstone prior to historic disturbances, and is thus significant to park management and to the diachronic study of ecosystem dynamics. The elk remains from Lamar Cave are primarily juvenile, suggesting further that the area was used by elk in the past much as it is today (Hadly 1990:98-99).

The last observation refers to the Lamar Cave area's present use by elk as a calving ground; high predation on newborn calves on the Northern Range, especially by coyotes (Singer and Harting 1990) and grizzly bears (French and French 1990) has recently been

documented, suggesting the area would still be a productive source of juvenile elk remains, as it apparently was in the past.

Hadly, concluding that the large mammalian fauna of the Lamar Cave area has been relatively unchanged over the past 1,000 years, also pointed out that, "the presence of wolf remains in Lamar Cave prior to 960 ± 60 yr. B.P. also shows that wolves were native to Yellowstone, another matter of popular debate." (Hadly 1990:117)

Wolf remains at the Lamar Cave consisted of 2 metapodial bones (toe bones), presumably from the same animal. A sample size of 1 is not conclusive proof of anything about the abundance of the wolf in prehistoric Yellowstone, but we find Varley's (1991) informal observations on the subject persuasive: "This is the first paleontological dig in Yellowstone National Park. Predators are the least common finds in sites like the Lamar Cave, because predators are always much less common than prey. The odds that the first dig would turn up a wolf if wolves were not common are infinitesimal" (Varley 1991).

One other addition to the paleoecological record was the discovery more than thirty years ago of elk bones and an elk skull, embedded about 30 m. below the surface in McCartney Cave, an extinct hot spring opening at Mammoth Hot Springs (Condon 1954).

Other inferential efforts have been made to address the question of prehistoric fauna in Yellowstone. Whitlock et al. (1991) examined pond sediments of 8 ponds on the Northern Range, in order to determine if any significant changes had occurred in erosion rates during the historical period:

In Yellowstone Park the paleoecologic record will register the episodes of heavy use by elk, bison, antelope, and deer in predictable ways. If ungulates had been the sole agent of environmental change since the park's formation, the following changes would have been expected during the periods of intense use: (1) an increase in silt derived from eroded hill slopes or from trampled lake margins; (2) a decrease in the pollen of browse species favored by ungulates, namely aspen, willow, alder, and birch; (3) an increase in the pollen of weedy plants associated with soil disturbance, including ragweed and various chenopods; and (4) an increase in indicators of eutrophic conditions in the lake, caused by increased manuring near the lake shore. In reality, of course, the model is by no means so simple, because other environmental changes have occurred. Most notably, climate has fluctuated, fire frequency has varied, and beaver populations and their utilization of riparian plants have changed. Any landscape reconstruction has to consider the synergistic effects of all factors" (Whitlock et al. 1991:292).

They could not find meaningful correlations of erosion rates with ungulate numbers, nor could they find any "synchronicity in the timing of pollen changes that would suggest a regional response to widespread environmental perturbation" (Whitlock et al. 1991:296-

301). These findings provide inferential evidence that elk populations on the Northern Range did not change dramatically in the several hundred years prior to the establishment of the park or until the manipulations of the population by park managers (such as the elk reductions of the 1960's).

Paleontological and archeological research in the region around Yellowstone National Park sheds some additional light on the story of prehistoric fauna in the park. The paleontological and archeological record for the Northern Rocky Mountains and adjacent regions, especially the area of Wyoming, Montana, and Idaho, has been reviewed completely or in part by Walker (1987), Graham et al. (1987), Hadly (1990), Kay (1990), and Cannon (1992). In general, elk (the species of foremost concern in the dialogues over prehistoric Yellowstone fauna) are represented in relatively few of these sites: for example, 9 of 28 sites in Montana (Graham et al. 1987), and 7 of 74 sites in Alberta, Saskatchewan, and Montana (Walker 1987).

Regarding the Wyoming sites, Connor et al. (1991) recognized a possible bias "toward sites that may not have been conducive to the deposition of elk (e.g., rockshelters and caves)," but were still useful. Cannon (pers. commun.) elaborated on this point:

It is interesting that few sites have evidence of elk and none of the assemblages is dominated by this species. This may imply that elk were not abundant on the northwestern Plains prehistorically, or they were not heavily exploited by prehistoric groups, and are therefore underrepresented in these assemblages (Cannon pers. commun. 1991).

Hadly 1990:99) noted that "from the late Holocene records of Wyoming, Montana, and Idaho, only 4 of 19 did not contain elk." This may indicate a change in elk abundance just prior to the advent of European humans in the region. Cannon offered a tentative hypothesis that a late Holocene (but prehistoric) growth of regional elk populations may have occurred because competitors became extinct, but concluded that more study is needed (Cannon pers. commun. 1991).

There is disagreement among archaeologists over relative prehistoric abundance of large mammals in Greater Yellowstone and in the park. The view that elk were rare in the Yellowstone area has persisted among archaeologists (for example, Frison 1978, Wright 1984, Cassells 1983) who found little evidence of elk in regional archeological sites. On the other hand, Lahren (1971, 1976) reported a variety of species, including elk, mule deer, and bison, at the Myers-Hindman site near present Livingston, Montana, persisting in the archeological record throughout the past 9,000 years, and Love (1972:12-14) maintained that elk, bison, mule deer, pronghorn, and bighorn sheep occupied the Jackson Hole area prehistorically, though he thought possibly in lower numbers than in the historical period. Condon (1948:41) reported at least one elk bone in a prehistoric burial site near Fishing Bridge.

The archeological record of prehistoric fauna of the Northern Range is quite limited because little work has been done. Cannon (1992) estimated that as of 1992 "less than one percent of the park (0.19%) has been intensively inventoried for archeological sites." Wright (1982:11) stated that "Yellowstone National Park is one of the poorest known archeological areas of North America." We cannot overstate our concern that this extremely small archeological research effort has somehow given at least some commentators extraordinary confidence that large mammals were rare in the park's prehistory. Attempting to "prove" that large mammals were rare on the basis of this slight amount of study is as unjustifiable an exercise as using only a few of the early historical accounts of the park to do the same.

But some archeological work has been done. Malouf (1958) and Hoffmann (1961) reported elk remains at a wickiup site on Lava Creek, though the bones were on or near the surface:

The center of each wickiup floor (standing and fallen) has been dug out by unknown persons. However, stones and charcoal still left inside the wickiups reveal the presence of true hearths. We recovered several large pieces of elk bone consisting of femur, vertebrae and scapula from inside the wickiups (Hoffmann 1961:38).

It is not clear from this account if the bones were at the bottom of the area that had been "dug out," that is, if they were beneath the soil surface, or if they were elsewhere on the wickiup floor.

Taylor (1964), basing his report partly on Hoffmann (1961), reviewed more archeological sites. He reported few bones in the sites, but many hunting-related tools, such as scrapers and projectile points, that indicated to him that at times during the past 10,000 years, as environmental factors allowed, hunting of large mammals was practiced in Yellowstone by these people. This was similar to the conclusions of Hoffmann, who did not see the lack of bones as proof of lack of hunting activity:

The tools include projectile points, knives, scrapers, choppers, drills, gravers and various types of hand stones. We found very little cut bone with the artifacts. The sites where such bone was found are mainly in the northern part of the Park along the Lamar, Gardiner and Yellowstone Rivers. The relative absence of bone in the southern and central areas of the Park may be due, in part, to the greater moisture content of these areas in contrast to that of the northern area. We found no decorated bone in the Park although we recovered stone gravers, tools used to incise bone, from sites along the Yellowstone River in the area where it leaves the northern Park boundary (Hoffmann 1961:20-21).

Taylor and Hoffmann concluded that use of the Yellowstone area was at times significant, and varied greatly with climatic factors that influenced wildlife abundance.

Haines (1962), reported an unspecified large mammal bone at the Rigler Bluff site near Corwin Springs, Montana, north of Yellowstone National Park but on the Northern Range. Wright excavated 3 sites on Swan Lake Flat, finding mule deer remains, and a site on the Gardner River east of Mammoth Hot Springs, finding unidentified ungulate bones and beaver bones (Wright 1982). Wright (1984:25) also concluded that elk were rare prehistorically in the southern-Yellowstone-Jackson Hole area. More recently, Connor et al. (1991) reported elk remains in prehistoric sites in Jackson Hole, but drew only tentative conclusions:

Although not a definitive refutation of Wright's thesis, the presence of elk from prehistoric deposits does provide tantalizing evidence of its early occurrence in the Jackson Hole region (Connor et al. 1991:276).

In 1989, Cannon (pers. commun.) found elk, bison, and bighorn sheep bones at a site on the south bank of the Yellowstone River near Gardiner, Montana. An archeological excavation currently underway at Sphinx Creek, in Yankee Jim Canyon north of the park has also produced a variety of large ungulate bones (W. Allen, U.S. Forest Service, pers. commun. 1992).

This review of archeological work on the Northern Range, and of the archeological record of large mammals in the Greater Yellowstone Area, is only a brief prologue to the more detailed review produced for the present volume by Cannon. Among other things, Cannon concludes that "the prehistoric record for grey wolves in the region is irrefutable" (Cannon 1992). Laundre (1992), in an analysis based in good part on Hadly (1990), agrees that the wolf is native to the park area.

Another approach to understanding the prehistory of Yellowstone fauna has been to examine historical photographs. Houston (1982) and Kay (1990) examined many early historical photographs, and reached opposing conclusions: Houston's examination of Northern Range photographs, for example, persuaded him that early park photographs showed evidence of high lining of trees, while Kay found what he saw as evidence of no high lining where it should have been if ungulates had been abundant. Kay further saw the condition of willows and other shrubby vegetation in early park photographs as proof elk were not present in numbers sufficient to use that vegetation as they do now, while Houston was inclined to attribute changes in this vegetation to changes in the fire regime.

Aspen have been of special interest in these analyses (1981). Kay (1990) for example, offered early photographs of aspen whose bark has not been scarred by ungulates as proof there were no ungulates around to eat the bark. He also saw the inability of present aspen groves to grow beyond the shrub stage as proof that elk are now suppressing aspen that were free to grow prior to the historical period because elk were not common then.

Despain (1991), on the other hand, suggested, through an examination of sectioned recently dead aspen trees, that virtually all (49 of 50) were in fact browsed their first and second years, and were still able to grow to tree height. He suggested that 100 years ago, some combination of environmental or physiological circumstances permitted aspen to reach tree height, a combination that no longer exists in that form. Despain et al. (1987) suggested that a variety of factors, including climate, fire, and ungulates, may have all contributed to changes in aspen since the late 1800's.

The historical record from the period immediately following the period covered in the present report adds to this point. The historical record for the 1880's and 1890's indicates beyond any reasonable doubt that elk were in fact quite common when the present "generation" of large aspen trees on the Northern Range began to grow. Tree-ring studies indicate that most of the trees that are now old and dying are the result of a period of aspen generation in the 1880's and 1890's (L. Wallace, pers. commun., 1991, D. Despain, pers. commun., 1991, W. Romme, pers. commun. 1992), a period when historical records show large numbers of elk--thousands, that is--wintering on the Northern Range.

The extent to which continued market- and hide-hunting may have reduced the elk numbers, or altered their distribution, during the 1880's, remains open for additional study, but despite these activities, elk were numerous, even in winter during that decade. For example, The Bozeman Avant Courier reported on February 15, 1883, that "between the Mammoth Springs and Cooke City there are at least 5,000 elk" (Avant Courier 1883c). It should also be pointed out that these were wintering elk. Acting Superintendent Harris (1887) reported several thousand elk wintering in the Lamar Valley, and Hofer (1887) reported at least 4,500 elk wintering in the park, based on observations that did not include the Junction Butte-Lamar Valley areas. Hofer reported that some observers believed there were 7,000 to 8,000 in the park, but he considered these numbers too high (Hofer 1887:319).

Hofer (1887:295) also published a map of the park, showing the route of his February, 1887, ski trip, and the locations of elk. The word "ELK" was prominently placed on his map in these locations: between Bluff and Thistle Creeks on the east edge of Hayden Valley, between Trout and Alum Creek and between Alum Creek and the Canyon area ("ELK" appears twice in this area), on the northwest slope of Mount Washburn, at the western foot of Mount Norris, at the Lamar River near the mouth of Cache Creek, along Rose and Slough Creeks, near Junction Butte, south of Crescent Hill, north of the junction of the Yellowstone and Lamar Rivers, on both sides of Geode Creek, on Mt. Everts, in Gardner's Hole, and west of Sepulchre Mountain ("ELK" appears twice in this area). These observations indicate that despite sometimes heavy hide- and meat-hunting, the Northern Range in the park was able to maintain sizeable populations of elk. The locations of groups of pronghorn, bighorn sheep, and bison were also shown on the map, which may have been the first of its kind in Yellowstone history. Hofer also provided a numerical tally, as mentioned above.

It is worth pointing out that there are significant problems with some of the early administrative records of animal numbers. Acting Superintendent Anderson (1891) reported that the elk "have increased enormously, and most conservative estimates place their numbers at 25,000," though it is unclear just what areas Anderson included in his estimate, or from what levels he believed the elk numbers had increased (Houston 1982:213). He may have been suggesting or observing a real increase from the earlier period of intense hunting, or he may have been observing the animals becoming less wary--and therefore more countable--as the U.S. Army became skilled at protecting them from hunters.

Houston (1982), in evaluating the usefulness of these early administrative reports, noted that during the period from about 1891 until about 1918, "officials customarily referred to elk and most other ungulates as increasing in numbers, although the individual chronological estimates do not support this interpretation" (Houston 1982:11). What Houston was referring to, perhaps so politely that his meaning may be unclear, was that during the thirty-two year army stay in the park (1886 to 1918), elk numbers were often said to be increasing, but the reported totals do not reflect a steady or significant increase over that period. Complications arose because administrators included or did not include a variety of elk herds, some even outside the park, in their totals, so that between 1891 and 1915, the official elk population totals for the entire park varied from 25,000 to 60,000, but usually were between 25,000 and 35,000. (Houston 1982:213-216).

Those informational tangles aside, the historical record supports the idea that at least at some times in the past, such as the 1880's, aspen have been able to grow to tree height despite the presence of large numbers of elk. Exactly what this means for future interpretations of the prehistoric relationship of elk, aspen, and shrubby vegetation in Yellowstone is unclear, but it does seem to indicate that there was not a simple relationship among the 3 of them.

One obvious question that arises from the aspen issue concerns the timing of elk use of aspen and willow. For example, if climatic conditions were different in the early 1800's, the park may not have been as hospitable winter range as it is today, decreasing browsing pressure. An important part of our review of the historical record that follows is a search for indications of presence or absence of wintering ungulates in the present park area prior to the 1880-1918 period discussed above.

The early historical record of fauna in what is now Yellowstone National Park has only been lightly examined prior to this paper. Several views of that faunal community--its most common species and their relative abundance--have prevailed since the first European travelers came to the Yellowstone area.

As will be shown in the narrative analysis of early accounts, practically all travelers prior to 1882 who commented on the matter assumed wildlife to be abundant at the time of their visits, or to have been abundant prior to the establishment of the park. These

accounts reveal that it was the common perception of travelers and explorers prior to 1882 that the species of large mammals present then were essentially the same ones as now, except that wolves were present and moose were only common in the southern part of the park.

Around the turn of the century, however, a different viewpoint came into dominance, that the park had only been sparsely inhabited by large mammals prior to the settlement of the surrounding country by whites. This new viewpoint grew out of a broader, indeed national perception among many wildlife authorities that most large mammals had been plains animals and had been "crowded farther back into the mountains" (Graves and Nelson 1919) by loss of more desirable habitats to human settlement.

This viewpoint became common in Yellowstone. Skinner (1927) reviewed several exploration accounts from the period 1870 to 1875 and concluded that large mammals were abundant in the lower country, such as the plains and valleys, but were rare in mountainous regions. Skinner (1928), Bailey (1930), Rush (1932), and Grimm (1939) agreed.

This view was challenged very quickly. Murie (1940) reviewed more accounts than any previous investigator, especially noting the faunal accounts in trapper Osborne Russell's diary (first published in 1914, cited hereinafter as Russell 1955, as the edition edited by A. Haines contains the most useful commentary). Murie's observations on the abundance of large mammals in the park area form the foundation for later debates and so must be quoted at some length, to establish context for later discussions.

In analyzing the statements made by early explorers some points must be kept in mind. First, negative evidence must yield to positive evidence because failure to report game does not disprove its abundance. Difficulty in finding game where it is known to be abundant is a common experience. Acting Superintendent F. A. Boutelle in a supplement to the 1889 Yellowstone Annual Report makes the statement: "Visitors are sometimes a little incredulous as to the great number of large game animals in the park and complain that they have seen nothing." In more recent years I have heard a superintendent make a similar remark in regard to the abundance of elk in Yellowstone. While studying elk in Teton National Forest south of Yellowstone in 1928 where hundreds of elk were summering, there were periods, especially in late summer, when the elk were more in the woods and we had difficulty finding the animals. In 1938 I heard an old-timer, familiar with all details of the Jackson Hole elk country, say that he had been out on the elk summer range for more than a week to photograph them and had hardly found an elk. It is not at all surprising to me to read of early hunting parties failing to shoot game in good mountain game country. Some other factors operating to varying degrees to give the impression that game was originally scarce in the mountains are: (1) game in summer was largely at high elevations away from traveled routes; (2) game was often much hunted along the routes and may have been locally scarce; (3) large parties were

noisy, resulting in game being scared away; (4) large parties needed a big supply of game and at regular intervals, so it was not unexpected that they should run out of food; (5) although game was no doubt more plentiful in the plains country than in the mountains the contrast was accentuated by wider visibility and easier hunting on the plains; (6) as in present-day journals, game was often referred to only casually, so all game was not necessarily listed; and (7) some habitats in the mountains, such as the dense lodgepole pine, are poor in game today, and the naturalists of the 1872 Hayden party traveled through Yellowstone largely in this habitat and not through the best summer game country. So much for explaining the impression sometimes obtained that game was scarce in the mountains" (Murie 1940).

Several later investigators (Cole 1969, Lovaas 1970, Gruell 1973, Meagher 1973, Houston 1982, and Barmore 1987) generally reinforced or elaborated on Murie's interpretation. Houston (1982:23-24) quoted at length from about 20 pre-1883 accounts, which he found cumulatively persuasive that, "the Yellowstone area was historical summer range for large numbers of elk," that, "it seems likely to me that elk have inhabited these areas in winter for as long as postglacial climates and plant communities would support them," and that, "historical accounts also do not support the interpretation that large numbers of elk were compressed into a smaller area in the park" by hunting or settlement.

Houston also expressed his doubt that useful winter ranges would have remained unoccupied: "Complete occupancy of all available winter range, the most limited seasonal energy source, probably evolved early on. The alternative interpretation of Skinner (1928) and others is not supported by the records and also requires postulating an unlikely biological vacuum if elk moved from the area."

There are numerous instances provided by the historical record (as reviewed below) that pose the question Houston suggests, that is, with elk known to be abundant in the valleys and plains nearby, why would they not also use appropriate habitats in the park area?

Weaver (1978), concluded, based on the historical record, that "Wolves were members of Yellowstone's native fauna. Although few observations were recorded during the 1800s..., this could reflect either an actual low density of wolves or simply a lack of records" (Weaver 1978:7).

Koth et al. (1990) reported on a Delphi process analysis of important questions relating to wolf restoration in Yellowstone. They consulted fifteen leading experts on wolves and wolf-prey interactions, who "unanimously agreed that wolves were part of the original Yellowstone National Park ecosystem" (Koth et al. 1990:4-53).

Kay (1990), conducted an extended analysis of "20 first-person historical accounts of exploration in the Yellowstone area from 1835 to 1876." Compiling references to large mammals in three categories (game seen, game sign encountered or referenced, and game shot), Kay concluded as follows:

1. Bison were rare in Yellowstone suggesting that today's 2,000-3,000 bison do not represent the "natural" or "Pristine" condition of the park.
2. Moose were extremely rare or absent and did not inhabit areas where they are common today suggesting that present moose populations do not represent "natural" conditions.
3. In relation to elk, mule deer and bighorn sheep constituted a larger proportion of the total ungulate community when Yellowstone was first explored than is the case today.
4. None of the early explorers saw or killed any wolves or mountain lions in the Yellowstone area. Very few explorers even reported seeing wolf or mountain lion tracks or hearing them vocalize. This suggests that ungulates were not historically abundant in and around Yellowstone Park. Reports of abundant ungulates on the plains are invariably accompanied by observations of large numbers of predators....
5. Elk and other ungulates were not abundant throughout the Greater Yellowstone Area during the period of early historical records. Few animals were seen or killed and their sign was not observed very often (Kay 1990:288).

The dialogue over the prehistoric and early historical presence of wolves and prey species has of course been conducted in the popular literature as well as in the scientific literature. A variety of journalists, special-interest advocates, and other commentators have taken a full range of positions on the issues (Chase 1986, Sherwood 1988, Owens 1988, Mader 1989, Williams 1990, Fischer 1991). These sources also sometimes relied to one extent or another on interpretations of historical materials, though many just implicitly adopted a given position as if it were universally accepted fact.

Limitations of the Historical Record

It is difficult to be too cautious in interpreting the documentary record we have gathered here. The utility of it for scholarly purposes is well characterized by a remark made by Bernard DeVoto: "documentary evidence... is among the most treacherous phenomena in a malevolent world" (Stegner 1974). But it is one of the few types of evidence we have, and we can learn much from it if we use it cautiously.

There are 2 general areas of risk. One is in assuming too much about the degree to which these early accounts portray some ideal "pristine" state of the area environment. The risks of such assumptions are discussed in the following paragraphs. The second area of risk is in not fully appreciating the internal limitations of the information provided in the accounts. This second risk involves many specific circumstances that will be dealt with, and discussed, in the narrative analysis of the early accounts.

Was the Early Nineteenth Century "Pristine" in Greater Yellowstone?

The documentary record of the Yellowstone area from the 1830's until the establishment of the park (1872) and on to the first meaningful wildlife protection regulations (1883) is helpful in extending, by a few decades, our knowledge of conditions in the area. It does not, however, allow us to reach into some ideal "pristine" period, when the effects of

European humans and their technology were unfelt in the area. Even if it did, that is even if we had a documentary record of several decades from some period prior to the influence of European humans, we would not have then learned of some "right" or "appropriate" condition for the area to which we could compare modern conditions.

First, consider the matter of European influences on the Yellowstone area between 1830 and 1872. These influences may be difficult or impossible to quantify precisely, but they were so pervasive that we dare not disregard them. They center around European effects on Native Americans.

By the late 1700's, European settlement of the eastern United States had displaced numerous tribal groups, setting off a chain of emigrations that eventually altered Native American population distribution and densities (and, therefore, use patterns) on the Great Plains and in the Rocky Mountains (Waldman 1985, White 1978). At the same time, and as part of the same process--indeed, facilitating if not generating parts of that process--horses were acquired by most plains and some mountain tribes, reaching the Snake River plain by about 1700 and the Crow, Cheyenne, and other tribes to the east and north of Yellowstone shortly thereafter. Trade networks grew up, as Native Americans responded to new market economies introduced by EuroAmericans (Haines 1977, Hoxie 1989, Roe 1955, Janetski 1987).

The effects of these changes in American Indian distribution and use of the land are still being debated on a regional scale (Flores 1991). Their effects on the ecological setting in and around present Yellowstone National Park are barely even considered in the historical literature, much less in the ecological literature. But we can only assume that there were effects, and that they were possibly meaningful. Flores (1991) has suggested that the horse culture on the Southern Plains, for example, had been in place too short a time prior to its destruction for us to know if any equilibrium between hunters and prey (bison) had been achieved. That is, the effects of the horse on Native American cultures initiated changes and disturbances in the setting that were still working themselves out. Presumably something of the sort was true for the Yellowstone area as well. In any event, it is clear that the arrival of the horse caused great changes, not only in the distribution of tribal groups, but in how they used the land.

For example, the extermination (by Indians who had acquired horses and firearms, and thus the means to hunt more effectively) of the bison herds of the Snake River Plains in the early 1840's compelled Bannock Indians residing there to make regular hunting trips through the present park area until the late 1870's, as the hunters, having adopted (thanks to the horse and perhaps to firearms as well) a "Plains lifestyle" (Janetski 1987), traveled east to southeastern Montana to suitable hunting grounds.

For another example, there is the very complicated subject of introduced diseases, especially those infecting native wildlife, primarily through domestic livestock. We know essentially nothing of what such diseases may have done to the wildlife populations of

the Yellowstone area prior to the creation of the park, but we do know that epidemics did affect wildlife populations, especially wild sheep, elsewhere in the West (Martin 1976).

Now we turn to the matter of using some prehistoric period of Yellowstone as a measure of the "rightness" of present conditions. Leopold et al. (1963), in a report that became National Park Service policy, proposed that the national parks should be "a vignette of primitive America." They stated that, "the biotic associations within each park be maintained, or where necessary recreated, as nearly as possible in the condition that prevailed when the area was first visited by white men." This general statement has been debated more or less continually since it was published. On one extreme are those who see it as a mandate to manage for scenery: for static settings in which all ecological elements are manipulated to maintain some predefined set of "balances." Leopold himself (pers. commun. 1981) did not intend that, though he certainly believed that in some cases manipulation was necessary; he was quite interested in allowing as many ecological processes to go as unhindered as practicable in each situation.

Whatever the view of the authors of the statement, it has often become a sort of prescription for "proper" park settings, leading to a presumption that there must once have been some ideal state of ecological affairs in a given setting.

The Yellowstone setting, however, has been subjected to significant changes at least since the last ice age. Patterns of use by Native Americans changed, sometimes dramatically (Haines 1977, 1:15-26). Changes in climate (Haines 1977, 1:18-20, Whitlock et al. 1991), flora (Whitlock et al. 1991), and fauna (Hadly 1990) have all been documented in the long-term record, that is, during the previous several thousand years before present. We are not aware of any policy statements in the National Park Service that state that it is either desirable or possible to create a "frozen frame" setting in a major national park.

Thus, continued study of the pre-1872 period of the Yellowstone may serve many purposes for scholars and managers, but it will not yield some simplistic goal in terms of what the park's ecological systems should look and behave like today. It will instead help to illuminate today's ecological setting through a broader understanding of how that setting has operated in the past.

REVIEW OF THE HISTORICAL ACCOUNTS

The documentary record of Yellowstone in its earliest historical period has been gathered, slowly and from many sources, by several generations of historians. The sources are almost as diverse as they are numerous. The easiest to locate, and therefore the best known and most often used, are the early government reports and surveys, especially superintendent's reports and mapping expeditions. These often included extended discussions, or entire separate chapters, on the natural or cultural features of the park.

The second general category of sources includes the first books about the park, most of which were combination travelogue and guidebook. These were often based both on the author's own experiences in the park and on the author's familiarity with the government publications. These are also relatively easy to locate in regional libraries, though surprisingly few of them have been used by previous investigators of early faunal history in Yellowstone.

A third category is found in the periodical literature. There is no estimating the number of Yellowstone-related articles, of all lengths, that have been published in magazines and newspapers, even prior to 1900. The rate at which these items are still being discovered suggests that the search will go on fruitfully for many years to come. They range from book-length series of articles recounting a long visit to the park to one-paragraph news notes about some event relating to the park.

The fourth category is unpublished government material, such as archival records relating to the management of the park. These rest in several repositories, including the National Archives and its satellite archival facility in the Albright Museum in Yellowstone National Park. These administrative records are still being gathered, and are only lightly appreciated as a historical resource by most ecological historians.

The fifth category is unpublished material from all other sources, including unpublished journals, photograph albums, letters, and other ephemeral material. The millions of people who have visited Yellowstone, even those hardy thousands who pioneered touring the park before 1890, brought back many proofs of their experience, most of which were immediately squirreled away in attics, and a few of which eventually found their way into some library or other facility. A few of those later came to light and finally entered the known historical record as it is studied by Yellowstone historians.

As this report should demonstrate, the search for early Yellowstone historical material is no idle exercise in antiquarianism. Though each discovery--each new personal journal located in a small county historical society, each additional periodical citation--may in itself mean little, eventually they accumulate into something very important indeed. Anecdote multiplied often enough becomes something very much like data.

As we undertook to review this material, and to add to it our own finds, we were struck by how little of it had come to the attention of previous investigators of Yellowstone's faunal history. We were likewise struck by how much more work needs to be done, especially in the published record between 1880 and 1900, before this crucial period in Yellowstone's history is thoroughly researched. Though hundreds of sources are already known, many more await discovery. Some key periodicals have only been unevenly used. For example, the leading sporting periodical of the late 1880's, *Forest and Stream*, carried scores of articles and notes about Yellowstone between 1873 and 1930; a project is now underway in the National Park Service to locate and index all of those items. Other periodicals should eventually be treated similarly.

In the meantime, we already have a rich body of material from which to draw a surprisingly full portrait of early Yellowstone's ecological conditions. In the following section, we review 168 accounts of Yellowstone wildlife prior to 1882. We examined many more than that, but some (such as government reports devoted to specific topics such as geology) did not mention animals. We defined an account as a report of a visit to the park, or a report of conditions in the park. Most of our 168 were of the former type--firsthand accounts of the park by visitors--but some of the latter, especially regional and local newspaper accounts, were extremely important as well.

Thus it is that the accounts considered here varied enormously in length and detail, from entire books to single paragraphs in local newspapers. If an account was serialized in a periodical, it was still defined as one account in our total. For example, H.B. Leckler's very long and informative 18-part magazine series on his 1881 visit, or C.C. Clawson's 11-part magazine series on his 1871 visit, were considered one account each. On the other hand, if a single work, such as an extended diary, contained material on more than one visit to the park, each visit reported in that work was considered to be a separate account. This was rare, but one important example was the unpublished diary of A.B. Henderson, who visited the park area at least 6 times between 1866 and 1873; this one work, then, contained 6 accounts.

A few writers, especially professional journalists, sometimes published their account in more than one place, perhaps first in a newspaper, then in a periodical, then in a book. Unless these various publications contained different information, they were usually considered only one account. On the other hand, a few visitors left more than one account of a single visit, but the accounts contained different information. These were considered separate accounts. W.H. Jackson, for example, left several written accounts of his 1871 and 1872 visits to Yellowstone, including a diary, books, the text of a public address, and a published catalogue of his photographs. These complemented each other, and each contained information not contained in the others, and so they were all considered accounts. His photographs, which are also cited or included here as evidence of animal presence, were not considered separate accounts. The goal was not to compile as large a number of publications as possible; the goal was to reflect the number of distinct sources of information.

It is only an accident of geography that gave the Yellowstone River its current name. As Haines (1977) has shown, early European travelers naturally encountered tribes along the lower river first, apparently getting the name Yellowstone from the Minataree, who lived in present North Dakota. But the Crow, who then lived along the Yellowstone River itself, and were encountered later by explorers, knew it as the Elk River, leading Haines to assume that the name "derived from the fact that it provided a migration route for those animals while passing between their summer range on the Yellowstone Plateau and their wintering grounds at lower elevations" (Haines 1977, 1:5). This name suggests that elk were common along the Yellowstone River.

Whether Haines was justified in presuming the elk did use the entire plateau cannot be demonstrated from the evidence of the name, but will be considered at length below. The presence of large numbers of elk in the Yellowstone Valley as far upstream as Paradise Valley was, however, established by the first formal exploration party to enter the region.

1806

Captain William Clark and his party approached the northern edge of what is now called the Greater Yellowstone Ecosystem in mid-July, 1806. All across the region he reported abundant game. They entered the area from the west. In the Gallatin Valley, he reported many species of wildlife, including "a large Gange [sic.] of Elk in the plains and Deer in the river bottoms" (Thwaites 1905, 5:25). About twenty miles from the Bridger Mountains, he reported that he saw "several Antelope, common Deer, wolves, beaver, otter, Eagles, hawks, crows, wild gees [sic.] both old and young, does &c. &c" (Thwaites 1905, 5:260). Near the present site of Bozeman, Montana, he "saw Elk, deer & Antelopes, and a great deel [sic.] of old signs of buffalow" [sic.] (Thwaites 1905, 5:261), and was informed by Sacajawea that Indians had reduced bison numbers in some parts of the region.

His narrative continued, with numerous mentions of wildlife. They followed "an old buffalow road" to the Yellowstone River near the present site of Livingston, Montana, and then followed the river downstream, noting "great numbers of beaver" along the way, as well as "two black bear on the side of the mountains" (Thwaites 1905, 5:265) somewhere near the mouth of the Shields River, which the party named. He also reported, "several gangs of Elk from 100 to 200 in a gangue [sic.] on the river, great numbers of Antelopes. one Elk only killed today" (Thwaites 1905, 5:265). Upstream from the present site of Big Timber, Montana, he "saw a large gangue [sic.] of about 200 Elk and nearly as many Antilope [sic.] also two white or Grey Bear in the plains" (Thwaites 1905, 5:266). Below the site of Big Timber, he saw "not so many Elk & more deer" (Thwaites 1905, 5:269).

These sites are all on the northern edge of what is now described as the Greater Yellowstone Ecosystem (Glick et al. 1991). The presence of large numbers of elk at this early date within fifty miles of the Northern Winter Range--as defined by Houston (1982) the Northern Winter Range extends downstream from Yellowstone National Park as far as Dome Mountain--brings up the question we have already referred to: if elk were abundant in the Yellowstone Valley, why would they not also be using appropriate habitats, as environmental conditions allowed, farther upstream in the present park?

1830

A more general statement of wildlife in the Yellowstone region was chronicled by Victor (1870) as having been told her by fur trapper Joe Meek, many years later. Meek, who knew the area from his own travels, was discussing the period of about 1830:

The whole country lying upon the Yellowstone and its tributaries, and about the headwaters of the Missouri, at the time of which we are writing, abounded not only in beaver, but in buffalo, bear, elk, antelope, and many smaller kinds of game.

General statements of wildlife presence, such as this one, are the least susceptible to quantification, and are often not at all susceptible to testing for reliability. But, like all other types of statements, ones such as these increase in worth as they increase in frequency.

1835

Osborne Russell, an educated trapper from Maine, made the first of four trips through the Yellowstone region this year, traveling from the Shoshone River headwaters to the Lamar River and from there to the Gallatin and then the Madison River.

On July 2, while in Jackson Hole, Russell noted that, "This valley like all other parts of the country abounds with game" (Russell 1955:18). On July 11, while in the Absaroka Mountain Range south and apparently east of the present park area, Russell reported that, "thousands of mountain Sheep were scattered up and down feeding on the short grass which grew among the cliffs and crevices: some were so high that it required a telescope to see them" (Russell 1955:21). On the 12th, they watched "large bands of Mountain Sheep carelessly feeding upon the short grass and herbage which grew among the Craggs and Cliffs whilst Crowds of little lambs were nimbly Skipping and playing upon the banks of snow" (Russell 1955:22). On the 16th, they hunted sheep, which, "were all very fat so that this could be called no other than high living" (Russell 1955:25).

In the Lamar Valley on July 29, Russell met about 20 members of the "Snake" (probably Sheepeater) tribe, who were "neatly clothed in dressed deer and Sheep skins of the best quality." Russell reported that their "bows were beautifully wrought from Sheep, Buffaloe [sic.] and Elk horns secured with Deer and Elk sinews," and stated that "we obtained a large number of Elk Deer and Sheep skins from them of the finest quality" (Russell 1955:26-27). One Indian drew a map for Russell on a piece of elk skin.

The Sheepeaters did not have horses (Janetski 1987) at this time, so it seems logical to assume they acquired these animal parts from nearby, either in or near the present park area.

Russell also made one of the most intriguing early observations about beaver, which virtually all early accounts indicate were much more common than they are today. He reported that the Sheepeaters, without incentive from fur traders, had taken most of the available beaver:

They said there had been a great many beaver on the branches of this stream [the Lamar River] but they had killed nearly all of them and being ignorant of the value

of fur had singed it off with fire in order to drip the meat more conveniently (Russell 1955:27).

As mentioned above, the effects had by Native Americans on North American wildlife prior to the influences of European humans, technologies, and markets, are still being debated. Here, according to Russell, we have evidence of substantial impact on beaver populations by Native Americans who professed no knowledge of the marketability of the skins. This, like Sacajawea's comment to Clark that Native Americans had reduced bison numbers, mentioned above, provides interesting evidence of such impacts in the Greater Yellowstone Ecosystem.

As mentioned elsewhere in this paper, much more work needs to be done on the relationship of Native Americans with animals in the Yellowstone area prior to the establishment of the park. As the archeological and paleontological records grow, questions of relative abundance of various species as reflected in prehistoric sites will continue to arise, and the beaver should be considered along with the ungulates as an important food source for Native Americans. McCabe, reviewing the role of elk as a food for Native Americans, listed "approximate rank of importance of elk and other nonvegetable foods in diets of historic North American Indians" (McCabe 1972:88). For tribes on the Northern Plains, bison was first, beaver was second, deer was third, and elk was fourth. He further reported that "when Indians had a choice between elk and animals of another big game species (including pronghorn, mountain goat, mountain sheep, bison, deer, and caribou), they invariably opted for the other species. Also, from the literature it appears that the Indian's regard for elk, as to palatability, ranked close to that for bear and perhaps moose" (McCabe 1972:90). Cannon (this volume) has reviewed the regional prehistoric record most recently, and addresses this and many related issues.

From August 3 to August 20, Russell and his party reached Gardner's Hole, a few miles south of Mammoth Hot Springs, where they were "continually employed in hunting and trapping beaver (Russell 1955:28). On August 21, on a branch of the Gallatin River, west of the main Gallatin Mountain Range but within the present park boundary, Russell "killed the fattest Elk I ever saw" (Russell 1955:29). But he continued that it "was a large buck the fat on his rump measured seven inches thick he had 14 spikes or branches on the left horn and 12 on the right."

Observations of this sort reveal the complications of using historical accounts. Natural history changed rapidly in the nineteenth century, as formal study of many parts of the American environment intensified. Early in the century, terminology for animals was less clear. The European animal most like the North American elk was known as the red deer. The European moose was known as the elk. The European badger has a pelage more like a wolverine than like an American badger.

More to the point of this particular observation, terms for male and female, such as bull, buck, doe, and cow, were interchanged. Russell stated that he killed an elk, but then described it as a buck, a term now reserved for deer. He then described antlers with a number of points that would only occur on an elk in the most unusual of circumstances (Thomas and Toweill 1982: 166-167). Such numerous points would be far more likely on a large mule deer. On the other hand, the thickness of the fat on the rump would only be possible on an animal much larger than a deer, leading us to assume it was indeed an elk. Russell's appendix to his journal leaves no question that he knew the difference between the two species (Russell 1955:135-138).

As well, it is immediately obvious that we are dependent upon Russell's personal view of what was worth writing down, a view we know little about. We have no way of judging what percentage of the animals he saw he actually took the time to note in his journal. In a country that "abounded with game," would he feel compelled to note every sighting? Would he be most likely to note the largest, most impressive herds, or the most unusual sightings? We don't know. We do, however, already have, at this early stage in his journals, a general view of the region as wildlife-rich.

An interesting sidelight to Russell's 1835 travels in the Yellowstone area is that south and west of the park, near present Ray's Lake (just to the west of what is now generally regarded as the Greater Yellowstone Ecosystem), he encountered a pack of wolves:

About an hour before day I was awakened by the howling of wolves who had formed a complete circle within 30 paces of me and my horse at the flashing of my pistol however they soon dispersed (Russell 1955:35).

1836

Osborne Russell returned to the Yellowstone area, travelling from Two Ocean Pass to Yellowstone Lake and then to the Lamar Valley and on north. In early August, he said that "Game is plenty and the river and lake abounds with fish" (Russell 1955:43) in the country on the north side of Jackson Hole. At the outlet of Yellowstone Lake, near the site of present Fishing Bridge, he said that, "This valley is interspersed with scattering groves of tall pines forming shady retreats for the numerous Elk and Deer during the heat of the day" (Russell 1955:44). Later, apparently on the Mirror Plateau, his party "concluded to follow an Elk Trail" and then "killed a fat buck Elk..." (Russell 1955:45).

That night, apparently August 19, Russell reported that "all is silent except the occasional howling of the solitary wolf on the neighboring mountain whose senses are attracted by the flavors of roasted meat but fearing to approach nearer he sits on a rock and bewails his calamities in piteous moans which are re-echoed among the Mountains" (Russell 1955:46).

It is worth noting that Russell, like Clark, found wildlife abundant on the Yellowstone River north of the present park. Describing his travels 20 miles downstream from the

mouth of the Shields River, he said that "thousands of Buffaloe [sic.] may be seen in almost every direction and Deer Elk and Grizzly bear are abundant. The latter are more numerous than in any other part of the mountains" (Russell 1955:47). In late October, he reported a similar abundance of the same species in present Bighorn County, Montana.

1837

Joe Meek reported through Victor that Jim Bridger trapped in today's park area this year, and noted that beaver had declined due to trapping (Victor 1870:237).

Russell again visited the Yellowstone area, entering from the south after killing "some Buffaloe [sic.]" (Russell 1955:62) in Jackson Hole. On August 4 he "killed a Dear [sic.] which came in good time as we had eaten the last of our provisions the night previous at the Yellowstone Lake and the flies and musketoes [sic.] were so bad and the underbrush so thick that we had not killed anything during the day" (Russell 1955:62).

On August 6, in the Hoodoo region near the east boundary of the present park, Russell saw, "scattered flocks of Sheep and Elk carelessly feeding or thoughtlessly reposing" (Russell 1955:63). Returning from a hunt in the area, he "found my companions had killed a fat Buck Elk during my absence and some of the choicest [sic.] parts of it were supported on sticks around the fire" (Russell 1955:63).

On August 7, on the headwaters of the Shoshone River just east of the present park boundary, Russell's party "fell in with a large band of Sheep killed two Ewes packed the best meat on our horses and proceeded down the defile" (Russell 1955:64). On about August 10, they traded for "some Beaver and Sheep skins" from some "Mountain Snakes" (Russell 1955:65) Indians (Sheepeaters), and on August 11, near Middle Creek, "Killed a couple of fat Doe Elk and encamped" (Russell 1955:65).

On August 12, Russell and one companion proceeded, "to set traps about the camp we hunted the branches of this stream then crossed the divide [present Sylvan Pass] to the waters of the Yellowstone Lake where we found the whole country swarming with Elk we killed a fat Buck for supper and encamped for the night the next day Allen shot a Grizzly Bear" (Russell 1955:66).

Russell eventually moved to a camp on the Yellowstone River, apparently at the mouth of the Boulder River. At this camp, Russell related, "It was the commencement of the rutting season with the Elk when the Bucks frequently utter a loud cry resembling a shrill whistle especially when they see anything of a strange appearance" (Russell 1955:67). Russell then related a story of how the "green Irish camp keeper" was frightened by the noise.

Russell and his party then traveled east and slightly south, crossing the Rosebud and the Big Horn, and reporting the country full of bison:

We traveled down Rocky fork all day amid crowds of Buffaloe [sic.] (Russell 1955:68).

[at the mouth of Rocky fork] we were lying within about 60 paces of the band which contained about 300 cows (Russell 1955:69).

[near the same site] we proceeded on our journey until sometime after dark when we found ourselves on a sudden in the midst of an immense band of Buffaloe [sic.] who getting the scent of us ran helter skelter around us in every direction rushing to and for like the waves of the ocean (Russell 1955:69).

1838

Victor (1870) reported that this year Joe Meek "started alone for the Gallatin Fork of the Missouri, trapping in a mountain basin called Gardiner's Hole. Beaver were plenty here.... On his return, in another basin called the Burnt Hole [present Hebgen Lake area], he found a buffalo skull...and...wrote on it" [a message for Jim Bridger]. This is incidental evidence of both beaver and bison in or near the present park area.

1839

Osborne Russell visited the Yellowstone area again this year, traveling up the Snake River from Jackson Hole to Shoshone Lake, then into the Firehole River valley, across Mary Mountain to Hayden Valley and the outlet of Yellowstone Lake, and then to the Lamar Valley, to the Yellowstone River Valley near present Emigrant, Montana, back to the present park area and up the Gardner River, back to Yellowstone Lake, and out of the present park area by way of Heart Lake and the Snake River.

At the outlet of Jackson Lake, on July 4, Russell "caught about 20 very fine salmon trout which together with fat mutton buffaloe [sic.] beef and coffee and the manner in which it was served up constituted a dinner that ought to be considered independent even by Britons" (Russell 1955:97). The sheep and bison appear to have been shot south of the lake, while traveling from Gray's River. Russell killed a bull bison on July 2, somewhere south of Jackson Hole.

On the Firehole River, probably near Old Faithful, Russell reported that "Vast numbers of blacktail deer are found in the vicinity of these springs and seem to be very familiar with the hot waters and steam" (Russell 1955:99). The presence of "vast numbers" of mule deer in the geyser basins would be cause for comment today, assuming we have the same general idea of what a vast number is. Mule deer do occur in the geyser basins, but in small numbers.

Their travels took them to various locations as listed above, with occasional beaver trapping, until they arrived near present Mill Creek, a tributary of the Yellowstone River in Paradise Valley, on July 17, where Russell set his traps. When some of his companions suggested going to the "plains to Kill some Buffaloe [sic.] Cows," he tried to

change their minds, pointing out that they "had plenty of fat deer and mutton" (Russell 1955:100). Here we have an instance of Russell having either killed deer and sheep and neglecting to report it, or having seen enough deer and sheep nearby to justify his confidence in killing them. In either case, the episode suggests that Russell did not always report his kills (his last recorded kill prior to July 17 was the bison bull on July 3).

Kay (1990) has misinterpreted this incident in important respects that require treatment here because his error has led him to assert that the historical record proves bison were rare at this time in the park area. He stated as follows:

However, on all of his trips through the Yellowstone area, Osborne Russell never reported any bison in the park, though he saw and killed bison in Jackson Hole. Moreover, while in the park during 1839, his comrades "started for the plains to kill some Buffalo Cows," implying that none were available in Yellowstone. Russell pointed out that this was a "dangerous" undertaking because Blackfeet Indians were on the plains. It is doubtful his companions would have braved that hazard if bison were to be found in the park (Kay 1990:255).

As pointed out above, Russell and his party were not in the present park area when this happened. They were camped well north of the present park boundary, probably near the mouth of Mill Creek. Russell gave the location of the stream's mouth as "about 40 Mls above the mouth of 25 yard river" (Russell 1955:100), which was an alternative early name of the Shields River, a tributary of the Yellowstone downstream from Livingston (Haines, n. 89, in Russell 1955:163). This would put them in Paradise Valley, about 30 miles down the Yellowstone River Valley from the present park boundary, and about 20 miles from the present site of Livingston. From there, the "plains" were an easy trip, and the men also pointed out to Russell that they knew a large village of Blackfeet had just recently vacated the area.

There is nowhere in Russell's account of this incident, any language that could be read as "implying," either by himself or by his companions, that bison were not available in the park area. The park area was not at issue, and, judging from historical accounts already presented here, bison were probably very easily had in open country of the Yellowstone River Valley, much more easily than they would be had in the rugged country of the park area.

There is, however, Russell's stated argument that there was no point in going for bison when other meat was so readily available. Kay portrays Russell as objecting to the proposed hunt solely on the grounds of its risk of Indian attack, when Russell in fact was arguing that there was no need to get food because food was already handy.

On August 28, on the shore of Yellowstone Lake, Russell reported that "Two of my comrades observed let us take a walk among the pines and kill an Elk" (Russell

1955:101), circumstantial evidence that elk were to be expected nearby. They were then attacked by Indians, and Russell and a companion, wounded and hiding near the lake afterwards, discussed their situation. His companion thought they would die, but Russell said, "I can crawl from this place upon my hands and one knee [he had taken arrows in the right hip and above the right knee] and Kill 2 or 3 Elk and make a shelter of the skins dry the meat until we get able to travel" (Russell 1955:103).

His confidence that elk were available was justified. On August 29 (the next day), they watched about 60 Indians "shooting at a large bank [sic.] of elk that was swimming in the lake killed 4 of them dragged them to shore and butchered them which occupied about 3 hours" (Russell 1955:104).

The next day, having been joined by another companion, they shot at and missed a swimming deer in the lake, then killed a "Doe Elk" (Russell 1955:106). A few days later, near Heart Lake, one of their party killed a deer, and then they "fell in with a large band of Elk killed two fat Does and took some of the meat" (Russell 1955:106).

Russell's 1839 journal demonstrates the importance of careful reading and the use of many kinds of evidence. If we tallied only the animals killed by his party, we would miss several large groups of animals, and the kills of the Indians. We would also miss the obvious confidence Russell displayed at least twice, that elk and other game were easy to come by.

Also in 1839, a party that included Ducharme and Lou Anderson traveled from Jackson Hole to Yellowstone Lake by way of Two Ocean Pass, and on to "Pelican Creek, where they caught large quantities of beaver and otter," as reported by Hamilton (1905), a trapper who heard the story from sources he considered reliable.

1849

Jim Bridger guided Lt. J.W. Gunnison's party to the Great Salt Lake this year and talked extensively with Gunnison, describing Yellowstone Lake, the falls, the geysers, and Mammoth Hot Springs (which Bridger called the "Great Springs"). Gunnison (1852) reported that, according to Bridger, "Bear, elk, deer, wolf, and fox are among the game" in the Yellowstone country.

1860

Captain W.F. Raynolds led an expedition, guided by Jim Bridger, that failed to penetrate the present park area but did pass to the south and west of it. The portion of this trip nearest the present park area was made in late May and early June, in deep snow and mud, with considerable hardship.

Because of the Civil War, Raynolds' report was not published until 1868. In it he described the upper Yellowstone Valley as "long the home of countless herds of Buffalo and consequently the favorite hunting ground of the Indians" (Raynolds 1868:11), though

it is impossible to tell from the context if he was including the present park area in that description; he spoke most specifically about the river somewhere farther downstream, on the prairie. He also made an interesting observation about wolves on this unspecified portion of the river, saying that their depredations on the bison calves, though not as significant in the destruction of the bison as those of skin hunters, were sizeable. He recommended that a "premium on wolf skins" would be a helpful addition to "a prohibition of the trade of buffalo robes." He said there were an "immense number of wolves in the country" (Raynolds 1868:11).

Raynolds and his party approached the park area from the southeast, up the Wind River. At their closest, they were within perhaps 25 or 30 miles of the present southeast corner of the park, but were turned back by snow and mud. Along the Wind River, they saw sufficient game to feed themselves, but could not always get it. On May 25, Raynolds reported that, "Some elk have been seen in the valley, and half a dozen antelope also crossed the plain to-day [sic.], but our hunter is on the sick list and we are without fresh meat in camp" (Raynolds 1868:84). On May 26, when Bridger shot a bear and their hunter shot an elk, they were "living upon the fat of the land, our bill of fare comprising elk, bear, venison, and brook trout" (Raynolds 1868:84).

The Raynolds party experienced hardships and difficult traveling conditions. As late as June 13, when south of the main Teton Range and near the present Wyoming-Idaho border, Raynolds reported that, "Today, for the first time since coming among the mountains, we have not been visited by rain" (Raynolds 1868:94). He spoke frequently of difficult traveling conditions, and problems in keeping their herd of stock under control. Under these conditions, we would expect their attentiveness to wildlife observation to be reduced.

At the end of May, near Union Pass, they reached a point where Bridger reaffirmed earlier statements that they would not be able to cross the high country and deep snows between them and the upper Yellowstone River drainage. We must quote this passage at some length, in order to establish without question just what area Bridger was referring to.

It was my original desire to go from the head of the Wind river to the head of the Yellowstone, keeping on the Atlantic slope, thence down the Yellowstone, passing the lake and across by the Gallatin to the Three Forks of the Missouri.

Bridger said at the outset that this would be impossible, and that it would be necessary to pass over to the head-waters of the Columbia, and back again to the Yellowstone. I had not previously believed that crossing the main crest twice would be more easily accomplished than the transit over what was in effect only a spur, but the view from our present camp settled the question adversely to my opinion at once. Directly across our route lies a basaltic ridge, rising not less than 5,000 feet above us, its wall apparently vertical with no visible pass nor even canon.

On the opposite side of this are the head-waters of the Yellowstone. Bridger remarked triumphantly and forcibly to me upon reaching this spot, "I told you you could not go through. A bird can't fly over that without taking a supply of grub along." I had no reply to offer, and mentally conceded the accuracy of the information of "the old man of the mountains" (Raynolds 1868:86).

One recent writer (Ross 1992:11), attempting to prove that Yellowstone had little wildlife prior to the late 1800's, has used this statement by Bridger as applying to the entire Yellowstone plateau, but from the context of Raynold's report it is clear that Bridger did not mean that Yellowstone had no wildlife. Bridger's statement referred to that one ridge between the party and the headwaters of the Yellowstone River, country that today at that time of year would just as likely contain little game because of the deep snows. Bridger's statement should not be misconstrued as applying to the present park area. As cited earlier, Gunnison (1852) quoted Bridger on the variety of wildlife that did live in the present park area.

That this was not a general statement about wildlife conditions in the region, but was concerned with only winter conditions in one specific area in the high country, seems plain from Raynolds' observations later in the same day's narrative (May 30), including interesting comments about Indian use of bison:

Throughout our entire ride [he was referring to their ride that day, not their entire trip] we saw abundance of buffalo "signs," showing that they had been here recently, and tending to confirm a statement I have frequently heard that the Snake Indians keep the buffaloes penned up in the mountain valleys, and kill then as their necessities require. Our camping ground for the night is evidently one much used, as the remains of numerous lodges and hundreds of lodge poles cover the ground, and it is evident that a camp at this point would effectually "pen" anything not winged that should chance to be in the valley above it.

Game is certainly abundant in the valley, and during our return ride we came upon an immense animal feeding amid the long grass at a distance of but 250 or 300 yards. We supposed it to be a buffalo, but upon its seeing us and rising we discovered that it was an enormous bear, whose equal for size I have never seen. As we were armed only with revolvers we did not molest it, nor did it seem in the least disconcerted by our presence. Antelopes are also numerous, and we saw many bands of at least 40 or 50. From the marshes close by immense flocks of ducks and geese were constantly rising (Raynolds 1868:86-87).

On June 1, while somewhere in the headwaters of the Gros Ventre, Raynolds reported that, "Yesterday, Bridger shot a 'mule deer,' and the day before our hunter killed one on the eastern side of the crest of the mountains, a locality out of their usual geographical limit" (Raynolds 1868:89). For the next few days they struggled through deep mud and snow drifts, both men and horses nearly exhausted. On June 7, now apparently on the

main Gros Ventre (Haines 1977:88), "The hunter to-day [sic.] was sufficiently fortunate to kill two deer, which form a desirable addition to our rather empty larder" (Raynolds 1868:91). On June 19, after many more hardships alternated with travel through beautiful early spring mountain settings, Raynolds next mentioned their provisions:

Notwithstanding the beauty and fertility of the valley we have seen no game, squirrels being the largest animals that have crossed our path, while of birds only a few curlew and others of the smaller varieties have been visible. These circumstances are to be regretted, as with our limited stock of provisions a constant supply of fresh meat is very desirable (Raynolds 1868:96).

Raynolds was not reporting as a naturalist, but as a hungry traveler. We have no way of knowing if he saw no trails or other sign of game. We know only what he told us, that he saw no game.

On June 22, "our hunter killed a large bear, giving us thus our first taste of fresh meat for nearly a week" (Raynolds 1868:97). The last day on which Raynolds mentions any killing of game was June 7, 15 days earlier. If "fresh meat" means newly killed game, then apparently at least one animal was killed between June 7 and June 22. If "fresh meat" is meant only in apposition to dried or jerked meat, then apparently no animals were killed between June 7 and June 22, and they ran out of the June 7 venison around June 15.

By the next day, as the party passed Henry's Lake, the period of meat shortage was over:

Game has been abundant to-day [sic.], and we have seen two large herds of elk. The hunter has also killed two deer and antelope. Bridger says that we are now through the timber, and that there is nothing to further delay our progress to the Three Forks (Raynolds 1868:98).

On June 25, "The prairie was beautiful with its luxuriant growth of young grass, and bands of antelope were scattered about us on all sides, three or four being killed in the course of the march." Later that day, they saw "one band of buffalo among the hills, and hope to soon be surrounded by this species of game" (Raynolds 1868:98-99). On June 27, "Three antelopes have been shot during the march, and we are thus abundantly provided with fresh meat; our other supplies are giving out, however" (Raynolds 1868:99). On June 28, as they traveled down the Madison River Valley, "a couple of buffaloes were discovered on the opposite bank, which became alarmed at our appearance, dashed headlong down stream, crossed it ahead of the train, and climbed the hill just in time to meet our hunter, who killed one, thus providing us with the first buffalo meat of the season" (Raynolds 1868:100). Raynolds also reported that day that, "Antelopes have been visible in large numbers upon all sides" (Raynolds 1868:100).

The Raynolds party had uneven success in finding game; in Jackson Hole and west of the Teton Range they seem to have failed completely to kill any, though Raynolds describes conditions ("fertility of the valley") under which game would thrive. We do not believe, however, that the occasional, or even extended failure of any one party to see wildlife, or, more accurately, to report that they have seen wildlife, is sufficient proof that it was not there.

There is, and always has been, an informal general rule about wildlife in the Yellowstone area (and elsewhere, for that matter). Sometimes you see it, and sometimes you don't. The Raynolds expedition supports that. Large mammals were often seen by them southeast of the park and west of the park (the closest the main party came to the present park area), but were not seen south of the park.

This topic is worth consideration here because, as discussed above, the occasional lack of sightings, or killings, of wild animals by early travelers is sometimes offered as evidence the animals were not there.

Fischer (1970) has defined "the fallacy of negative proof" as "an attempt to sustain a factual proposition merely by negative evidence. It occurs whenever a historian declares that 'there is no evidence that x is the case,' and then proceeds to affirm or assume that not-x is the case" Fischer continues, "but a simple statement that 'there is no evidence of x' means precisely what it says--no evidence. The only correct empirical procedure is to find affirmative evidence of not-x" (Fischer 1970).

In the case of Raynolds, we have his report, which gives us no evidence of large mammals south of the present park, in the southern Jackson Hole area. We have the evidence of large numbers of mammals to the east and to the north of that area, which should cause us to ask the question, once again, why would they not also use this habitat as well, but we have little else to go on from the historical account of this one trip.

Some of Murie's (1940) earlier comments apply here. Large parties (Raynolds' was about 20 men, plus stock) often frightened game. As well, there is the simple reality of luck. Based on our considerable acquaintance with the experiences of modern park travelers, we see ample reason to be unsurprised when early visitors reported not seeing wildlife.

For example, Yellowstone tour bus drivers today travel Yellowstone's roads seven days per week, eight to twelve hours per day, all season (May to mid-October). In winter they do the same thing in Snowcoaches (mid-December to mid-March). Occasional trips are made in the other seasons. These people continually see the main travel routes more than anyone else. An informal poll indicates that they do not consider animal visibility or lack of visibility as a reliable measure of animal presence. Drivers John Rhoades (7 years experience), Greg Dalling (9 years), Ken Cummings (13 years), Paul Shea (7 years) Leslie Quinn (11 years), Lori Detweiler (7 years), Leon Brunton (12 years), and Herb

Vaughn (14 years) agree on this as being the case between 1970 and 1991. All are college-educated, and all have lived and worked for extended times in Yellowstone. As John Rhoades has said, "Saying there are no animals just because you don't see them one day, two days, or a week, is like saying there are no Chevettes in America because there weren't any parked in the parking lot this morning. Seeing animals is a matter of luck at any time. Seeing them confirms their existence; not seeing them does not mean they are not there. Not seeing them simply means nothing."

We will return to this topic as we examine some key later accounts.

1863

Walter DeLacy and his party (40 prospectors at first, fewer later) traveled up the Snake River from Jackson Hole to Shoshone Lake. They then crossed the divide at the head of DeLacy Creek, dropped down White Creek to the Lower Geyser Basin and the Madison River, crossed to the Gallatin River, and followed it down to the settlements in Montana.

This party also had mixed success in hunting, though apparently they were well enough provisioned not to require fresh meat in order to survive and continue their work; there is no mention of food shortages, or discomfort due to starvation or weakness. On August 24, not far south of Jackson Hole, DeLacy noted that, "As usual, some of the men went out to hunt, and others to prospect, but brought in neither gold nor game" (DeLacy 1876:121).

Lack of success in hunting is a meaningful piece of information when trying to judge the presence of animals in an area, but in evaluating this negative evidence we must also keep in mind how little DeLacy tells us about these hunting efforts. He does not tell us whether or not the hunters saw game, or missed shots. He only tells us that they brought no meat back.

On August 27, they crossed the stream then already known as the Buffalo Fork of the Snake River. Rather like the case of the Yellowstone River's Crow name of Elk River, we suspect this name was given to the Buffalo Fork for a reason having to do with the animal being present.

At the end of the month, the party split, 27 including DeLacy resolving "to try to reach Virginia City by going north" (DeLacy 1876:127). They were continually in fear of attack from Indians, and on September 3 saw fresh horse tracks, suggesting they were probably not the only people who would be trying to find some game in the country. On September 5, now within the southern boundary of the present park, another split occurred, and DeLacy and about thirteen men continued on. That day he reported that, "We killed two deer this evening, which was the first large game shot on the trip" (DeLacy 1876:129). On the next day, September 6, after making camp at the mouth of Lewis Lake, they "prospected and hunted for the rest of the day, but without any success"

(DeLacy 1876:130-131). On September 7, they followed the eastern shore of the lake, reporting that "there were many game trails made by the wood buffalo, whose tracks appeared numerous and fresh" (DeLacy 1876:131).

An interesting aside in the history of Yellowstone natural history is that this night their camp was invaded by "thousands of black lizards," apparently a migration of salamanders. DeLacy amused himself by watching them run into the hot ashes of his fire, and, in revenge for being annoyed "all night" by them, he tossed some into the flames.

Traveling through heavy timber, they made their way to the Lower Geyser Basin, and on to the Madison River. He reported "numerous beaver dams" (DeLacy 1876:134) that impeded their progress. From there, the party crossed the south slopes of the Gallatin Range. On September 12, "Several men went out, but found neither gold nor game" (DeLacy 1876:135).

On September 13, they moved down what was probably the Grayling Creek drainage, then when it turned southwest, they turned north. That day, while still in the present park area, or just along its west boundary (Haines 1977, I:66), they saw fresh signs of Indians, and then late in the day, having moved to near the main stem of the Gallatin River, they saw more animals:

We saw many elks, and one was killed near camp, so that we all had plenty of meat (DeLacy 1876:135-136).

On September 15, somewhere near the northwest corner of the present park, they killed a bear that ran only a short distance when it first saw them. "We encountered many bands of elk to-day [sic.], who, like the bear, were not accustomed to the sight of men, and would stand within thirty yards of us without fear. Two of them were killed. We also had the excitement of a stampede" (DeLacy 1876: 137).

Another issue in these early accounts is the behavior of the wildlife. The bear they saw ran a short distance, as bears often do, before turning, probably in order to determine what spooked it and if more running was necessary. The elk didn't run. Like the visibility of wildlife, the behavior of wildlife once sighted is difficult to generalize about; sometimes they run, sometimes they don't.

The DeLacy party obviously put considerable energy into hunting, sometimes doing it at the end of a day's travel, and sometimes apparently spending entire days at it and prospecting at the same time. Still, they reported evidence--either tracks or sightings--of large numbers of both bison and elk while in the present park area.

Also in 1863, James Stuart led a party of prospectors from Bannack City, Montana (northwest of the present park area) across the northern edge of the Greater Yellowstone Ecosystem. He reported an apparent abundance of animals--mentioning

elk, antelope, bison, deer, and black bear--in the Madison Valley. Near the present site of Bozeman, he "Saw plenty of black and white-tailed deer and antelope, also one band of about twenty elk" (Stuart 1876:158).

On Sunday, April 19, after camping in the Gallatin Valley, apparently near the present site of Bozeman, he reported more animals, including wolves:

I was serenaded by a full band of wolves while on guard last night. We saw four or five black bear and plenty of deer and antelope to-day[sic.]. Traveled up the small creek that we camped on last night, for about ten miles, to its head; then crossed over a small divide, and camped on a small stream about twenty-five feet wide coming in from the northeast and running west. I killed a black-tailed deer and an antelope, and Bostwick also killed a black-tailed deer (Stuart 1876:159).

Stuart, like Clark and Russell, reported abundant wildlife all across the northern Greater Yellowstone Ecosystem. Near the Shields River they saw "many elk and antelope" on April 22, then "Saw fresh buffalo signs, and many elk, antelope, and three white-tailed deer" (Stuart 1876:160) on April 23. That night they camped "about four miles" above the mouth of the Shields River, and he commented that, "We do not carry any fresh meat with us, every day provides for itself" (Stuart 1876:161). We suspect that by "fresh" Stuart meant "raw."

1864

John C. Davis, a member of Delacy's 1863 party, returned to the park area the following year. In his brief account, which mostly involved the geothermal features and Indians, he twice mentioned large mammals of the park. Near the Upper Falls, he recorded that, "After camping I took my gun and started out in the hope of finding an elk for dinner" (Davis 1884). It is not too much to suspect that this man, who did not say "to find some game" but specified elk, had reason to believe elk were nearby. He also mentioned that in "the volcanic region of the geysers we were much alarmed at the yielding of the ground [this could have been a marsh or bog, or some geothermally unstable ground]. Finally we struck a buffalo track, and followed this with some feeling of safety" (Davis 1884). Many modern travelers have no doubt had a similar experience of relief in finding themselves in unsure footing, then discovering the tracks of some far heavier animal that had crossed to safety.

In September of 1864, a party of prospectors composed of Robert Vaughn, James Gibb, Jack Williams, Charles Howard, and a man named Wilson traveled from Alder Gulch, Montana, to Emigrant, Montana. Somewhere near the northwest corner of the present park, in an area containing much petrified wood, they made the following sighting:

On a cliff about one hundred yards off stood a Rocky mountain goat. At first we thought it a domestic sheep, for it was very white, bleated, and acted as if it was glad to see us. But then, as there were no settlers within several hundred miles, we could

not imagine how a sheep could get to such a place. While we were discussing the matter, the animal leaped over cliffs and up the mountain as if it was on level ground, and this satisfied us all that it was a Rocky mountain goat. Not one of us had seen one previously (Vaughn 1900:35).

Though the party had no prior experience with goats, their description of the animal and its behavior is to some extent persuasive, though often bighorn sheep are quite pale, and even appear white. The narrator made no mention of the possibility of it being a bighorn sheep, which also could have negotiated the cliffs well, and could have "bleated."

1866

One of the key sources of information on Yellowstone just prior to the creation of the park has long been the journals of prospector A. Bart Henderson (Haines 1977:76-77, Haines 1974:36-37). Henderson's diaries relate experiences in and near Yellowstone for several years, and contain numerous mentions of wildlife.

Kay (1990) has attempted to discredit Henderson as a source, bringing up for us another useful topic in the analysis of these sources. Kay points out that Henderson seemed too often to see "thousands" of bison or elk, numbers that seem to Kay to be too large. Part of Kay's reason for discounting Henderson was apparently because Kay had not found other accounts of such abundant wildlife (Kay 1990:259), but like other previous investigators, Kay used very few of the available sources, and missed important accounts. However, Kay does offer some specific criticisms that are helpful in analyzing Henderson.

First, Kay noted that at one point Henderson claimed to have "27 bearskins" in camp, which Kay judged to have been mostly those of grizzly bears. Kay observed that "that would represent over 10% of the current grizzly bear population of the entire Greater Yellowstone Ecosystem" (Kay 1990:260). This is an interesting observation, but not a persuasive one. Henderson and his party could easily have killed that many bears. We are not told by Henderson how many were adults, but we know from his diary that he and his party killed entire family groups. We are not told how long it took them to kill that many bears, or over how large an area the killings took place.

More important, the 1866 population of grizzly bears was not like the modern population. The grizzly bears of the time did not live in an island Greater Yellowstone Ecosystem population; they lived in the Greater Rocky Mountain Ecosystem, and were abundant in all directions from Yellowstone. Fourteen years later, in 1880, a famous grizzly bear hunter, William Pickett (1913:204), killed 23 grizzly bears by himself on the eastern side of the Greater Yellowstone Ecosystem. He reported killing 19 "...on the head of Meteteetse Creek and the camp on the Grey Bull and from intermediate camps...the majority of them large, with well furred robes"). Surely the population was occasionally hit hard in those days.

Second, Kay pointed out that Henderson claimed that one of his camps was "attacked" by wolves, something that there is little evidence of in North America. This topic will be dealt with at some length below, in proper sequence, but it is a more interesting criticism. In the often cryptic language of the Henderson journals, it is impossible to determine exactly what Henderson meant by many of his comments; his idea of an "attack" by wolves may, for example, have meant a real attack, or it may have only meant that a pack of wolves threatened the camp, coming closer than the men expected.

Third, Kay rejected Henderson's report of moose on the Northern Range, citing Houston's (1982) conclusion that there were no verifiable observations of moose there that early. As we will suggest and demonstrate later, not enough search has been done until now to locate observations. If Houston or other observers maintained that moose were not on the range that early, we must at least entertain the possibility that they were in error.

Last, Kay points out that Henderson used the term "thousands" often to describe how many of something he saw, specifically noting that Henderson claimed that there were "thousands of hot or boiling springs" in the upper Lamar Valley. The Lamar Valley episode is an especially instructive one. There is a sizeable thermal plain at the base of Mount Norris near the Lamar River; today it produces relatively little flow or steam, but apparently it was quite active in Henderson's time.

The variability of Yellowstone's thermal activity must be taken into account in considering such evidence. The General Land Office manuscript map of the park area (Haines 1974:192) shows a "Brimstone Basin" in this location. Doane's 1870 map shows a "Sulphur Springs" (Doane 1970:198). Numerous other maps from later in the century show as many as three active thermal areas there. As will be cited for other reasons later, park gamekeeper Yount (1881b) said that the "...winds and hot vapors from the Fire Hole Basin at the foot of Mount Norris kept the snow pretty clear along its western slopes, where there were abundance of mountain sheep, and some elk, all winter." These sources all indicate that there was considerably more activity, and resultant steam, in the area then than there is now. It is not difficult to imagine that Henderson could have seen a lot of steam, though it seems unlikely to us that he saw thousands of springs; the area is just not large enough for that many outlets to exist. But the evidence suggests to us that Henderson was guilty more of exaggeration than of outright lying.

In fact, an examination of the entire journal reveals that Henderson occasionally used the term "thousands," whether he was describing hot springs, game, minerals, or the number of fish his party caught. However, he much more often gave very precise descriptions of many things, such as the widths of rivers, the amount of equipment they had, or the numbers of Indians seen on an occasion.

There is an additional complication with the Henderson account. Internal evidence makes it apparent that he either wrote or revised the accounts after the trips were

completed; he mentioned certain hunts as the last time a certain species of game was killed, for example, something he could not know until after the trip.

So how are we to interpret the diary? We see no reason that Henderson would be purposely lying in these accounts, and we see no evidence that he was somehow deluded. He maintained his stories, and his level of sightings, for five years; if it was a lie, it was an uncommonly consistent one. There is also the question of motivation. This diary was never published; indeed, it is still very hard to come by. We cannot know if Henderson intended to publish it, or to use it as field notes for some other work. If he did not intend to publish (and we have only negative evidence for that), why would he lie to himself?

A careful examination of the whole diary reveals that Henderson had two ways of describing things: the specific and the general. In the specific, and these are by far the more common, he wrote down exactly what he saw (mileages of travel, for example), or had (27 bear skins, for example). In the general, he appears to have used the word "thousands" the way someone else might use the word "lots." Judging from the relative accuracy of the great amount of information he reports that we can test, such as river widths and trip mileages, we cannot agree with Kay that he is justified to "discard this entire diary" (Kay 1990:260). There is simply too much obviously reliable material in it, and, as will be seen as the accounts proceed, too much of it is corroborated by accounts that no previous investigators used.

Virtually nothing is known of Henderson, a biographical void that always increases a historian's nervousness about a source. Henderson's diary was transcribed by Granville Stuart and presented to the Montana Historical Society in 1894. That being the earliest date for which we have evidence of the completed document, it is the date we will use in our citations. The current version, from which we worked, exists in typescript with an introduction by Aubrey Haines, at the Yellowstone Park Reference Library; our page number citations refer to that typescript.

In 1866, then, Henderson reported extensive travels in the Greater Yellowstone Ecosystem. From "Bozeman City" he traveled east to the Yellowstone River, where on August 14 he reported, "at this time we find large herds of buffalo, Elk, White tailed deer, black tailed deer, & antelope, all of which are roaming over the prairie unmolested by white men or Indians" (Henderson 1894:10). His description of the abundance of game in the country along the Yellowstone River downstream from Livingston is quite similar to those given by Clark, Russell, Reynolds, and Stuart, above; large mammals were obviously numerous.

On August 17, the prospecting company was formally organized with 172 men plus a guide, and spent the rest of the month traveling more or less east, encountering many animals. Several miles up the Boulder River (or one of its forks) they killed "a large grizzly bear" and later "killed several fine elk and black tailed bucks, the heads of the

ravines being full of them. Here we caught thousands of trout" (Henderson 1894:11). This "thousands" may be slightly less problematic than the others, because a party of 172 men could indeed catch a lot of trout from a lightly fished river, though perhaps not thousands. The next day, near the East Boulder, "Several Elk, Deer, & Bear were killed during the days [sic.] march" (Henderson 1894:12).

On August 25, they camped near the head of the Stillwater River, "amid beaver dams, & could hear the beavers at work at all times during the night" (Henderson 1894:13). On August 28, camped apparently on lower Rock Creek, Henderson recorded that, "Looking to the NE 12 miles we saw several thousand buffalo" (Henderson 1894:14), a numerical estimate in keeping with other accounts of the bison population of the area. On August 29, the party split. Henderson and 58 others moved to the drainage of the Clark's Fork. In early September he noted, "Here we found buffalo, elk, bear, deer, sheep & antelope in fact the whole country is alive with game of all kinds. too plenty for prospectors, as they will neglect prospecting for the sake of a good hunt" (Henderson 1894:16). Here Henderson offers us a modest surprise, the first apparent reference we have noted to purely sport hunting; the men did not need the meat amid such plenty, and so were hunting because they enjoyed the sport.

On subsequent days, Henderson saw many more animals, as well as another group of "several thousand buffalo" that stampeded at his party (Henderson 1894:16), and high cliffs near the Big Horn River, where "thousands of mountain sheep find a home & shelter during the winter time" (Henderson 1894:17). They then moved down to the Greybull River, where they continued to find game abundant, and eventually to the Wind River.

Also in 1866, David B. Weaver commented on the "plentiful" game in the Paradise Valley area. Weaver was one of the discoverers of the gold at Emigrant Gulch and Yellowstone City north of the present park area. He stated as follows:

When I left Yellowstone City (for the last time) on October 15, 1866, the former empty cabins were again occupied, by men who had come there to pass the winter and live largely upon the plentiful wild game (Weaver 1910).

1867

A. Bart Henderson traveled through Jackson Hole and up Pacific Creek, down the Yellowstone River to Yellowstone Lake, then down the Yellowstone River and out of the present park area and on down the Yellowstone River Valley to near the present site of Livingston, Montana.

In this year's diary we see one of the instances of his apparently revising or writing the account after the trip was over. On August 20, on Camas Creek (apparently southwest of the Teton Range, and very early in the trip), he said the stream "is one of the finest streams to capture trout in that we saw on our trip" (Henderson 1894:39). He could only

have made this judgment after having seen all the streams on the trip, it would appear. On the next two days he mentioned seeing many beaver ("thousands" in fact), and on the 24th arrived at the Henry's Fork, where a member of the party killed an antelope.

By August 28, the party was on the Gros Ventre, where "we found thousands of agates & other beautiful stones, of which I collected quite a lot.--Clover, timothy, & bunch grass, flies, gnats & mosquitoes without end" (Henderson 1894:42). By August 30, they were apparently high enough to see "the far famed Yellowstone Lake, about 15 miles northwest" (Henderson 1894:43). They headed toward the lake, commenting, as did so many others, on the difficult travel through deadfall in the forest, and then, once reaching the lake, commenting, as did so many others, on the wormy trout.

On September 2, they found "game trails running in all directions. We found several open parks covered with fine bunch grass, & elk everywhere. They all seemed to be making their way out of the mountains. John killed a very fine & fat cow. Cut off the choice meat and left the rest" (Henderson 1894:44). On September 3, apparently near Mount Washburn and certainly near the Grand Canyon of the Yellowstone ("this great chasm"), they encountered snow four inches deep. Henderson said there were "bear trails running in all directions, some so fresh that they smoked (Henderson 1894: 45). In the same area, they found "plenty elk, deer, antelope & bear" (Henderson 1894:45). Farther downstream, possibly below the mouth of the Lamar River, there were "Elk everywhere" and near camp along the river that night there were "Elk, deer & antelope in abundance" (Henderson 1894:45-46). The next day (September 5), apparently about 12 miles farther downstream, "Capt killed a fine buck antelope" (Henderson 1894:46). They proceeded past Bear Gulch, and down the river to the north. Topping (1968:25) reported that a party of prospectors named the gulch in 1863 because they saw "a hairless bear cub" there.

Also in 1867, a surgeon named James Dunlevy came up the Yellowstone River from Montana to Mammoth Hot Springs. A Montana newspaper reported that his party found "a herd of antelope" at the springs and killed and ate one of them (Haines 1974:35).

Also that year, a frontier journalist named Legh Freeman appears to have traveled through at least parts of the present park area, for he wrote of game and other curiosities in his newspaper, Frontier Index. Freeman stated that he owned a ranch in the Gallatin Valley of Montana, and had traversed the region thoroughly, talking to many people about it. Freeman apparently heard of Yellowstone from prospector Lou Anderson, and explored it on foot, carrying his supplies on draft cattle (Haines 1974:161).

Freeman wrote some fairly sensational items about Yellowstone (Varley and Schullery 1983:14), but he apparently did see the region, and so his comments are not without worth:

For, know you, that the 'Yellowstone Hell' is in the northwestern corner of Wyoming. So your young Territory possesses more wondrous volcanoes; the highest perpendicular falls of any considerable river; the Yellowstone falls 1,500 feet; the largest mountain lake, 60 by 30 miles, on top of the Rocky Mountains; more game, from a white buffalo to a white rabbitt [sic.]--waterfowl, from a black swan to a mosquito--fish, from the salmon trout to the trout--bear, from the great grizzly [sic.] to the black--tigers, from a cougar to a catamount--wolves, from the large gray to the half fox, half cayote [sic.]. Then deer, moose, elk, antelope and sheep by the thousand, besides fur animals from the \$400 pelt of the prized black fox to the diminutive white weasle [sic.] (Freeman 1868).

To what extent this was outright prevarication, or ignorance, or boosterism, we do not know. But amid the occasional white buffalo and black swan we do find a fairly complete list of the large mammals of the Yellowstone area.

1869

In 1869, the first of the several important "exploring" expeditions of the present park area occurred. The combined journals of these men were edited for publication by Haines (1965). The Cook-Folsom-Peterson party entered the Yellowstone River Valley, coming from Bozeman, on September 10, finding "numerous herds of antelope" near Trail Creek (Haines 1965:14). On September 11, they passed the ranch of Frederick and Phillip Bottler, near Emigrant Creek. Frederick, who was one of the most knowledgeable and energetic skin hunters mentioned in the historical record of the valley, must already have been at work, because the party noted "A pile of antelope and elk hides proved that they depend upon the rifle for their meat" (Haines 1965:15). The killing of elk and other animals in the upper Yellowstone Valley, mostly by skin hunters, became a major element of the wildlife story in the 1870's.

In Yankee Jim Canyon they "started a herd of antelope" and killed one, dining "sumptuously on antelope steak and trout from the water" (Haines 1965:18). On September 13, after crossing the Gardner River near the present park boundary, they camped on Rescue Creek, east of Mount Everts. Here Folsom commented on wildlife:

This is a hunter's Paradise. We saw the tracks of elk, deer and sheep in great abundance, and for several miles were scarcely out of sight of antelope, but as we have fresh meat enough to supply our present needs, we did not attempt to shoot any (Haines 1965:19).

On September 16, camped near the mouth of Calfee Creek, they heard 3 different species of wildlife:

As darkness approaches, the voice of the night breaks in upon the pervading stillness; the wolf scents us afar and the mournful cadence of his howl adds to our sense of

solitude. The roar of the mountain lion awakens the sleeping echoes of the adjacent cliffs and we hear the elk whistling in every direction (Haines 1965:27).

The next night, on Flint Creek, "We saw a great many deer today and, judging from their tracks, elk are also very abundant" (Haines 1965:28). On the Mirror Plateau on September 20, Folsom noted that "Our supply of fresh meat was getting low, so, towards evening I went hunting and succeeded in killing a fine elk within a mile of camp" (Haines 1965:31). On their way to the Yellowstone Lake, along the River, Cook shot two geese from among the "myriads" they saw, but it is not clear whether or not the three men added them to their larder (Haines 1965:34).

On September 24, Folsom and Cook described the waters of Yellowstone Lake as "feeding ground for thousands of water fowl and we can take our choice of ducks, geese, trout, pelican or swan" (Haines 1965:36); however, the next day they expressed concerns that their "supply of provisions is getting low" (Haines 1965:36), leading us to wonder if by provisions they didn't mean something other than meat--coffee, salt, or other supplies. This same day, however, they mentioned "...the bright vision of a supper upon fat ducks..." (Haines 1965:37-38), and on September 26 decide to stay on the shore of the Lake, at West Thumb, for two days to view "the many objects of interest" (Haines 1965:38). So to this point they apparently were not too alarmed about food shortages. Not only were waterfowl abundant, but at several points in their journals they mention catching trout easily.

Kay (1990) misstated the circumstances here, saying that "Unlike Osborne Russell (1965), Cook et al. (1965) reported seeing no game along the west shore of Yellowstone Lake" (Kay 1990:259). This puts words in the mouths of Cook et. al., who reported no such thing. What Kay may have meant, or could have said, at most, was that Cook and his associates made no report at all, on either the presence or absence of mammals, though they did several times mention the great abundance of waterfowl, some of which they killed and ate.

On October 2, Folsom offers the first statement about a shortage of wildlife, in the Firehole Valley:

There were no fish in the river, no birds in the trees, no animals--not even a track--anywhere to be seen, although in one spring we saw the entire skelton [sic.] of a buffalo that has probably fallen in accidentally and been boiled down to soup (Haines 1965:44).

We are inclined to agree with Haines (1965:44) that, "The presence of bones in Buffalo Pool should have been a sufficient hint that their a priori reasoning--or rather that of their prospector informants--was not correct. Then, as now, animals frequented the thermal areas at some seasons and avoided them at others." As well, it does appear that Folsom was caught up in the hyperbolic rhetorical opportunities of the extraordinary

setting they were visiting; why would there be no birds in the trees? In any case, with this one exception, the Cook-Folsom-Peterson party made no comments about wildlife except to celebrate its general abundance in the present park area.

At some unknown later date, Cook loaned his original diary to Mrs. Julia Haas Emery of Bozeman, Montana, who made notes from it. She wrote, in part:

They met moose, elk, and bands of antelope and mountain sheep, while the streams were filled...with large spickled [sic.] trout. The land seemed a hunter's paradise...they continued on their way, listening at night to the stealthy steps of the Bear, and almost human wail of the mountain lion, which seemed all about them, so that even their horses would draw near to the camp fire for protection (Emery n.d.).

This would appear mostly to paraphrase passages already quoted, but it is worth pointing out that the only mention of moose in the published journal was a single animal seen near Bozeman.

1870

In addition to the famous Washburn-Langford-Doane expedition, the parties of P.W. Norris, and A.B. Henderson visited the park area this year. A brief mention of moose appeared in a Bozeman, Montana-area paper.

P.W. Norris, who became superintendent of Yellowstone National Park in 1877, made his first trip to the region in 1870, before the arrival of the Washburn-Langford-Doane expedition. He recorded his experience in manuscript form (apparently anticipating later publication), the manuscript surviving in the Norris Papers at the Huntington Library.

Meeting his friend Fred Bottler at Bottler's Ranch, Norris started up the Yellowstone Valley toward the present park area. Also visited by the Cook-Folsom-Peterson party in 1869, the Bottlers had established their ranch in 1868. It became an important way station for many travelers into the region, and will figure prominently in several later accounts. Frederick Bottler was a hunter, and his brother Phillip was a farmer.

Unfortunately, near Cinnabar Mountain, Norris and Bottler encountered a problem. Bottler was swept away while trying to cross a stream, losing his gun and other equipment and injuring himself. The two men ascended a spur of Electric Peak, and Norris looked south into the present park area, where he saw distant clouds of "smoke or spray" (Norris n.d.). This was as far as the men got, owing to the earliness of the season and Bottler's losses and injuries. Norris stated that, "During our last day's hunt we killed one fine elk, four antelope, and some prairie dogs" (Norris n.d.) They packed the meat out on their horses. This is a rare early mention of prairie dogs south of Livingston, where they were apparently present at least late into the nineteenth century.

Prospector A.B. Henderson spent much of the summer of 1870 in the Hellroaring, Lamar, Tower, and Canyon areas of the present park. Here are excerpts from his diary:

June 10 [near Yankee Jim Canyon] "Horne [Miller] and myself killed several elk & blacktail" (Henderson 1894:48-49).

June 20 [Hellroaring Creek] "game plenty, but no gold" (Henderson 1894:50).

June 21 [head of Hellroaring Creek] "We turned to the left, crossed a low divide or gap, & came to a beautiful flat, which we gave the name of Buffalo Flat [now Buffalo Plateau], as we found thousands of buffalo quietly grazing.

This flat is something like 10 miles by 6, with numerous lakes scattered over it, & the finest range in the world. Here we found all manner of wild game--buffalo, elk, blacktail deer, bear & moose" (Henderson 1894:50).

June 23 [apparently farther north] "Grass scarce, but snow, buffalo, elk & bear plenty" (Henderson 1894:50).

June 24 [At head of Boulder Creek] "Killed several elk, grass scarce" (Henderson 1894:50).

June 25 "Clear & warm. Turned back & camped on main river at Moose swamp. Fine camp, good wood, water & grass. No gold. Formation cement and lava" (Henderson 1894:50).

June 26 "Killed fine buffalo cow & cut calf. Game plenty" (Henderson 1894:51).

June 27 "Fine grass game plenty--buffalo, elk, deer & bear, mosquitos [sic.] & ants"

[Later that day, this entry suggests that he had indeed crossed the divide from Hellroaring Creek to Buffalo Creek] "This creek is 50 feet in width, clear & beautiful. flows south 25 miles into East Fork of Yellowstone" (Henderson 1894:51). [Actually, the creek flowed into Slough Creek shortly before that stream joined the Lamar River, known to Henderson as the East Fork.]

June 28 "Killed several elk, buffalo & deer. Buffalo bull run thru [sic.] the tent, while all hands were in bed. Horne had wounded him. Located trail & killed a bear" (Henderson 1894:51).

June 29 [on Slough Creek] "3 miles from summit train attacked by a buffalo bull. Fired one shot, he run over me & attacked the horses. Finally killed him" (Henderson 1894:51).

[Later that day] "This stream is something like 100 feet wide, shallow, clear & gravelly. Here we found the first indications of gold. Saw several holes sunk in the Middle Fork. Saw the first moose near camp. Mosquitoes and flies plenty" (Henderson 1894:51).

June 30 "Located trail & killed a fine elk" (Henderson 1894:51).

July 1 [location unclear; apparently in upper Slough Creek drainage, near an unidentified "summit"] "Mountain sheep & wolverines plenty" (Henderson 1894:51).

July 2 [headwaters of "Middle Rosebud Creek"] "Thousands of bear, elk, buffalo & deer" (Henderson 1894:52).

July 4 "Fine grass, caught fine lot of trout. Killed several deer & 3 bear" (Henderson 1894:52).

July 6 "I killed large bear near camp" (Henderson 1894:52)

July 7 [still on Rosebud, apparently the same camp area for several days more.] "Killed several fat bull elk" (Henderson 1894:52).

July 9 "Dad & muself [sic.] left camp to prospect. Met an old she bear & three cubs. After a severe fight killed the whole outfit, while a short distance further on we was attacked by an old boar bear. We soon killed him. He proved to be the largest ever killed in the mountains, weighing 960 pounds.

We returned to camp, after killing give [sic.] bear & doing no prospecting" (Henderson 1894:52-53).

July 10 "Killed six bear today" (Henderson 1894:53).

July 14 "Passed thru [sic.] low gap to head of North Fork of Clark's Fork; followed down 4 miles. Camped in a beautiful bottom, fine grass. Several hundred elk near camp. Killed several fat ones" (Henderson 1894:53).

July 15 "Killed 3 elk" (Henderson 1894:53).

July 17 "Camped in a large basin covered with timber & several beautiful parks, full of buffalo, elk & bear. Gold everywhere, & mosquitoes, gnats, flies & ants" (Henderson 1894:53).

July 19 "Killed 3 bear" (Henderson 1894:54).

July 22 [not far from Pilot Peak, probably to the south] "This days [sic.] travel was south, thro [sic.] buffalo, elk & bear--all very tame" (Henderson 1894:54).

July 23 [upper Lamar River] "Here we saw thousands of antelope & flies" (Henderson 1894:54).

July 24 ["near a summit 15 miles north of the Great Falls of the Yellowstone," possible Mount Washburn] "Buffalo, elk & bear, while deer are more plentiful than we have seen on the trip. Killed several" (Henderson 1894:55).

July 26 [apparently up the Lamar River drainage] "Game trails everywhere, no gold but thousands of elk & deer" (Henderson 1894:55).

July 27 [apparently far up Lamar drainage, because the next day they drop into the Shoshone drainage] "...elk & sheep plenty, bear everywhere" (Henderson: 1894:55)

August 1 [still near headwaters of Shoshone, which Henderson knew as the Stinking River] "We left everything else in tent--21 traps & 27 bear skins" (Henderson 1894:56).

[Later that day, they moved to a "very rough canyon towards the East Fork."] "The benches covered with mountain sheep" (Henderson 1894:56).

August 3 [in upper Lamar River drainage] "Soon after camping our camp was attacked by wolves" (Henderson 1894:57).

August 4 [at least 6 miles downstream] "Feasted on trout....Killed 4 antelope" (Henderson 1894:57).

August 6 [near mouth of Buffalo Creek] "Killed a deer" (Henderson 1894:57).

August 7 [farther up Buffalo Creek] "Killed a fine bull elk--very fat" (Henderson 1894:57).

August 8 [near head of Hellroaring Creek] "Saw several buffalo....Killed 2 fat bull elk" (Henderson 1894:57).

August 9 [near head of "Middle Boulder"] "Thousands of buffalo, elk & bear. Found good trail. Killed 3 fat elk" (Henderson 1894:58).

August 11 "Killed a fine buck" (Henderson 1894:58).

August 12 [near West Boulder] "Killed 2 large bucks on the divide, both very fat" (Henderson 1894:58).

The internal evidence of these excerpts suggests many things to us. As far as his reliability as an observer, he only reported large numbers of mammals in areas where large numbers might reasonably be expected to occur. He plainly could not have seen "thousands" of everything he listed; we believe he used the term to describe great abundance, just as he used the term "plenty." He maintained his diary for some five years, making entries regularly, judging from his frequent information about weather conditions and his even more frequent attention to other details such as amounts of camp supplies and so on. His recorded kills seem reasonable for a party of prospectors who had no way to preserve meat, who were apparently also enthusiastic sport hunters, and who were not influenced by today's standards or ethics as far as killing of game.

It is not possible to determine, of course, whether many of the more general references to game abundance are based solely on animals seen or on tracks and other evidence. For example, on July 1, when he reported "Mountain sheep & wolverines plenty," did he actually see several (or however many he defined as plenty) wolverines, or did he suddenly notice many tracks or other sign?

As well, there is some uncertainty about his most intriguing observations, of moose. The first moose reference, on June 21, lists the moose along with a number of other animals that the party "found." But on Slough Creek on June 29, he reported "the first moose near camp." We cannot be certain if he meant the first moose he actually saw that year, or the first moose he saw near that camp.

Equally intriguing, on June 25, he mentions a place name, Moose Swamp, located in the upper Boulder drainage. At that date, it appears, there already was enough belief in moose presence that someone named a natural feature for the animal, a feature all the more significant for being a wetland, the sort of place moose might be expected to inhabit. Henderson might have named it himself, but does not say so; in 1871, when he named Trout Lake, he said so.

We also see in these accounts daily accumulations of bear hides that make his total of 27 seem quite unremarkable. Henderson and his party described more encounters with bears than other parties, but they also spent more time than other parties off the main trails, hunting along stream courses. We must wonder, however, how he weighed the huge bear he reports killing on July 9, or why he took the time to do so.

The wolf attack described on August 3 is also a puzzle. Weaver (1978) places this incident at the mouth of Cache Creek, while Aubrey Haines (1974:40) places it at the mouth of Miller Creek). There may be a question of meaning in the account. When Henderson said he was attacked by Indians, his meaning was clear: Indians were trying to kill him. This would lead one to assume he is claiming that wolves actually rushed the camp, trying to kill or harm the men. The literature of the North American wolf contains few or no reliable accounts of packs attacking humans, so we tend to doubt that whatever happened was quite that dramatic.

We also recognize the possibility of it having happened. Considering the startling array of animals Henderson and his associates killed, they may have had a lot of fresh raw meat with them in any camp, certainly an attractant to scavengers. Assuming that he did have some kind of encounter with wolves, we might propose that Henderson, rather like Russell at Ray's Lake as described above, may have found his camp surrounded by a wolf pack and regarded its presence as sign of an imminent attack. When describing his encounters with large mammals, Henderson rarely took the trouble to overdramatize events; more often he reported hunts and other adventures quite matter-of-factly. One of the reasons this episode has a ring of truth to it is that it is so briefly and casually stated. That is, his telling of an attack by wolves is not even a well-told tale, which makes it seem less likely it is a lie.

Useful corroboration of Henderson's 1870 account of abundant wildlife is provided in the journal of James A. Gourley, a prospector who traveled with Henderson part of the season. According to historian Aubrey Haines, who wrote the introduction to the surviving Gourley manuscript, Gourley's account "checks remarkably well with the Henderson source, supplying some details not available in that diary" (Haines intr. to Gourley 1929).

Gourley's account does indeed support Henderson's, though with less detail. Here is the portion on their early travels on the Buffalo Plateau:

From there we followed the mountain ridges until we reached the slough creek divide at the head of Wolverine Creek, we named Wolverine Creek because of killing a wolverine, about five miles from Lake Abundance. On the way we crossed the Boulder River near Independence. I had been interested in the discovery in 66. After looking it over a little, we went on. We crossed the head of Buffalo Creek and struck what was probably about all of the buffalo herd of the National Park country. That night we made our camp on the head of Wolverine Creek. The next morning we killed a wolverine. The first one any of us had ever seen and consequently gave the name to the creek. From there we made our way to Lake Abundance where we found the first gold prospect.

The course we followed was a hunters paradise, bear, chiefly grizzly, sheep, elk and deer, always high on the mountains under the banks, over the Buffalo tables, between Hell Roaring and Mill Creek and along a high ridge to the boulder (Gourley 1929:1).

This portion of Gourley's narrative probably explains Henderson's "wolverines plenty," possibly revealing it as an exaggeration, unless Henderson saw more animals or sign than Gourley mentioned. Generally, however, it does corroborate a great abundance of game as reported by Henderson.

Later in his account, after telling of an incident not involved in the trip with Henderson, Gourley related the portion of the trip where the Henderson party moved from near Pilot Peak to the Lamar:

After returning to camp we started out around Pilot Mountain to the head of the Creek south of Pilot Mountain crossing the divide to a creek that run into LaMar River. There was a wide open flat going down where there were hundreds of Elk so tame that they only moved a little distance to the side of us. Crossing the LaMar river we camped on the Yellowstone River below the Grand Canyon (Gourley 1929:2).

Again, Gourley provided general corroboration of Henderson's account of abundant large mammals, in this case in the Lamar Valley.

The best known party to visit Yellowstone in 1870 was the Washburn-Langford-Doane expedition, hereinafter the Washburn party. It consisted of nineteen men, forty horses, and a dog. Eight members of the party left accounts of the trip, two of them (Langford and Hedges) leaving two accounts (Hedges left three if we count a brief letter), and one of them (Trumbull) leaving three, for a total of twelve accounts. Doane's report was also quoted extensively in *Forest and Stream* (1874). As will be seen later, official reports provided material for many journalistic accounts.

The Washburn party traveled up the Yellowstone River, crossed the Northern Range along the river, climbed Mount Washburn, followed the river to Yellowstone Lake, followed the east and south shores of the lake to West Thumb, crossed to Old Faithful, then left the area down the Madison Valley. A review of the twelve accounts makes it clear that, as might be expected, not every member of the expedition reported the same events, and that no single account is sufficient in judging the party's encounters with wildlife. We see, for example, that Doane mentioned seeing wildlife much more frequently than did Washburn. Thus, without as full an accounting as possible of all diarists' observations, the party's experiences with wildlife cannot be adequately considered.

Doane (1970:224) noted that north of the Bottler Ranch "a few antelope were seen during the day, but no other game." Trumbull (1870) confirmed this. Doane (1970:233) mentioned the killing of an antelope between Bottler's and Yankee Jim Canyon. In the same area, north of Yankee Jim Canyon, Trumbull noted, "During the day plenty of small game was killed" (Trumbull 1871:432). Langford stated, "Tonight we have antelope, rabbit, duck, grouse and the finest of large trout for supper" (Langford 1871:6).

Samuel Hauser wrote that near the mouth of the Gardner River there were "plenty of trout and antelope" (Hauser 1870). Near Rescue Creek, Private Williamson killed an antelope (Doane 1970:245, Trumbull 1871:433).

Walter Trumbull, near Tower, said that, "we had plenty of fish and game here" (Trumbull 1870).

Near Mount Washburn, Doane saw "two magnificent buck elk" and wounded one of them, also reporting that Jake Smith scared up a bear (Doane 1970:265). He also reported that, "the ground was everywhere tracked by the passage of herds of elk and mountain sheep. Bear signs were everywhere visible" (Doane 1970:265).

Warren Gillette noted that from the top of Mount Washburn, the grassy areas to the north and west afforded "food for herds of Deer, Elk, Antelope, and Buffalo" (Gillette 1972:19). Near Mount Washburn, Hedges declared that, "Didn't go far over divide till we camped in timber, open, plenty of good feed and so of game, bear and elk very plenty" (Hedges 1904:379). These accounts do not make it clear if the animals were actually seen, if their tracks were seen, or if their presence was presumed. The last option seems the least likely, and we suspect both observers were basing their statements on some more substantial evidence than presumption.

Near the Lower Falls, Hauser stated that, "I killed a fine 'buck' blacktail," and Gillette confirmed it (Hauser 1870, Gillette 1972:19). Also near the falls, Doane reported that the party found a "large flock of mountain sheep, very tame" and one was killed (Doane 1970:282). Doane also observed, while near the canyon, that "on the caps of these dizzy heights, mountain sheep and elk rest during the night" (Doane 1970:281). Nathaniel Langford, describing the scenery around the canyon, stated that, "The river is filled with trout, and bear, elk, deer, mountain lions and lesser game roam the plains, forests and mountain fastnesses" (Langford 1972:33). Near the Lower Falls, Hedges reported that, "To all those points [on the canyon] were well-worn paths of the mountain sheep" (Hedges 1932:101). About two miles above the Upper Falls, Doane reported a "game trail" along the river (Doane 1970:285).

In Hayden Valley below Crater Hills, Doane observed that "elk were feeding in small bands on the other side of the valley" (Doane 1970:286).

On Beaverdam Creek, south of Yellowstone Lake, on September 6, Doane noted that "during the night we were several times disturbed by the dismal screaming of California lions, and in the morning found their huge tracks close around camp" (Doane 1970:307). Langford agreed:

Last night when all but the guards were asleep, we were startled by a mountain lion's shrill scream, sounding so like the human voice that for a moment I was deceived by it into believing that some traveler in distress was hailing our camp (Langford 1972:57).

In a contemporary magazine article, Langford reported the sounds this way:

During the night we were startled by the shrill and almost human scream of an amiss or mountain lion, which sounded uncomfortably near. This terrible animal is much larger than the panther of the eastern forests, but greatly resembles it in shape, color, and ferocity. It is the terror of the mountaineers, and furnishes them with the staple for many tales full of daring exploits (Langford 1871:116).

South of Yellowstone Lake, on September 8, Hedges' horse was frightened by a grizzly bear, and later Washburn and Hauser encountered a sow grizzly bear with cubs (Langford 1972:67-68). Doane commented on this and mentioned that, "These animals are very numerous in the basin" (Doane 1970:317-318). Doane also commented that Privates Williamson and Moore, who searched for the lost Truman Everts near Heart Lake, "found game plentiful and tame, and had no difficulty in obtaining an abundant game supply" (Doane 1970:384-385). This appears to be evidence not only of game seen, but of game killed, though numbers and species were not given.

Doane also commented on the ordeal of Everts, whose account is treated separately below: "Herds of game passed by him during the night on many occasions when he was on the verge of starvation" (Doane 1970:385). But perhaps the most important of Doane's comments was on September 6:

The ground was trodden by thousands of elk and sheep. Bear tracks and beaver trails were also numerous and occasionally was seen the footsteps of a California lion (Doane 1970:307).

These observations were partly confirmed by Langford, who said, "We have today seen an abundance of the tracks of elk and bears, and occasionally the track of a mountain lion" (Langford 1972:57). Doane, like Russell in the 1830's, suggests large numbers of bighorn sheep in the southeastern part of the park, though when Doane said "thousands of elk and sheep," he could be understood as saying, "thousands of elk and thousands of sheep," or "thousands of elk as well as sheep." Like Russell and Henderson before him, he leaves us to wonder how precisely he used the word "thousands."

Meanwhile, still south of the lake, Williamson killed "a fat two year old heifer Elk" (Gillette 1972:27). Gillette also observed that, "Occasionally where the trees are sparse, you see verdure suitable for the game that abound in this region" (Gillette 1972:25).

On September 7, Doane further reported on the presence of elk as follows:

After traveling some distance I discovered we were following a band of elk, having missed the trail in the darkness. We then struck out for the lake shore on which our course was regained but presently lost again after more elk (Doane 1970:310).

Doane, then, apparently saw (if he only heard them he might not have been able to determine that they were elk) two different elk groups this night. In the same area,

Doane mentioned that, "The small lakes are perfectly alive with otter, which may be seen playing upon their surfaces at night fall by hundreds. Beaver, mink, and muskrats are also abundant" (Doane 1970:318).

On September 12, despite the ample evidence of elk and other huntable wildlife in the area only a few days earlier, Langford commented that, "The country through which we have passed for the past five days is like that facetiously described by Bridger [see Raynolds account, earlier] as being so desolate and impassable and barren of resources, that even the crows flying over it were obliged to carry along with them supplies of provisions' (Langford 1972:80). Kay uses this statement as proof that the party "ran short of food in the park" (Kay 1990:261), because there was so little game. Seeing game and killing it are two different things, of course, but this is the first mention by any of the party that might suggest wildlife was anything other than abundant.

On the night of September 11-12, camped south of Flat Mountain Arm, Doane again reported mountain lion noises:

In the early morning we were serenaded by a couple of lions, their melancholy voices echoing through the heavy forest with a peculiar, wild and mournful sound (Doane 1970:325).

Langford's account agreed with Doane:

We were roused this morning about 2 o'clock by the shrill howl of a mountain lion, and again while we were at breakfast we heard another yell. As we stood around our campfire tonight, our ears were saluted with a shriek so terribly human, that for a moment we believed it to be a call from [the lost member of their party] Mr. Everts, and we hallooed in response, and several of our party started in the direction whence the sounds came, and would have instituted a search for our comrade but for an admonitory growl of a mountain lion (Langford 1972:80).

Langford's contemporary article (Langford 1871:11) said essentially the same thing. Mountain lions being more or less exclusively carnivores, we must assume there was prey, other than the explorers' horses, nearby.

On September 14, Doane reported, "of animals I saw several species of squirrels and weasel which do not appear in the books" (Doane 1970:121).

Langford commented on the mountain lions again on September 15:

Each night that we have been camped here we have heard the shrill cries of the mountain lions, and under a momentary illusion I have each time been half convinced that it was a human being in distress. Because of the mountain lions we are keeping close watch upon our horses. They are very fond of horse flesh, and

oftentimes will follow a horseman a long distance, more to make a meal upon the flesh of the horse than for the purpose of attacking the rider (Langford 1972:92-93).

Doane shared Langford's concern, commenting that a party of three would be safe in the region as long as they kept "close watch upon their horses at night as the lions would make short work with them if an opportunity was afforded, horse flesh being their favorite diet" (Doane 1970:334).

On September 16, while still at Yellowstone Lake, Langford for the first time mentioned concern about their provisions. In order to understand the context of his remarks, however, it is necessary to quote a later remark of his, from his September 19 entry, on the planning of the trip. As he wrote, the party was camped at the junction of the Firehole and Gibbon Rivers:

When we left Helena on August 17th, we believed that twenty-five days would be the limit of time which would be consumed before our return; but to meet all exigencies we laid in a thirty days' supply of provisions. We have now been absent thirty-four days, and as we cached some of our supply on Yellowstone lake for Mr. Everts' relief, we are now on short rations, but the fish we dried while camped on Yellowstone lake are doing good service (Langford 1972:116).

From this we learn for the first time that they were using fish from Yellowstone Lake in some volume, but we also see that the provisions, according to their planning, should have run out on about September 15. No wonder, then, that Langford made the following statement on September 16:

It is a source of great regret to us all that we must leave this place [Yellowstone Lake] and abandon the search for Mr. Everts; but our provisions are rapidly diminishing, and force of circumstance obliges us to move forward (Langford 1972:98).

According to an unpublished letter written by Hedges to his sister after the party returned to Helena, the "force of circumstances" Langford mentioned included 18 inches of fresh snow (Hedges 1870).

It appears from the record that only after passing Flat Mountain Arm did the party enter country in which wildlife was not frequently encountered. Up to that point, for all their observations of wildlife, and for their occasional killing of small and large animals to supplement their provisions, they seem not to have even required such supplements for survival. As well, though they ran short of food later, "provisions" would also have included coffee, salt, medicines, and any number of other items not readily replaceable in the wilderness.

On September 18, at the Upper Geyser Basin, while the party was camped north of the site of the present lower Hamilton Store, on the banks of Frog Pond, Doane saw more tracks:

...camped in a little grove of pine timber near the margin of a small marshy lake around which were to be seen numerous fresh signs of buffalo driven out by the noise of our hasty intrusion (Doane 1970:342).

Noise made by large parties was, in several cases, assumed to scare off wildlife. Kay (1990) has challenged these early travelers' perception of their experience, pointing out that in some cases these groups sent smaller parties out to hunt, and that these parties were often unsuccessful at finding animals as well. It might be enough to refer to a truism most hunters appreciate, that sometimes you find something and sometimes you don't, but judging from the frequency with which large mammals were seen by many of the travelers whose accounts we are reviewing here, the point is probably moot. In some instances below, with parties other than the Washburn one, we are able to test Kay's suggestion.

According to the evidence in their numerous accounts, the Washburn party encountered abundant wildlife until they were somewhere south of the lake. After that, and perhaps partly because they were then moving in haste (shortages of provisions and the onset of winter weather were both concerns for them), they reported less wildlife, though Doane did find evidence that bison inhabited the Upper Geyser Basin.

In an 1896 book Cornelius Hedges looked back on their adventure, and pointed out that, though they campaigned for the creation of the national park in order to protect the geological and geothermal wonders, they "builded even better than they knew," because the park became "a safe and secure resort for the great game that but for this last resort would in all probability be soon extinct, a sacred trust for our national government" (Hedges 1896).

The many references the Washburn party made to plentiful or abundant game, "thousands of elk and sheep," large and small herds of animals, and other sightings, were reinforced by the "lost" member of their party, Truman Everts. Truman Everts became separated from the rest of the party somewhere near Grouse Creek. His misadventures after that are one of the most colorful chapters in the history of Yellowstone travelers. His exact location at any time until his rescue 37 days later by Jack Baronett is almost impossible to determine, but he never left the present park area. Everts' account is not a diary, but was written very soon after the experience, and appeared in Scribner's magazine in November of 1871.

Early in his ordeal, probably still south of the Yellowstone Lake, Everts reported on the night noises:

The forest seemed alive with the screeching of night birds, the angry barking of coyotes, and the prolonged, dismal howl of the gray wolf (Everts 1871:3).

Near Heart Lake, Everts found an abundance of wildlife:

large flocks of swans and other water-fowl were sporting on the quiet surface of the lake; otters in great numbers performed the most amusing aquatic evolutions; mink and beaver swam around unscared, in most grotesque confusion. Deer, elk, and mountain sheep stared at me, manifesting more surprise than fear at my presence among them (Everts 1871:3).

This seems to corroborate Doane's account of Williamson and Moore, who also found wildlife abundant near Heart Lake. A few days later, in a tale that occupies a full column in his original magazine article, Everts encountered a mountain lion, and spent some time in a tree while the lion circled below (Everts 1871:4-5). He subsisted on thistle and a small bird.

Several days later, now probably north of Yellowstone Lake, he again encountered night sounds:

The deep gloom of the forest, in the spectral light which revealed on all sides of me a compact and unending growth of trunks, and an impervious canopy of somber foliage; the shrieking of night-birds; the supernaturally human scream of the mountain lion; the prolonged howl of the wolf, made me insensible to all other forms of suffering (Everts 1871:8).

By this point in his narrative, the florid Victorian prose becomes even more difficult to penetrate for factual details because he admits to experiencing some sort of delirium. He imagines that he will be devoured by a "forest monster," and that he is about to be torn asunder by wolves, but these cannot be counted as sightings or reliable reports (forest monsters not appearing elsewhere in the historical, archeological, or paleoecological record anyway).

He tried to fashion fishing gear from his spectacles, but "The tackle was defective. The country was full of game in great variety. I saw large herds of deer, elk, antelope, occasionally a bear, and many smaller animals. Numerous flocks of ducks, geese, swans, and pelicans inhabited the lakes and rivers. But with no means of killing them, their presence was a perpetual aggravation" (Everts 1871:13). Near Tower Fall, he rested in a bear den.

Everts was finally rescued after 37 days by Jack Baronett and George Pritchett. Baronett reportedly killed a mountain lion nearby:

Mr. Barnett [Baronett] says he killed a mountain lion near where he found Mr. Everts, and thinks the beast was on his [Everts'] path (Helena Daily Herald 1870).

According to Doane, speaking of Everts, "A large lion was killed near him on the trail which he said had followed him at a short distance for several days previously" (Doane 1970:385). This information may have been the result of personal communication between Doane and Everts, as it does not appear in Everts's account. Doane also may have communicated with Baronett, or read of the event in newspaper quoted above.

Finally, early on March 10, 1870, the following report appeared in the Montana Pick and Plow, an extremely rare early area newspaper (only three issues are known to exist):

A moose was brought in from the Yellowstone during the week, which weighed eight hundred pounds. Its head was as large as a horse's, but a view of the horns suggests that it should have been as big as an elephant's; some of the prongs are a yard long (Montana Pick and Plow 1870).

1871

This year the very large party of Ferdinand V. Hayden's U.S. Geological and Geographical Survey of the Territories, along with its military escort, passed through the park. Several lesser known parties did as well, including those of R.W. Raymond and C.C. Clawson, H.B. Calfee, A.B. Henderson, and a lone traveler Bozeman Dr. Howard O'Neill.

The R.W. Raymond party consisted of U.S. Mining Commissioner Rossiter Raymond, journalist Calcium Clawson, photographer A.J. Thrasher, Assistant Mining Commissioner Eiler, Indiana businessman J.D. Daugherty, and Gilman Sawtell, a prominent guide from Henry's Lake. Raymond, Clawson, and Thrasher left accounts; Thrasher's does not mention animals.

The party entered the park from the west and traveled to the Lower Geyser Basin, then over the divide to Yellowstone Lake, where they apparently stayed for an extended period, evidently visiting West Thumb before traveling to the Canyon and then back out the west side of the park.

Clawson mentioned seeing a bear near Henry's Lake (Clawson 1871a), and then, along the South Fork of the Madison, near present West Yellowstone, Montana, he noted, "Elk, moose, deer, sheep, and antelope feed upon its green banks or slake their thirst in its pearly waters" and again mentioned bears (Clawson 1871b).

The party also visited Red Rocks Lakes before entering the park, where Clawson observed, "Being out of the usual line of hunters and sportsmen, elk, moose, deer, as well as different kinds of small game abound in this wild, secluded spot" (Clawson 1871c).

Entering the park area and viewing Madison Canyon, Clawson said, "Game is abundant in this locality, and we saw many fresh tracks of elk and deer passing to and from the [Madison] valley below" (Clawson 1871d).

At Fountain Flats, Clawson said that, "...tracks of elk and deer were visible on all sides" (Clawson 1871e).

He referred to Yellowstone Lake as "the fishing and hunting grounds, where elk and moose and deer and bear have maintained their rights to this, their Eden since the day they were given possession" (Clawson 1872a).

Probably near West Thumb, he reported that "a band of hungry wolves sat upon a point some distance away and howled and yelled a most heart-rending war song, that seemed to terrify even our dog, who was a wolf-hunter by profession" (Clawson 1872a). He later referred to Yellowstone Lake as a place of "...fish and game of endless quantity" (Clawson 1872b), and during a storm there, made the following observation:

Elk in bands flew away at the sight of us or stood in groups until the crack of the riddle [sic.] admonished them they stood in dangerous places. Then we looked forward in our imagination on venison cutlets and steaks of elk (Clawson 1872c).

Here we see one hunter, in one series of experiences, demonstrating the variability of game behavior; sometimes they run away, and sometimes they don't.

Raymond's accounts of this trip appeared in several places: a book he wrote, an article in an obscure New York periodical, in Harper's Weekly, and in Montana newspapers. Two separate full accounts exist.

In his Harper's article, Raymond made the following general statement about park-area game, including a mention of wolves that seems to corroborate Clawson's account:

...most of the country abounds in game. The mountain bison is rarely seen: bears frequent the service-berry thickets and the ravines...troops of antelope course over the grassy uplands and valley benches; moose, elk, and deer haunt the forest glades, and trample the edges of the water-courses; the prairie wolf, or coyote, and his larger cousin, the mountain wolf, howl plaintively o' nights (Raymond 1873:274).

In the New York Christian Union, Raymond described the Madison Canyon area: "The forest and the wave alike teem with legged and winged game" (Raymond 1874:437). He also mentioned an encounter with a grizzly bear (Raymond 1874:437) and game near (if not inside of) the present west boundary, on the Madison River: "[At night] there are deer and elk going down to the water to drink" (Raymond 1874:437).

He reported "four footed game of every variety in forest and field" near Henry's Lake, noted numerous beaver dams near Hebgen Lake, and made another general comment about the game of the area:

At this camp, we got a taste of the mosquitoes [sic.] and black flies which taught us that the country did not swarm exclusively with game for us (Raymond 1872b).

He also mentioned that Clawson saw a bear on the Madison River, and that on Duck Creek, Sawtell's dog chased a coyote (Raymond 1872c).

Photographer Henry Bird Calfee and his companion Macon Josey visited the park area in 1871, and left several mentions of wildlife there. Calfee stated that while the two were camped near Mud Volcano, and were almost out of provisions, there was no cause for concern:

Meat however was in abundance. It consisted of buffalo, moose, elk, bear, wolverine, black and white tail deer, antelope, mountain sheep, goat or ibex, wolf, lion, fox, coyote, badger, otter, beaver, mink, marten, sable, rabbit, muskrat, porcupine, rock dog, squirrel, chipmunk, grouse, goose, duck, swan, pelican, crane, brant, eagle, owl, hawk, crow, raven, blackbird, blue-jay, snow bird, curlew, sage hen, prairie chicken, and wormy trout, with which the upper Yellowstone and Lake abounded. This bill seems elaborate, but all could be gotten within five miles of our camp and in a very short time (Calfee 1896:2).

This is a singular list, not only because it seems to suggest that Calfee was willing to eat quite a few things most travelers would not consider good fare, but also because it makes what we would regard as fairly extravagant claims for some species. Where within five miles of Mud Volcano would one find goat habitat?

At Crater Hills, Calfee "killed an elk and a buffalo and fire dried quite a quantity of meat" (Calfee 1896:2). On a tributary of the Firehole River, Calfee watched a deer fall into a hot spring as it attempted to flee from them, and his companion, Macon Josey, was badly injured trying to rescue the deer (Calfee 1896:2). On several other occasions, Calfee referred to eating meat from their stores, presumably meat shot in the region.

A writer known only as "Semi-Occasional" (pen names were far more common in periodicals of that day than now) accompanied a party to Mammoth Hot Springs in the summer of 1871. The party saw antelope south of Bottler's Ranch and then traveled to what is now called Boiling River on the Gardner River, about a mile and a half from Mammoth Hot Springs. There they met a Colonel Chestnut from Bozeman, who treated them to "a feast of elk calf" (Semi-Occasional 1871).

A. Bart Henderson returned to the park area in 1871, spending much time around the northeast corner. The following excerpts contain his mentions of wildlife:

May 16 [at Crevice Lake] "Saw buffalo sign" (Henderson 1894:60).

May 18 [on Hellroaring Creek] "Killed 4 elk" (Henderson 1894:60).

May 19 "Killed antelope" (Henderson 1894:60).

May 26 [near Lamar River] "Killed 2 fine buffalo" (Henderson 1894:61).

May 30 [three miles up the Lamar River from the mouth of Soda Butte Creek] "Killed 2 elk & one blacktail" (Henderson 1894:61).

May 31 [same site] "Killed 2 elk" (Henderson 1894:61).

June 2 [at "Red Mountain 6 miles below the mines"] "Killed 4 mountain sheep" (Henderson 1894:61).

There is a break here, during which at least one "spree" occurred in camp (Henderson and his associates appear to have led a pretty raucous existence, with a number of drinking sessions reported), and then various altercations broke up much of the prospecting in the area.

June 24 ["East Fork of Slough Creek"] "Killed fine blacktail" (Henderson 1894:63).

June 25 [Buffalo Creek] "Killed fine bull elk" (Henderson 1894:63).

June 26 [mention of trail] "Buffalo trail on east side to head of Middle Boulder" (Henderson 1894:63).

June 27 [approaching head of Mill Creek] "Buffalo, elk & bear plenty" (Henderson 1894:63).

The rest of the diary for 1871 involves very little prospecting or hunting, though it does include two sprees and a "jollification."

A Bozeman physician, Howard O'Neill, traveled to the Canyon area this year. His trip is almost completely unknown to historians. O'Neill saw enough tracks and game trails at the Lower Falls to merit this observation:

The trail and worn tracks made by countless generations of moose, elk, deer, and other wild animals coming down the mountains in the fall and returning in the spring, are imprinted into the solid shelf, where, having left their routes, they come to gaze over at the wonderful waterfall (O'Neill 1871).

The anthropomorphism of this statement may be out of date now, but otherwise it seems a legitimate account.

The Hayden Survey of 1871 included about 20 people plus packers and cooks, as well as an unknown number of stock, presumably more than one per person. They ascended the Yellowstone River to Yellowstone Lake, circled the lake, explored the Firehole River basins, probed the southeast corner of the park-to-be, ascended Pelican Creek, crossed the Mirror Plateau, and then descended the Lamar and Yellowstone Rivers out of the area. Accounts were left by Hayden, Peale (2), Barlow and Heap, and Jackson, the photographer who left 4 published accounts plus his personal diary.

Hayden's own published account has been used by some previous investigators (Skinner 1927:173, Kay 1990:264-265) as proof that there was little game in the park area, again demonstrating the need to examine multiple sources.

Hayden did make a few comments about wildlife. Near the mouth of the Lamar River, he noted the following:

The finest of mountain water, fish in the greatest abundance, with a good supply of game of all kinds, fully satisfy the wants of the traveler, and render this valley one of the most attractive places of resort for invalids or pleasure-seekers in America (Hayden 1872:76).

Kay (1990:265) accuses Hayden at this point of a deception, apparently thinking Hayden lied in this official report in order to boost the popularity of the area:

It appears Hayden may have included his reference to abundant game to promote tourism in Yellowstone. It must be remembered that Hayden and others used this report to lobby for the creation of Yellowstone National Park (Kay 1990:265).

We do not find this argument persuasive. Hayden did not have a reputation for lying. Instead, we find Kay's approach questionable here. In his analysis of the historical accounts, Kay proposed that Ludlow, Strong, Norris, Hayden, and Henderson were being dishonest (as opposed to merely being in error) in their reports of animals in the park. That is, in order to maintain his case, Kay is in the peculiar position of accusing 25% of his sources of lying.

The evidence from the other Hayden party accounts indicates there was no shortage of game. Hayden himself did not believe it was rare:

A small party in charge of Mr. Stevenson returned from Hot Spring camp to Bottler's Ranch, by way of the west side of the lake, to obtain additional supplies. On the evening of August 9, we camped at the head of the main bay, west of Flat Mountain. Our hunters returned, after diligent search for two and a half days, with only a black-

tailed deer, which, though poor, was a most important addition to our larder. It seems that during the summer months of August and September the elk and deer resort to the summits of the mountains, to escape from the swarms of flies in the lowlands about the lake. Tracks of game could be seen everywhere, but none of the animals themselves were to be found (Hayden 1872:131).

It is not clear from the context just what supplies Stevenson went to Bottler's for, but they could have included food.

Peale's diary alone indicates that the Hayden party encountered much game and evidence of game. At Bottler's Ranch, he reported that, "they have a great many skins--bear, antelope, etc." (Peale) and further mentioned that "Our hunters came in with plenty of antelope" (Peale 1871). He reported that near Mammoth Hot Springs, "One of the men of Genl Barlow's party brought in a bear & 2 cubs which he killed" (Peale 1871). We see here, incidentally, the continued skin-hunting work of Fred Bottler, which recurs in many accounts.

Near the Cut (east of Tower), "we saw 2 antelope and flushed [3] flocks of grouse." At Antelope Creek they saw, "2 herd of antelope one containing 8. The other was too far away to count them." On July 29, he reported that party members who visited Stevenson's Island said "the tracks of game are abundant." On July 31, probably in Hayden Valley, "we saw an Elk but he was too far off to shoot & he soon saw us & [trotted] off" (Peale 1871).

A second account of the trip to Stevenson Island exists. Norton (1873) stated as follows:

...after about one-and-a-half hours rowing they reached the shore of the island, and to their utter astonishment the first thing that met their eyes was the track of a bear, the dimensions of which indicated one of the largest of his kind. On alighting from the boat and looking around, numerous tracks were observed of the same animal; also those of the wolf, elk, deer, rabbits, and evidences of a variety of smaller quadrupeds (Norton 1873:37).

A third account, by travel writer E.J. Stanley, is slightly different, but we do not know if it is based on any original source or is merely taken from earlier accounts:

Mr. Stevenson found them [the islands] covered with large pine-timber, abounding in dense jungles, the safe retreat of bears, mountain-lions, deer, and other game, the signs of which were but too abundant (Stanley 1878:136).

The movement of large animals to and from islands in Yellowstone Lake apparently occurs in both summer (by swimming) and winter (across the ice), and we see no reason to doubt at least the more original of these accounts.

From August 1 to August 26, Peale made many game entries in his diary. In summary, they follow. On August 1, on the Firehole River (Haines 1977 I:145), "Jose saw a buffalo and wounded him but did not get him." On August 3, camped near Giant Geyser, "Jose was in having been on the hunt for game all morning without success." Peale repeats this statement later in the entry for the same day. On August 4, "We had squirrel and partridge for dinner as Jose got no game." On August 6, "We had a rabbit for breakfast which tasted very good in place of bacon." On August 7, Peale's group returned to the lake to find "the party here living on 2 biscuits for dinner with what meat they could get and 1 biscuit & cup of tea for supper." This certainly sounds like short rations. On August 8, Peale "had prunes bacon bread & coffee" for breakfast. Later that day, "one of the soldiers saw three bears but was afraid to shoot. His excuse was that he had but one cartridge" (Peale 1871).

On August 9, Peale noted, "We saw an elk on the way. [near Flat Mountain?] Lieut. Doane shot at but missed him." He then added, "Jose and Clark came in with a blacktail deer." This may have been the one that Hayden mentioned, but instead of describing it as poor, Peale said it was "very tender & delicious" (Peale 1871).

On August 11, the party saw beaver dams at the south end of the lake and "saw a wolverine" as well, and "The Lieut. shot a duck which with a rabbit that Steve caught we had for supper." Peale had rabbit for breakfast the next day, and one party member "shot a pheasant [grouse?] taking off its head." They then fished, and "soon caught enough for dinner." But then "Jo Clark came in this evening with a goose & said that Jose had an elk & that they had killed three but we came too far for them to bring in. Goodfellow shot 6 ducks" (Peale 1871).

August 13, Jose came in with more elk meat (the diary is unclear but it might read "600 pounds"). A revealing remark about the provisions appears this day: "We are reduced now again to one biscuit a meal," suggesting that flour, at least, was in short supply, though meat was now abundant. In one of the vicissitudes that many hunters will recognize, one of the party fired five times at a bear that, upon closer inspection, turned out to be a tree stump. Two members of the party brought in a "female eagle" they "shot on a nest near the trail" (Peale 1871).

On the morning of August 14, two "pine hens" were killed from a group flushed along the trail. They wounded and captured another eagle--presumably the mate--at the eagle nest. They were out of yeast at this point. Late in the day, "Steve sent Jo Clark back on the trail with a pack for the meat he left behind. I spent the afternoon reading. Jo Clark came in after dark without the meat saying it had been eaten by some animal" (Peale 1871).

On August 15, Peale reported that, "All our flour has been used and we have to live on meat coffee & tea." Two beaver dams were seen, and a bear was seen and a blacktailed deer shot. Jose shot another deer on August 16, and on August 20, Jim and Cam "saw 2

deer and an elk" and killed one rabbit. On August 21, one party member saw bear tracks, and another shot at and missed a deer. Possibly near Turbid Lake, they "saw three elk but got none of them" (Peale 1871).

On August 23, they saw two elk as they entered Pelican Valley; "Jo & Jose went after them but did not get either of them." They shot some ducks and geese in the creek. Near the divide ("9700 ft."), "We saw a deer on Pelican Creek and the Lieut. shot a 2nd one. We saw numbers of places where elk had lain & their tracks were fresh in every direction. Joe Clark shot some geese this afternoon." Later in the day, "Joe Clark killed an elk & Jose came in with a deerskin (blacktail) having hung up the meat. Smith also killed an elk" (Peale 1871).

On August 24, "We passed the Elk that Smith shot & when Jackson came along he photographed him." On August 25, having followed the Lamar River and crossed the Yellowstone on Baronett's Bridge, "We saw a herd of antelope on the way. Jackson fired but missed. We also saw 3 polecats. Jackson fired at them also but missed" (Peale 1871). On August 26, a few miles below the present site of Gardiner, Montana, on the Yellowstone River, "we had a good supper of antelope Jose having killed 3 and Jo Clark one. We had fish also." On August 28, apparently near Bottlers, they "flushed three flocks of prairie hens & saw two antelope besides a number of rabbits" (Peale 1871). The next day, they started for Fort Ellis, and saw more antelope on the way.

Peale's diary alone indicates that the party frequently saw game, though they occasionally ran short of meat and (more often) other provisions. It is curious that Hayden did not mention all the other wildlife taken by his party, but the party was often split up, and he was primarily concerned with reporting other things.

William Henry Jackson also wrote of the trip, but said little of game. He did mention shooting a grizzly bear south of the lake (Jackson 1940:249-250). More important, he contributed excellent photographs that provide compelling visual evidence of the animals the party saw.

Jackson photograph no. 203 (Fig. 2), shows the Bottler's ranch in 1871 (reprinted in Haines, 1977 I:152). In the right foreground is a very large open, roofed structure that is solidly filled, in fact it is overflowing out the back, with hundreds of hides of several sizes. There also is a young pronghorn standing next to one of the men in the photograph.

Jackson photograph 302 (Fig. 3) shows, as Jackson wrote, "Our hunters, Jose and Joe Clark, returning from a successful hunt, with pack-animal laden with elk-meat" (Jackson 1875:31).



Fig. 2. W. H. Jackson photograph No. 203, 1871, Bottler's Ranch. Yellowstone National Park Photoarchives.



Fig. 3. W. H. Jackson photograph No. 302, 1871, "Our hunters, Jose and Joe Clark, returning from a successful hunt, with pack animal laden with elk-meat" (Jackson 1875:31). Yellowstone National Park Photoarchives.

Jackson photograph 304 is "An elk, Cervus Canadensis. Very abundant about the [Yellowstone] lake. The one shown in the view is two years old, with horns still in the velvet" (Jackson 1875:32).

Jackson photographs 305, 306, and 307 are three views of Soda Butte (Jackson 1875:32). The first two of them show a bull elk skull with antlers on the northwest side of the formation; it may have been placed there for the photograph, but must have been from nearby. Number 307 was taken from the west, and shows the creek flowing toward the camera with the butte in the middle distance. There is an elk antler along the creek in the foreground.

Jackson photograph 467 is another view of an elk (Jackson 1875:34).

Captains Barlow and Heap led the military escort for the 1871 Hayden Survey. Their route covered much of the present park, and at times they camped with the survey party. This means that some of the meat taken by the hunters--as described by Peale, above--may have been eaten by the military escort as well.

The published report left by Barlow and Heap further fleshes out the picture of where evidence of game was found. It seems apparent, given the numerous mentions of other animals killed and described in Peale's account, that party leaders did not always trouble themselves, in their published reports, at least, with the details of day-to-day provender. Knowing that, we can use Barlow's account to supplement what is already established about conditions in 1871.

Barlow noted that "Several antelope were seen as we came up this valley [the Yellowstone, approaching Bottler's ranch from the north], none, however, sufficiently near to allow of their being shot" (Barlow and Heap 1872:7). An important early observation of theirs was of the Bottler ranch:

two brothers, named Bottler, who have several fields already under cultivation. Their crops of wheat, potatoes, and many other vegetables yield an abundant harvest, while in the raising of stock and making of butter and cheese they have met with remarkable success. A ready market for their produce is found in the mining camps across the river (Barlow and Heap 1872:7).

This suggests that the sorts of provisions Hayden and his party most needed--such as flour--were to be had at Bottlers. We imagine that Stevenson went for such provisions, considering how much meat the hunters were finding. Note also the existence of miners in the valley; pressures on the game were increasing.

Upstream from Yankee Jim Canyon, Barlow reported that they "caught trout by the dozens" (Barlow and Heap 1872:8).

While camped near Mammoth Hot Springs, Barlow corroborated Peale's account of bear meat brought in:

While at this camp one of the men killed a large brown bear and three cubs. The latter were brought in and served our mess with delicious steak for several meals (Barlow and Heap 1872:11).

Peale thought there were two cubs, and apparently thought that the sow had been brought in too; Barlow seems to say only the cubs were brought in.

Near Baronett's bridge over the Yellowstone (not far upstream from the mouth of the Lamar), Barlow noted that "In this area were three or four small lakes or ponds literally covered with ducks" (Barlow and Heap 1872:12). Near Tower, "The trout in this part of the river are exceedingly fine and added much to the variety of our mess" (Barlow and Heap 1872:12). Near the summit of Mount Washburn, "I discovered that I was following the trail of a bear to his den" (Barlow and Heap 1872:13). Also near Mount Washburn, he saw elk:

In this forest were many open glades covered with grass and flowers. In one of these, quietly reposing, I discovered three fine elk, which, upon my approach, disappeared into the thick underbrush before I could bring my carbine to bear upon them (Barlow and Heap 1872:14).

Near Mud Volcano, he mentioned that "Ducks are usually found in these sluggish streams, as well as in the little lakes so numerous throughout this whole region" (Barlow and Heap 1872:15).

Also at Mud Volcano, Barlow reported a mountain lion screaming:

July 29.--Sounds resembling a human voice calling for help were heard at intervals throughout the night; it is supposed they proceeded from the throat of a species of panther, called the American lion. I saw the skin and claws of one of these animals at Bottler's Ranch, which had belonged to a formidable specimen of this genus. In size it must have been somewhat under that of the lions usually seen in menageries, though from the appearance of the head and claws it must have nearly equaled them in strength and fierceness (Barlow and Heap 1872:17).

The skin at Bottler's is, of course, an additional sign of lion presence in the Yellowstone area.

At Yellowstone Lake, Barlow discussed the "very numerous" fish there, and their worms. At Pelican Creek, he reported a "long sand-bar here reaches out into the lake, the resort of numerous water-fowls" (Barlow and Heap 1872:18).

The party traveled over Mary Mountain to the Firehole at the Lower Basin. At Rush Lake, Barlow reported "tracks of deer, elk, and buffalo in great abundance were seen" (Barlow and Heap 1872:21). Near Kepler Cascades and Scaup Lake, Barlow said, "We found game and Indian trails during a part of the way, but as they usually bore too much to the westward we had to select our route across the country by the compass alone" (Barlow and Heap 1872:31).

Apparently at Heart Lake, he wrote as follows:

I was greatly relieved to find the whole party assembled again; the lost men having been recovered by Captain Heap's party at the other camp, to which they had just returned, after wandering two days in the woods. They had suffered very little, having killed a deer the second morning, which supplied their immediate necessities (Barlow and Heap 1872:35).

On a branch of the Snake River, he described the fish as "very excellent, though shy and difficult to catch" (Barlow and Heap 1872:35). On the upper Yellowstone River, apparently just south of the present park boundary, he reported that, "Signs of game abound, among which were found the tracks of the grizzly and black bear, mountain-sheep, elk, and deer" (Barlow and Heap 1872:36). Near Bridger Lake, "we encountered a large grizzly bear and cub" (Barlow and Heap 1872:37).

By this time, Barlow was regularly commenting on the poor condition of his stock, which caused him to travel more slowly, and at a point 18 miles up the Yellowstone River from the Lake he noted that "Our provisions were just exhausted, but the arrival at this point of fresh supplies, sent for from the west side of the lake on the 9th instant, relieved my anxiety in that respect. These stores would, however, be no more than sufficient to last us to Fort Ellis [near Bozeman], traveling as slowly as the poor condition of the animals rendered necessary" (Barlow and Heap 1872:37).

It is not possible from the context to tell if "provisions" meant meat, did not mean meat, or meant a variety of things including meat. But these are presumably the provisions brought up by Stevenson, which we see reason to believe, as explained above, were flour and other staples. With game so abundant, and as often killed as Peale reported, it is hard to imagine that Stevenson was hauling large quantities of meat all the way from Bottler's.

Barlow did not mention food again until visiting the Falls, when his party fished the river between the Upper and Lower Falls, and "caught some very fine specimens of trout" (Barlow and Heap 1872:39). North of Sour Creek, "the wood abounded with game-tracks, several elk and deer being seen just in advance of our train" (Barlow and Heap 1872:40). Near the mouth of Soda Butte Creek, in the Lamar Valley, "Numerous bands of antelope were seen skipping over the prairie while we remained in the valley" (Barlow and Heap 1872:41). Near Baronett's Bridge, "Two packers crossed the river and

returned the next day, bringing with them the carcasses of an elk and a deer. We were now provided with fresh meat for the remainder of the journey [to Fort Ellis] (Barlow and Heap 1872:41).

Barlow at no point says there was a shortage of game in the park; his occasional observations reveal the opposite, and further fill out the picture provided by Peale, that large mammals or their tracks were seen at many points along the routes of travel of the Hayden survey of 1871.

1872

Parties led by Harry Norton, Seth Bullock, A.B. Henderson, John Gibbon, F.V. Hayden, and Ed Hendrie entered the park the year it was established. Additionally, James Richardson's book, *Wonders of the Yellowstone Region*, was published in late 1872, based on information gained from several of the 1870-1872 visiting parties.

It is not known whether or not James Richardson made a trip into the park area himself. His book does contain some statements that are made independently of his sources, so if he did not make the trip, he apparently talked or otherwise communicated at some length to members of the Washburn, Hayden, Barlow, or other parties. Though the book has a publication date of 1873, internal evidence in a surviving copy, an inscription dated January 2, 1873, leads us to believe that the book was actually printed at the end of 1872.

Richardson noted of Yellowstone Lake that, "Its waters teem with trout, and the primeval forests that cover the surrounding country are crowded with game" (Richardson 1873:2). He also noted that, "Herds of deer, elk, and mountain sheep, throng the forests and mountain meadows about the [Yellowstone] Lake. Buffalo signs, grizzly bears and California lions are far from uncommon, while the smaller lakes and creek-valleys of the basin are fairly alive with otter, beaver, mink, and muskrat" (Richardson 1873:111).

Careful readers will note parallels between these statements and those of the 1870-1872 parties quoted above. The record of Yellowstone exploration was, even as early as the year of the park's establishment, being put to use by commercial journalists. As well, a few years later, Marshall (1880b:5), quoted from several accounts from around 1878 in this report, plagiarized Richardson's statements almost exactly.

Seth Bullock, who later was a leading figure in Montana territorial politics, made a trip into the park in 1872. His short journal recorded that he saw two bears on Mount Washburn and shot one of them. He also killed an elk on Trail Creek north of the park (Bullock 1906).

A. Bart Henderson spent less time prospecting the Yellowstone area this year than in previous years, and made far fewer notes about wildlife. His only useful diary entry for the year is this:

On our way to the settlements [from the Cooke City area] we visited Slough Creek, Buffalo, Hell Roaring River & Crevice & Bear Gulches, East & Middle Forks, Mill Creek & a number of other streams, & killed several bear, buffalo, elk, black & white tailed deer, & mountain sheep & many other small animals & curious fowls, & finally on the 31st of Aug we arrived on the east side of the river opposite home & found it swimming (Henderson 1894:66).

The Hayden party of 1872 consisted of two divisions numbering 34 and 30 men respectively, each group with its own stock. The published reports by Hayden, Peale, and Rudolph Hering do not mention animals in any detail, being concerned with the subjects of the survey. Frank Bradley's published report does contain some mentions of animals in the region, as do unpublished diaries of other survey members. Because these travelers often split up, we will not integrate their accounts as we did with those of the Washburn party.

In the Teton Basin, southwest of the park, Bradley described a pond with marshy borders, "whose surface was covered with tracks of antelope, deer, and elk" (Bradley 1873:215). In Jackson Hole, east of Grand Teton, elk tracks were "abundant" (Bradley 1873:223).

Bradley's party then traveled to Henry's Lake, where they met trappers Sawtell and Wurtz, who reported "that game is still abundant in the neighborhood--antelope, deer, elk, moose, bear, and mountain sheep, as well as smaller antelope" (Bradley 1873:226). On Sawtell Peak he reported that "trails of mountain-sheep were abundant, but the only vertebrate seen was a large gopher..." (Bradley 1873:227).

In the Madison Valley not far from Reynolds Pass, Bradley reported that "antelope and black-tailed deer were seen in considerable numbers in this park-like region, which continued up to the mouth of the upper canyon of the Madison" (Bradley 1873:229).

At the Lower Falls, Bradley noted that, "This is evidently a grazing-ground of deer and elk, whose tracks abounded, even on steepest slopes" (Bradley 1873:232). After descending into the Canyon, Bradley found trails: "In ascending, I followed the track of an elk, part of the way, and found much less difficulty [than in descending]...on the east slope, regular game trails are numerous" (Bradley 1873:232-233).

In the southern part of the park, near Mount Hancock, Bradley declared that, "To avoid traveling in the bed of the stream, we followed some of the numerous game trails...This is mostly fine grazing ground, and the numerous game trails give evidence that it is frequented by deer and elk; indeed, we found two herds of elk, of about twenty each, among the groves on the top of the ridge" (Bradley 1873:253-254). Near the Bechler River, Bradley saw no game and few game trails, but noted that "a few miles farther east, game is very abundant" (Bradley 1873:244).

Seventeen year-old Sidford Hamp was a general assistant to the Hayden party, and nephew of party guest William Blackmore, whose account is summarized below. Hamp left two records of his visit: a set of letters to his mother, and his journals. The letters do not discuss wildlife to speak of, but the journals contain a few mentions. On the Henry's Fork, Hamp noted that, "Mr. Bechler shot a duck and a fox today." On August 12, Hamp mentioned that Bechler "shot [at] an antelope" but missed, and that "West shot an antelope" on August 13 (Brayer 1942).

Joseph Savage was a general assistant to the northern division of the Hayden survey party. Along the Firehole River in the Lower Geyser Basin he reported apparent evidence of animals:

We entered and traversed a few miles of sparsely timbered bottom land, the bark of whose trees was often seared by the bite and scratch of the bear, and some said to be girdled by the elk and moose for food during the long winter of that region (Savage 1872).

This is the earliest reference we have to trees being "damaged" by large mammals of the park. Observations on the condition of the vegetation, beyond general statements of its sparseness or lushness (mostly in the context of feed for stock) were not common. It is unfortunate that he did not tell us what kind of trees these were, but the most common such evidence today would be trees that were "barked" by bison bulls during the rut.

William Holmes was artist for the 1872 Hayden survey northern division. His journals include several references to animals.

Near Bottler's ranch, Holmes saw a herd of 30 antelope, and mentioned that Hank Bottler killed a blacktail deer. At Yankee Jim Canyon, Holmes shot at an antelope, and on the Gardner River, he noted that, "Bottler killed a she bear and two cubs," and Holmes himself wounded an antelope (Holmes 1872).

On his trip to Yellowstone Lake, Holmes mentioned the killing of a wolverine, an otter, a bear, and a deer (all by party hunter Lowe near Mud Geyser), and five elk and a deer killed by Bottler. Three additional elk were killed by "our hunter" near Mud Geyser (Holmes 1872). Langford (1873:23) noted that Holmes and Blackmore chased a large brown bear near Old Faithful on this same trip.

William Henry Jackson was photographer for the 1872 Hayden survey's southern division. His party spent some of its time in the Teton area before meeting the northern division on the Firehole. He kept a journal, published a catalogue of his photographs, later wrote two books about his life, and also gave slide shows about his Yellowstone experiences.

As in 1871, his photographs provide the most vivid evidence imaginable of the presence of ungulates during his visit.

Jackson photograph 422 (Fig. 4) is the "Moose Camp of the photographers, in the Teton Canon, three miles above its mouth. So named from the killing of three moose close by. One of the small ones is hanging by the tent" (Jackson 1875:42). Jackson photographs 502 and 503 are two other views of the dead moose at this camp.

Jackson photograph 431, of Sawtell's ranch on Henry's Lake, does not show game, but in his catalogue Jackson said that "large game of all kinds is abundant" there (Jackson 1875:42).

Jackson photograph 500 (Fig. 5) is "The Successful Hunter. Fred. Boteler [sic.] who accompanied the survey as hunter, killed, within an area of fifty feet diameter, five large elk, before breakfast. The view shows them as they fell, with the hunter in the center of the group. The locality is on the Yellowstone River, about three miles above the Great Falls" (Jackson 1875:46). Holmes, Peale, and Blackmore all mentioned this event.

Jackson photographs 501 and 504 through 509 are various views of young moose, elk, and bison at the Pease ranch in northern Paradise Valley. Major Pease, who settled in the valley in 1870, was in the habit of domesticating the wild game of the region (Jackson 1875:46).

In a talk and slide show given at Old Faithful in 1935, Jackson stated that, "The same season [1872] we took this first distant view of Jackson Lake and the Tetons. The elk were coming out of the mountains: thousands of them" (Jackson 1935). He did not say which mountains, but provided evidence of abundant elk just south of the present Yellowstone Park boundary. In the Teton area, Jackson said that, "sheep and bears were numerous all over the higher plateau, and elk, deer, and moose lived in the wooded seclusion of the canyons and hillsides" (Jackson 1929:127-128). He also mentioned that "the Teton region at this time was a game paradise," mentioning deer, moose (his party killed one), sheep, and bears (Jackson 1929:132).

Dr. A.C. Peale's diaries again give us a more detailed look at animals seen by his party and killed by the hunters. North of Electric Peak, Peale's party "saw a deer and an antelope." On July 27, he corroborated Holmes' report of the sow and cub bears killed by Bottler, adding that Savage also helped. On Elk Creek, Peale noted that four antelope were killed, and on the Lamar River, Peale saw a herd of bighorn sheep (Peale 1872).



Fig. 4. W. H. Jackson photograph No. 422, 1872, "Moose Camp of the photographers, in the Teton Canon, three miles above its mouth. So named from the killing of three moose close by. one of the small ones is hanging by the tent" (Jackson 1875:42). Yellowstone National Park Photoarchives.



Fig. 5. W. H. Jackson photograph No. 500, 1872, "The successful hunter. Fred. Boteler [sic.], who accompanied the survey as hunter, killed, within an area of fifty feet diameter, five large elk, before breakfast. The view shows them as they fell, with the hunter in the center of the group. The locality is on the Yellowstone River, about three miles above the Great Falls" (Jackson 1875:46). Yellowstone National Park Photoarchives.

On August 7, Peale reported that near the Canyon, Bottler killed five elk and brought in a lot of the meat. On August 10, near Mud Volcano, Peale, "found them all enjoying roast elk meat...the place looked like a meat market, there was so much meat about" (Peale 1872). On August 15, when the northern and southern divisions of the survey were united at Old Faithful, Peale mentioned that Sloan and Bottler came in with two mules loaded with elk meat. In the Madison Canyon on August 21, Bottler brought in an antelope. On September 29, south of Bottler's ranch, we saw a herd of antelope" (Peale 1872).

William Blackmore, a British traveler, accompanied the Hayden survey as the guest of Dr. Hayden. Of all the Hayden survey chroniclers, Blackmore gave the most attention to animals seen by the party, probably because he was a sportsman and spent much of his time out hunting for game. His account, even more than Peale's, displays the frequency with which the survey parties encountered game.

Blackmore traveled part of the time with Hayden himself. He followed the Yellowstone River to the park, visited Mammoth Hot Springs, crossed to the Lamar Valley, and then visited the headwaters of the Clark's Fork and Rosebud Creek. From there he returned to the Lamar Valley, crossed Mount Washburn, passed the falls, and went on to Yellowstone Lake, crossed the Mary Mountain area to the Firehole, and left the park by way of the Madison River.

At Bottler's ranch, Blackmore accompanied Bill Hamilton, a famous trapper with 28 years of experience in the west, to the Gallatin Range west of Bottler's, where they found, "some deer and antelope" (Blackmore 1872, 6:32). When they returned to camp, they found that a "she bear and two cubs" had been killed in their absence" (Blackmore 1872, 6:62). At Mammoth Hot Springs, Blackmore saw "some trails [of] elk deer antelope and buffalo" and some 'buffalo remains' as well" (Blackmore 1872, 6:68).

On Blacktail Deer Creek, another park feature (like Elk Creek, Grizzly Creek, Grizzly Lake, and so on) probably named for resident animals, Blackmore saw, "a herd of antelope--2 shots both missed" and reported a single antelope killed by Hamilton. In the same vicinity, the party found "elk horns in abundance" (Blackmore 1872, 6:71-72), which Houston (1982) cited as proof of significant numbers of wintering elk on the Northern Range.

On Elk Creek, three antelope were killed, and the party moved on to the Lamar Valley. There Blackmore stated that, "B[ill] H[amilton] informs me that this valley is a favorite winter resort of the mountain buffalo or bison," and said that the previous spring Hamilton had captured seven bison calves and seven elk there, a curious early example of captive animals in the park that Blackmore elaborated on further:

Jack Burnet [Baronett] when [he] met us informed me that he had capital sport in the Spring lassoing yearling buffaloes on the plains (Blackmore 1872, 6:75-76).

Also in the Lamar Valley, he noted "signs of mink," and commented on the lack of antelope at the time of his visit:

This last year and previous [the Lamar Valley] was a great antelope region but the hard weather last winter killed nearly one half" (Blackmore 1872, 6:76).

He reported few antelope in the Lamar, but did note "decayed remains of buffalo bones around" (Blackmore 1872, 6:78). In a description of the local hunters, Blackmore mentioned that, "In the autumn hunt when a good shot can always manage to get a few loads of meat" (Blackmore 1872, 6:86). They "ascended middle fork of Clarke's fork--disturbed band of Elks" (Blackmore 1872, 6:90).

The party moved northeast to the country above Soda Butte, where they "watched for some time a flock of 30 or 40 mountain sheep feeding" (Blackmore 1872, 6:92). At the head of Rosebud Creek, near Index Peak, they were in an area of great reputation for hunting:

This valley is the most celebrated in the district for game[.] Elk, Blacktail deer, Bears and Mountain Sheep being represented to abound--especially (Elk and Bear) (Blackmore 1872, 6:95).

Blackmore here corroborated Russell, Henderson, Gourley, and others on the abundance of game north and east of the park area. In the same valley, the party was charged by a bear with cubs, Baronett killed an elk, and another bear came into their camp (Blackmore 1872, 6:99).

The party moved south to Tower Fall, seeing one antelope and an elk trail. Near Mud Volcano, Blackmore killed a wolverine (note that Holmes credited a wolverine kill to another hunter near Mud Geyser; perhaps this was the same animal). At Yellowstone Lake, they "came upon a band of 11 or 12 elk, one magnificent old buck with splendid horns" (Blackmore 1872, 7:1). At West Thumb, they saw, "elk, bear and deer tracks at side of hot springs. Elk and deer believed to frequent these springs to escape from mosquitoes and large and vicious horsefly" (Blackmore 1872, 7:16).

On August 10, the party returned to Mud Volcano and found that "the hunters had been unusually successful Boteler [sic.] having killed 5 elk and a black tailed deer and Tom Ticknor...an elk and a cinnamon bear. We had thus the meat of 7 elk in camp which we were eating as well as venison" (Blackmore 1872, 7:21). The party added to its stores by camping near Violet Springs, where Hamilton had previously left several killed elk. At that site, Blackmore reported that, "In the afternoon camp excited by news that a panther was prowling around probably attracted by the elk meat" (Blackmore 1872, 7:24).

At the Lower Geyser Basin, Blackmore reported, "Bear tracks about a week old in abundance...we also saw a white tailed deer feeding" (Blackmore 1872, 7:28).

Blackmore enumerated the animals killed by his party between July 19 and August 10. The listing appeared in his dairy in this form:

Boteler	6 antelope
	6 elk
	2 black tail deer
	3 bears
Tom Ticknor	2 elk
	1 bear
	3 antelope
Bill Hamilton	2 antelope
Jack Bean	2 antelope
W B	Elk 8
	Bear 4
	Wolverine 1 (Blackmore 1872, 7:35)

This list has apparently confused at least one previous investigator. Kay (1990), summarized it as follows:

At another point in his journal, Blackmore (1872:Diary 7, p. 35) noted that from July 19, when the party left Bozeman, to August 8, the group's four hunters had killed a total of 13 antelope, 8 elk, 4 bear, and 2 mule deer (Kay 1990:267).

As can be seen from the table in Blackmore's diary, Kay's summary presents half the story. For some reason, Kay excluded Blackmore's (W B) own kills of eight elk, four bears, and one wolverine, which bring the total amount of meat available to the party to 16 elk, 13 antelope, five bears, and two mule deer. Perhaps Kay thought that the figures under "W B" were some erroneous totalling of the hunters' kills; their eight elk do equal Blackmore's eight elk. However, in his tabulation of animals killed, Kay said that Blackmore reported 7 elk, 1 deer, 4 pronghorn, and 4 bears, numbers that do not agree with either interpretation (Kay 1990:276). Those past interpretive problems aside, the party killed a lot of animals, and acquired a lot of meat, in a 23-day period.

Blackmore's diary contained some other interesting notes on wildlife. One was a list of animals in the Yellowstone country. It included, "wolves--wolverines, mountain lion" (Blackmore 1872, 7:53).

Clinton Hart Merriam also accompanied the Hayden party. He left no extended writings, which is extremely unfortunate for he was a keen naturalist who eventually became one of the leading figures in mammalogy. However, Grinnell (1876) listed animals seen by Merriam in 1872. They included wolverine, two species of skunk, grizzly.

bear, black bear, moose, mink, pronghorn, and beaver (Grinnell 1876:90-91). We do not know the source of Grinnell's information about Merriam's observations, but perhaps it was personal communication. Merriam's own very short report mentioned that a wolverine and a skunk were found by his 1872 party (Merriam 1873:662).

The military party of Major-General John Gibbon entered the park in 1872 as well. Gibbon's party was large, and he wrote little about the animals he saw. But at Yankee Jim Canyon, north of the park, he mentioned that, "Wild animals have, however, been here before us, and left the faint record of their footsteps" (Gibbon 1874:114). In the tangled lodgepole forest between West Thumb and Old Faithful, Gibbon noted that, "for although there are plenty of trails, they are old game trails, and run in every possible direction except the right one" (Gibbon 1874:114).

Gibbon's account, much like the published reports of the leaders of most of the more formal expeditions, helps us understand why these most easily found--and therefore most often-cited--accounts of Yellowstone are of relatively limited value to ecological historians. These parties were there to report on, as Gibbon's title put it, "The Wonders of the Yellowstone." These wonders, the reasons for which the park had been set aside, were largely geological and to a lesser extent scenic. At this early stage in the park's history, wildlife were an interesting but not terribly significant feature. It would take some years of abuse by overhunting for the park's animals to come to public attention and thus become thought of as a part of the wonder of Yellowstone. In the meantime, most official reports would continue to report on geysers, canyons, and other less animate features, inadvertently leaving it to diarists such as Peale and Blackmore to fill in the rest of the story.

T.B. Gray attempted to survey a route from Bozeman to the present west entrance of the park by way of the Gallatin Canyon in 1872 (his suggested route followed present Highway 191). Gray noted that above the Gallatin Canyon, "The few hunters and trappers who have ventured here and there [in] this comparatively unknown region... [tell] of beautiful meadows and lakes, abundance of game and fish" (Gray 1872). In boosting his proposed route (and boosterism is suspect, as it tends to glorify things), Gray declared that the Gallatin route "...takes the traveler the entire distance through a rolling timbered country, which during the most pleasant traveling season is full of Moose, Elk, Deer, and Bear and other game" (Gray 1872).

Harry J. Norton's 1872 party consisted of seven Montanans, including James Mills, editor of the *Deer Lodge New North West*, a physician named M.H. Raymond, P.A. Largey, owner of a local telegraph line, Hillhouse Raymond, Frank Woodall, Theodore Freeler, and Norton himself, an employee of the same paper as Mills. They entered the park from the west, traveled to the Lower and Upper Geyser Basins, crossed Mary Mountain to Yellowstone Lake, then to the Canyon, Tower, and Mammoth.

Norton's party met Gilman Sawtell, the enterprising trapper and fisherman of the Henry's Lake region. Like so many before and after him, Norton saw that Sawtell's domain was rich in game:

His annual "catch" of trout is nearly forty thousand fish, and the number of elk, deer, antelope, moose, and bear slaughtered will reach nearly four hundred head yearly (Norton 1873:53).

About the Madison Valley, Norton stated that, "The basin is a paradise for fish and water-fowl, and the surrounding valley and forests the home and grazing-place of antelope, deer, elk, and other four-footed game" (Norton 1873:56).

In the Madison Canyon in the park, according to Norton, "we saw no living thing during our ride through save two sour-looking timber wolves, who scampered affrightedly away at our approach" (Norton 1873:8).

Norton's party traveled to Yellowstone Lake, and there he said, "yet to the sportsman the trip is full of interest and adventure, as the region abounds in elk, deer, moose, cinnamon, black, and grizzly bear, catamounts, and mountain-lion" (Norton 1873:71).

Norton considered the park to be a grand hunting ground:

If you have a good spaniel or retriever, he will be useful to bring in a game, and a pack of deer or bloodhounds will furnish the sportsman fine amusement among the bear, deer, and elk.... The tourist to the Park will pass through it and admire it; hunt the elk, buffalo, moose, bear, deer, and antelope which graze and roam over its mountains, plains, and valleys (Norton 1873:81-82).

In an unpublished reminiscence dated 1931, Edward Beard Hendrie claimed to have visited the Yellowstone Park area in 1870. He stated that the date of his trip could not have been later than 1870. Information on the first page of Hendrie's brief manuscript narrative makes the date uncertain, but it seems most probable that the trip occurred no later than the early 1870's. We notice that Bullock (1872), in his entry for September 1, mentioned meeting Hendrie at Mammoth Hot Springs, so we are assuming that 1872 was most probably the year of the visit reported on in Hendrie's unpublished reminiscence.

At the Lower Falls, Hendrie saw a grizzly bear and black bear, and observed a separate "band" of black bears in raspberry bushes. On the way to Yellowstone Lake, Hendrie said that "the large birds...were feasting together with the elk, moose and deer, and of course bears were always in evidence wherever we went" (Hendrie 1931:3). He also commented on the fishing and hunting:

We had no trouble in catching fish, of course, and hence shot no game, although we saw a number of birds that we could have shot...but were so busy moving about, making our beds, etc. that we did not bother (Hendrie 1931:4).

1873

The parties of E.J. Stanley, Captain W.A. Jones, Taylor Bliven, E.A. Maynard, A. Bart Henderson, the Bozeman Avant Courier, and an unknown "H.C." all left comments about the park's animals this year.

The Reverend E.J. Stanley and his party came up the Yellowstone River to Mammoth Hot Springs, then east to Tower, over Mount Washburn to Canyon, over Mary Mountain to the Lower and Upper Geyser Basins, back to Yellowstone Lake, and then north by an unstated route to Mammoth Hot Springs.

At Tower, Stanley commented that an "...abundance of game--bear, elk, and deer--exists in the surrounding mountains, but we could not stop to hunt," adding that the forest was "alive" with grouse in some places (Stanley 1878:67).

At Yellowstone Lake, Stanley found a bear track, and this seemed a fitting introduction to the four pages that he then devoted to wildlife. He declared that, "Besides the myriads [sic.] of water-fowl, abundance of wild game, such as deer, elk, moose, bear, mountain lions, etc., is found in woodland, jungle, and park. The game is usually driven from the trail to more secluded regions, and cannot be found without hunting" (Stanley 1878:142).

Of moose, he said, "The most remarkable animal in these regions is the moose," whose habits he then described. Of bighorn sheep, he said, "Numerous flocks of mountain-sheep roam the 'rugged steeps' and clamber among the rocks," and then described their habits as well (Stanley 1878:144). He spoke of elk only in passing, noting that the grouse often flapped their wings wildly as, "a note of alarm to the elk or watchful deer" (Stanley 1878:144).

He said more about mountain lions, "whose lairs are found in the jungles and caves of these mountains....They are not numerous, and live mostly in the 'secret corners of the earth.' They are seldom seen, and are not considered ferocious, except when followed to their haunts" (Stanley 1878:144-145).

He then mentioned bears again, and launched into a page-long discussion of beavers, which he said were "everywhere" and "very numerous on many of the tributaries putting into the Yellowstone Lake" (Stanley 1878:145-146).

A party consisting of R.H. Evans, C.J. Tyler, S.W. Hall, Eugene Erwin, and "H.C." entered and left by way of the Madison Valley, making the trip in late September and early October and visiting today's "lower loop." The only mention of animals in the park

was of a confrontation near Mary Lake, "with an old she grizzly and cub" (H.C. 1873). However, at the close of the article, the writer summarized the whole trip:

We arrived safe home again, having been gone 31 days. All enjoyed the trip immensely. We were most bountifully supplied with game, such as bear, antelope, hare, ducks, geese, grouse, and trout. We came down to bacon, for one meal only, on the entire trip (H.C. 1873).

A.B. Henderson visited the park area again in 1873. By now he was working on a road through what would later become known as Yankee Jim Canyon (after the man who maintained the road as a toll road). On April 24, apparently in the canyon, he "Killed a bear" (Henderson 1894:67). On May 17, on the Gardner River, he "Killed 2 bear with one shot, & was chased by the third. Killed a fine buffalo bull" (Henderson 1894:67). On May 27, at Soda Butte, he "Killed elk & bear" (Henderson 1894:67)

E.A. Maynard was a pioneer resident of the Madison Valley who made at least six trips to the park between 1872 and 1885. His second trip occurred in 1873, and his party included five people on horseback with five pack horses. Near Henry's Lake, the party "saw some deer" and killed two of them. Crossing Targhee Pass into the Madison basin, the party reported that, "All this Sunday the game was coming to the river for water." On the Gibbon River, they "killed two more deer" and hung them up in a tree. At Fountain Geyser, they "killed an elk before noon" (Howard 1933:63-64).

They also reported that "While we were in the Lower Geyser Basin we saw a black bear and my brother got a very good shot at it....the same day we killed an elk" (Howard 1933:66).

Taylor Bliven's party killed five bears near the Lower Falls in September of 1873. The account appeared in a Bozeman newspaper:

Mr. Taylor Bliven and a fellow mountaineer, whose name we have not been able to get, came on to a gang of six bears, two or three weeks ago, in the vicinity of the Great Falls of the Yellowstone, all of which they succeeded in killing except one. Being armed with needle guns, and having approached unseen within close range, the savage monsters were stretched out in death by the rapid and unerring discharges of their rifles before they knew that they were in the very midst of danger or that there were enemies to defend themselves against (Avant Courier 1873c).

This account should serve to remind us that to a very large majority of Americans, especially in the west, the bear and other carnivores were varmints deserving of destruction.

One of the most important 1873 parties was that of Captain W.A. Jones of the U.S. Army Corps of Engineers. His party entered the park from the east by way of Jones Pass or a pass near it, went to present Fishing Bridge, followed the Yellowstone River to the Canyon, then, crossing the west side of the Mirror Plateau, reached Tower, where they received supplies from Fort Ellis. The party then crossed the Washburn Range back to Canyon, crossed to the geyser basins, traveled east along the south shore of Lake Yellowstone, and left the park by way of the Thorofare Region (Haines 1977, I:202).

Jones's party had little success in killing game. Though provisions were more or less constantly in short supply, the problem was at least partly due to a lack of non-meat provisions and partly due to the inability of the party to kill game they saw or saw evidence of.

On July 26, in the valley of the "North Fork of the Stinking Water" (now the Shoshone), apparently near the present site of Cody, Jones summarized conditions:

Above the canon the waters of both streams are perfectly pure and have no smell. Fine trout are abundant and game has been very plentiful. The tracks indicated that the elk and mountain-sheep have lately moved higher up into the mountains (Jones 1875:18).

This apparent abundance of game seemed to be of little use to the Jones party, who arrived at the eastern park border already short of supplies. At the head of the Shoshone River, east of the park border, Jones said that, "Elk, deer, and trout are abundant. A mule deer was killed" (Jones 1875:19). That same day, he noted that the "...question of provisions asserted its importance" (Jones 1875:20), and summarized the shortages and their causes:

An examination showed that the soldiers had eaten more than their allowance of flour; that my party had consumed considerably more than its allowance of everything, and that the Indians had devoured their rations long ago and were subsisting on the country (Jones 1875:20).

These remarks by Jones (who proved to be one of the more entertaining official explorers of the park area in this era) suggest the true nature of their shortages, which as time passed proved to be a perennial need for meat and an apparently more serious lack of other staples. But the problem was not solved, even on those occasions when game was sighted.

On August 3, near Jones Pass and in the park, "We found fresh tracks of mountain sheep exceedingly numerous, but there was so much noise that they took the alarm in time to get out of sight. Two bears came down to witness our passage, but the hostile demonstrations of our Nimrods scared them away" (Jones 1875:21).

That same day, he reported that Captain Noyes had gone to Yellowstone Lake and reported that, "...the three missing persons were there, and not likely to suffer, as they had killed an elk" (Jones 1875:21).

On August 7, at the outlet of Yellowstone Lake, they placed a "...cache of provisions and materials, for which we did not have transportation..." (Jones 1875:23) and traveled to the Canyon. On August 11, he sent men back from the Canyon area to retrieve the cache, as "Provisions are getting low..." (Jones 1875:27). On August 15 Jones set out from the Tower area with a small party for Mammoth Hot Springs. He returned to Tower, and on August 17, moved the main camp to near Baronett's bridge, where on August 18 the pack train arrived from Fort Ellis with "...twenty days' supplies for the escort and twenty days' supplies for my working party" (Jones 1875:33).

Apparently sufficiently provisioned for the time being, Jones made no more mentions of provisions until August 28, when he expressed concern over a lost mule that carried a cargo of "...flour, beans, and coffee..." all items that could not be replaced without another trip to a settlement: "Our rations were too short to permit any more time to be spent in search and it was therefore abandoned" (Jones 1875:36). On August 31, Jones noted that he had only twelve days' of rations left.

On September 2, about 23 miles above the mouth of the Yellowstone River at Yellowstone Lake (that is, just outside the park boundary), Jones again noted tracks:

All through this basin game-tracks have been very abundant, but our party from its size makes a good deal of noise, which will account for the fact that we did not see a great deal. A magnificent elk crossed the valley in advance of us, and in plain sight today. He was a royal fellow, indeed, and seemed to resent our intrusion upon his chosen rutting ground. The party was too much drenched and too cold from the driving rain to make any attempt to get him; the first instance of the escape of anything (except bear) that came in sight of it (Jones 1875:39).

On September 3, "...two of our Indians discovering three elk close by gave us an illustration of skillful hunting by crawling up and killing the three with four rifle shots. They were extremely large and fat" (Jones 1875:40). On September 4, "...two of the Indians and one of the white guides killed three bears after a lively skirmish," (Jones 1875:41), but the next day, in what was apparently one episode in a protracted quarrel with some of the Indians, Jones noted that, "...there was not enough game in the country to feed such a big crowd" (Jones 1875:41). This was his last mention of game prior to arriving at Camp Brown a week later. Apparently the provisions held out sufficiently for all to survive the rest of the trip.

Clearly, Jones had perpetual provision problems, compounded by logistical and personnel problems (people, including his guides, seemed to get lost a lot) that must seem a good deal more amusing now than they did to him at the time. He noted in his report

evidence of abundant game on several occasions, and we have no way of knowing if he observed it on other occasions. He also mentioned the discovery of bison bones in a cave near Mammoth Hot Springs (Jones 1873:213). Only in the last remark quoted in the previous paragraph does Jones ever suggest that a shortage of game in the country was responsible for his problems; he laid the blame squarely on the size of the party, and sometimes on the inefficiency of his hunters.

A member of Jones's party gave us a chance to test Jones's assertion that his large party scared off the game. Theodore Comstock, geologist on this expedition, traveled alone for some time. On August 6, for example, he went from the outlet of Yellowstone Lake to Steamboat Springs for study. He camped that night near Steamboat Point, where he had a good deal to say about local wildlife:

My camp was upon a well-worn game-trail, which led up a bluff within a few feet of the fire. Being much fatigued, I turned in early, but, when fairly in a doze I was aroused by the frightened movements of my mule picketed near by, and I presently heard the doleful howl of a large wolf, which was slowly approaching along the trail. In anticipation of a trifling adventure, I lay down again with my carbine close at hand. It was late in the morning when I woke, and all was quiet; but a little investigation showed that the animal had been lying in the grass at the edge of the bluff, just above my head. This locality seems to be a favorite resort of many animals. Our train approached it by following a prominent game-trail, at least a dozen of which, extending for miles into the forest, meet at this point. Upon my first visit to this place, the day before the passage of the train, fresh tracks and other unmistakable signs of their presence were visible. To-day I started numbers of elk while passing through the fallen timber, not far from some active boiling springs (Comstock 1875:92).

On August 12, traveling with one companion along the Yellowstone River near the lake, Comstock saw, shot at, and missed a badger, but his companion collected a porcupine. On the next day, he proceeded up the Pelican Creek drainage:

From the forks of Pelican Creek the trail leads rapidly upward, passing a series of cascades with one interesting waterfall, the valley for the most part being rather broad and grassy. Plentiful tracks of game were noticed, but we saw very little until near the summit, when we met a large drove of elk and some deer. After reaching the south branch of the East Fork [the Lamar River, apparently some tributary], our course lay through a belt of fallen timber, all but impassable for some distance, when we succeeded in keeping clear of the greatest difficulties by following the most open of the very numerous game-trails high above the stream (Comstock 1875:93).

On August 15, near Baronett's bridge, Comstock made some interesting observations of small mammals:

At the foot of a steep hill, which we ascended, about a mile beyond the bridge, three fair-sized California raccoons (Procyon hermandez, Wagler,) crossed our path. This neighborhood seems to be well supplied with these animals, as I noticed others at points not far distant (Comstock 1875:93).

On August 19, again traveling with one assistant, he went to Hellroaring Creek:

On the way we met with several large droves of antelopes feeding upon the fine pasturage here afforded with much security, owing to the irregular topography, which enables them to seek immediate shelter upon the approach of danger. At the time of our visit the great antelope country along the left bank of the East Fork was remarkably free from their presence, which may doubtless be explained by the recent passage of several parties of miners. Near the mouth of Hell-Roaring Creek we met another raccoon, which quite savagely resisted an attack until it was forced to beat a hasty retreat (Comstock 1875:94).

Comstock also predicted a decline in park beaver, saying that they were "...still common in portions of the Yellowstone Park, and elsewhere, but the hand of man is already turned against them" (Comstock 1875:177).

But to the point of small parties seeing more game than large ones, Comstock's experience is at least suggestive that they could. In only a few days of travel with one companion he saw some unspecified number of elk (in an unspecified number of groups, but at least two), deer, and an unspecified number of pronghorn, also in an unspecified number of "droves."

Comparing Comstock's account of his experience with Jones' account of his is, however, a very limited and impure sort of test; we do not know how many other observations either of them made of tracks or other evidence, and they traveled through different country. It could be that Comstock took more interest in such observations, being a scientist, than Jones did, the latter being the beleaguered administrator of a star-crossed expedition.

We see in Comstock's writings the beginnings of concern for the wildlife of the park, as well as the realization that it will not stay visible where there are many armed visitors traveling.

Comstock was something of a crusader for the park. He eventually wrote no less than eight articles about the region. In one of these, he proposed that the park be used as a reserve to protect samples of important American fauna. It is not always possible to determine from his text just what he means--if he believed in stocking the park with non-native animals, for example--but he does provide a list (Comstock 1874:75-76) of "only the most important of the mammals and birds observed by myself during the past summer (exclusive of those already mentioned), with some few additions from the report

of Mr. C. H. Merriam, Zoologist of the Snake River Division of Dr. Hayden's expedition of 1872, in order to include a portion of the fauna of Idaho and Montana" (Comstock 1874:75). The inclusion of Merriam's list muddies the waters for the purposes of determining just what all Comstock saw in Yellowstone, but it is necessary to point out that Comstock's list includes mountain lion, coyote, and two varieties of wolf.

Other, slighter accounts also serve to flesh out the wildlife encounters of the Jones expedition. Paul LeHardy, a topographer, wrote a biography that survives in manuscript form, and it contains a few additional wildlife observations. In one of the thermal areas, he described the ground as "strewn with bleached bones," and concluded that "undoubtedly the several bleached skeletons [sic.] were those of animals which perhaps in deadly combat here had been asphyxiated" (LeHardy n.d.:101). The cause of the deaths may more likely have been the winter mortality that occurs normally among animals who winter in or near the thermal areas.

While the main party waited near Tower for the provisions from Fort Ellis, LeHardy and one companion left the group and "explored the environs" (LeHardy n.d.:101). LeHardy described the Lamar Valley: "The valley of the East Fork extends Eastward very straight for many miles, the floor flats and perhaps in [probably should read "is"] quarter of a mile wide and deeply covered with grass. In this grass we saw quite a number of Buffalo" (LeHardy n.d.:101). His last mention of wildlife, aside from fish, which he enjoyed catching and eating, was of deer:

One morning after a stay of nearly a week, we commenced our return journey on the west side of the Yellowstone. Just as we were going, a deer ventured right into the camp of our Indian scouts; as he was shot he made a great leap into the air (LeHardy n.d.:102).

Though slighter than Comstock's account, LeHardy's does add additional information, again seeming to show that small parties traveling apart from the Jones party saw animals in greater numbers.

C.L. Heitzman, assistant surgeon with the Jones party, did not mention wildlife in his official report (part of the Jones report), but did in a separate article in a medical journal:

The zoological features do not differ generally from those of the neighboring basins, but what differences exist must be very peculiar, strikingly instructive, and novel in the inhabitants of the hot waters. Of course the sport of hunting is afforded, but the region is, like all others in the Rocky Mountains, uncertain in amount and time,- the seasons for large game particularly being undetermined, probably following no law. Fish, lake and river trout, are plenty at all times (Heitzman 1876:409).

Later, speaking of the area's attractions as a resort, he said that "one can take the alpenstock and scale snow-topped peaks, fish or hunt for one's dinner in charming valleys, ply the oar in one of the most beautiful lakes in the world, picnic at any number of enlivening falls, surrounded by the most novel scenery" (Heitzman 1876:409).

A colorful little tale from Mammoth Hot Springs appeared in the Bozeman Avant Courier on March 14, 1873. It involved James McCartney, proprietor of an early hotel there.

One night two weeks ago there occurred at the springs one of those bloody adventures which terminate in murder. One of the cabins at that place was used as a meat-house, where quantities of elk, deer and mountain sheep were suspended from the rafters. One night a thief broke in and absconded with a saddle of venison. The following day Jim McCortney [sic.], one of the proprietors of the springs, set a musket for the intruder. This piece of ordnance [sic.] was encircled with a goodly quantity of rust, and take it all in all, was a dangerous weapon under any circumstances. Jim placed in it about three inches of powder and five large balls. About 12 o'clock a report was heard, mingled with dving [sic.] yells. Result: one musket with stock badly shattered, the barrel bursted, one window broken and a dead bear lying in the centre of the cabin. The funeral services were brief, and were delivered thus: "just my d__d luck; the musket is spoiled, the window broken, five bullets thrown away[,] a bloody cabin, and the hair all knocked off that bear skin" (Avant Courier 1873b).

This account indicates ample supply of wild game meat, as well as the presence of a bear. To our knowledge, this is the first description of a Yellowstone Park bear breaking into a building for food, and event that would become extremely common by the early 1900's (Schullery 1992). More important to the present study, it shows the storage of "quantities" of wild game meat at Mammoth Hot Springs.

The year 1873 also marks the beginning of a regional public movement to provide the park and its features, including its wildlife, with better protection. On February 21, the Bozeman Avant Courier reported on the excessive killing of game, and also made the first report we are aware of the destruction of fish:

Recently we published a communication from a settler on the Yellowstone in regard to the wanton destruction of game by hunters, who seem to be shooting elk, deer, antelope &c. for the pleasure of seeing them fall while others were killing them for their hides. Our attention is now called to the fact that numerous persons have constructed traps and are using seines on the Yellowstone and its tributaries for the purpose of catching fish, and we are informed by parties residing in that vicinity that fish are already scarce and hard to catch with a hook and line. If a stop is not put to this trapping and seining in five years one of the great charms of the Yellowstone, its plenitude of fish, and the pleasure it affords anglers in drawing them from their watery habitation, will be gone. The practice is a direct violation of the law and we

understand that the parties engaged in it are being watched and will be reported to the proper officers (Avant Courier 1873a).

On December 12, the Avant Courier ran a petition to the Secretary of the Interior urging him to appoint appropriate park staff, build roads, and protect features:

We are urged to this request by the vandalism that is rapidly denuding the Park of its curiosities, driving off and killing its game, and rendering it a disappointment to all those who desire to see this grand domain left in a state of nature (Avant Courier 1873d).

As will be seen later, the problem had to worsen considerably, especially in the killing of wildlife, before measures were taken to protect the park.

1874

The parties of Mabel C. Osmund, R.C. Wallace, Lt. G.C. Doane, and the Earl of Dunraven all mentioned animals they saw this year in Yellowstone Park.

Mabel Osmund visited Yellowstone as a child of six and a half years old, with her family. The party of six went up the Yellowstone River to Mammoth Hot Springs, visited Old Faithful, Canyon, and Tower. Mabel Osmund, commenting on the primitive conditions early tourists encountered, and on the importance of being well provisioned, stated that beyond the Bottler ranch, "there was only the wilderness and no food to be secured, except fish, and game" (Osmund n.d.:3). Osmund described the usual evening routine:

The cook having started his campfire undid the packs--set up the oven and prepared the bread for baking and then attended to the fish or game and the rest of dinner. Fish were so plentiful that in the small streams the men could straddle from rock to rock and leaning down pick one up in their hands (Osmund n.d.:4)

Osmund also said, "Crossing Mount Washburn we saw our only bear, a black one. My father took a shot at it but it ran off in the woods. We also saw way off in a valley a large herd of grazing buffalo" (Osmund n.d.:6). Osmund's account has more layers of uncertainty about it than most of the others considered here; she apparently did not write this remembrance until several decades later (she mentions another visit to the park in the 1920's). In the meantime, she would have been subjected to all of the things that influence memory, including the overheard recollections of other, older, members of the party.

R.C. Wallace's party consisted of five persons: Joe Flick, Charley Jeffries, Joe Stewart, Billy Muth, and Wallace. They traveled up the Madison River to the present west entrance, to the Upper Geyser Basin, to Yellowstone Lake, Canyon, Tower, Mammoth Hot Springs, and then out of the park. Both Wallace and Muth left accounts.

Wallace mentioned wildlife only briefly. At Yellowstone Lake, the party met two trappers who had just killed a bear. Wallace also stated that, "Portions of the lake were covered with wild geese, ducks and swan and on the shore elk, bear and deer were quite plentiful" (Wallace 1900:58-59).

Billy Muth mentioned game indirectly at two other Yellowstone-area locations, but did not mention it at Yellowstone Lake. At Sawtell's ranch, Muth stated that, "Here we found good shooting and fishing" (Muth 1900:295). At Mammoth Hot Springs, Muth, Wallace, and party dined with hotel keeper James McCartney: "The bill of fare was trout, deer, and elk" (Muth 1900:298).

Little is known about Lieutenant G.C. Doane's 1874 trip into the park because he left no known journal, only mentioning it briefly in an account of a later trip. However, while traveling through the difficult canyon country at the headwaters of Tower Creek and onto the west slopes of the Washburn range, Doane stated that, "Late in the afternoon we reached the summit of the mountain [facing] toward Mammoth Hot Springs, coming out into an open space where there were thousands of Elk horns. There are many such places in the Park, Where these animals have gone for centuries to drop their horns in the early winter" (Doane 1970:473). Antlers are actually dropped in late winter. This account, like Blackmore's above, of many elk antlers on the Blacktail Plateau, suggests that elk wintered in the area. An alternative possibility is that Doane was observing the remnants of the work of the skin hunters, but if so he would likely have seen skeletons as well as antlers.

The Earl of Dunraven was on a hunting trip when he visited the Yellowstone area. His book is full of confrontations with animals, and in general he saw more animals to the north of the park than in the park, though there are conflicts in his account. Though for many years, his account has been used as proof of a scarcity of large animals in Yellowstone Park at the time of his 1874 visit (Skinner 1927:174-175), Dunraven himself did not see it that way. Early in his book about the trip, he gave his own view on hunting new areas:

Good sport cannot very well be attained without the expenditure of considerable time and trouble. It takes one a year or two to get acquainted with the country, and to learn something of the habits, manners, and customs of the wild beasts inhabiting it. And without this knowledge success is impossible. I have scarcely ever done much good on my first visit to any section, but I have managed to find out sufficient to ensure my being amply rewarded for my pains on a second attempt (Dunraven 1876:7).

Dunraven approached the park from the north, stopping for a visit and hunt in the Bottler-ranch area. He then went from Mammoth Hot Springs to Tower, Canyon, and, by way of Mary Mountain, to the Upper Geyser Basin. He retraced his route and stopped again to hunt at the Bottler ranch. Large animals were abundant near Bottler's.

Near the house, they found a dead bear, and almost immediately started three doe deer. This happened several times without the hunters getting a shot:

Snap would go a dry stick under foot, followed immediately by a crashing among the branches in the distance, and on stopping down we would just catch a glimpse of a brown shadow bounding through the trees (Dunraven 1876:136).

On the way back to camp, they stalked "a herd of twenty antelope" (Dunraven 1876:137) but Dunraven missed a shot.

Leaving Bottler's, with Fred Bottler as guide, the party made its way toward the park. The first day they went eight miles, the second day they did better, making "a very fair march" that put them at the mouth of a small creek that flowed into the Yellowstone. From this camp they hunted for several days, apparently on the west side of the river. Dunraven reported a "strong deer trail" (Dunraven 1876:150) up the stream, and then jumped three deer. Later, they all "caught a glimpse of the dark-brown forms of some wapiti feeding quietly in the wood" (Dunraven 1876:151). Dunraven killed a cow. Camping nearby, they listened to elk bugle that night, sighting "a real monarch" (Dunraven 1876:153) in the twilight. Dunraven killed it. During the night, the two elk carcasses were visited by two grizzly bears. Dunraven considered his bear hunting unsuccessful:

We were very unlucky with them indeed, for though bears were plentiful in the valley, and the members of our party had interviews with them, we got only one, a middling-sized beast, weighing about 800 pounds. Had we been provided with a dog to track them, we should have obtained many more (Dunraven 1876:154).

By modern standards, that is by the actual weight standards of grizzly bears studied in Yellowstone since 1959, 800 pounds is much more than a middling bear (Schullery 1992). A few days later they saw another very large grizzly bear near the site of their first elk kill, one of the several "interviews" Dunraven mentioned.

The day after killing the bull elk, they again heard elk bugling, and located a herd: "forty or fifty hinds and four stags" (Dunraven 1876:162). Dunraven reported that generally "game seemed tolerably abundant in the valley" apparently referring to the valley of the stream they were camped on, and they also stalked at least two groups of bighorn sheep, including, "a magnificent band of old rams fourteen in number, some of them carrying splendid heads" (Dunraven 1876:166).

This trip seemed to take them across the Gallatin Range, for he mentioned that, "Near the foot of the mountains are two picturesque little lakes; and several streams--confluents of the West Madison" (Dunraven 1876:167), probably the Gallatin River. Though they continued to have mixed success at actually seeing or killing animals, Dunraven was sure the animals were there:

The country about there is very pretty, and at some seasons of the year must be full of game, for the little prairies and woodland glades, the slopes of the foot-hills, and the bare ridges jutting out from the mountains like promontories into a sea of forest, were covered and intersected in all directions with the paths and trails of mountain buffalo, wapiti, and deer. The signs of bear were also very numerous (Dunraven 1876:167).

As his success did not improve, Dunraven returned to the camp along the Yellowstone, where he "found that Campbell had killed a couple antelopes" One member of their party composed a long song, which Dunraven printed in full. The last verse began, "Oh, Montana, it is beautiful! the Yellowstone is fine, Game it is abundant, leastways the sign" (Dunraven 1876:178).

At Mammoth Hot Springs, "Some of us went out hunting, and brought in good store of fat antelope; others amused themselves with the trout which abound in Gardiner's [sic.] River and the Yellowstone" (Dunraven 1876:208). Not far from Mammoth Hot Springs they met two white men with their Indian families, who had "collected a great pile of deer-hides and beaver-skins" (Dunraven 1876:210) that they were just then going to sell. This was probably part of the skin-hunting trade then occurring in the park area.

Near Mount Washburn, he made the following curious comment:

as I am writing from memory whatever comes uppermost, the recollection of antelope steak is very fresh and distinct just as present, savouring in my nostrils and bringing moisture to the lip, and overpowering all other thoughts. I fancy I can scent the odour of it from afar off. Would that I could do so in reality. Bearing in mind that I had lived for a week at the hot springs on burnt flour and water, you will perhaps pardon my gastronomic enthusiasm (Dunraven 1876:214-215).

Dunraven had reported the gathering of a "good store" of antelope at Mammoth Hot Springs. It is difficult to tell if this comment on lack of meat is dramatic exaggeration, or if the antelope was not gathered until they left the area, and they were just now enjoying it. But he also mentions plentiful fish, so we suspect that the comments on meat shortage were just a bit of overstatement to that point. Later comments in his account support this suspicion.

Somewhere south of Mount Washburn, "we found wapiti close to camp, and Campbell fired at but missed a stag. Jack killed one later in the day" (Dunraven 1876:218). Dunraven's mention of "wapiti" rather than "a wapiti" leads us to assume he found more than one.

South of Canyon, "We were constantly on the look-out for game also, for signs were plentiful enough to keep us on the qui vive, and fish and fowl swarmed in the woods and water" (Dunraven 1876:229). Later, "We saw several indications also of deer; and on

riding out of a wood on to a little plain covered with grey sage-brush we espied, not half a mile off, a large bull elk" (Dunraven 1876:229). They shot the bull, but found it to be "utterly worthless for food" (Dunraven 1876:230). At Mud Volcano, he also reported the trout to be wormy and "almost useless for food" (Dunraven 1876:250).

By now, they were short of meat:

Meat had been growing very scarce for the last few days. We had scraped clean the bones of the antelope we packed with us from Gardiner's River, and afterwards boiled them into soup; and we had killed nothing on the march except wapiti stags, which at this time of year are not fit to eat; so we determined to halt, for a day at any rate, and endeavour to replenish the larder. Accordingly, the next morning before light we all went out--each taking a different direction--to look for game; scanning the ground and peering through the trees, with the eagerness not only of hunters, but of hungry men. But no distant rifle-shot, bearing tidings of dinner, broke the silence of the morning air, or echoed "supper" through the glades; and about nine o'clock the hunters returned tired and dejected, all with the same story to tell; plenty of old sign, but not a single fresh track, and nothing whatever eatable to be seen (Dunraven 1876:253).

That evening they tried again, but with no success, and Dunraven decided that, "there was no game then in the country; and finding a pool in a little stream that was full of small trout, I turned to and caught three or four dozen little fellows" (Dunraven 1876:254).

Note that Dunraven said there was no game "then" in the country. He apparently continued to believe that there was, at the proper season, game to be had. After viewing the geyser basins, he summarized the park area:

The scenery is beautiful, the climate most healthy; game is abundant, and every lake and rivers teems with trout.... Compared with other districts equally prolific in big game, it enjoys a wonderful immunity from that great bugbear of the hunter, the hostile Redskin (Dunraven 1876:295).

Two paragraphs later, he mentioned again that "the country had produced no game" (Dunraven 1876:296). When he returned to Mammoth Hot Springs, he again reviewed their experience:

We had counted upon getting plenty of game, deer or elk, all through the trip, and had arranged the commissariat accordingly. But we had grievously miscalculated either our own skill or the resources of the country, for not an atom of fresh meat had we tasted for days. This sort of perpetual fast began to tell upon us. We were a hungry crowd. Trout I had devoured till I was ashamed to look a fish in the face (Dunraven 1876:336).

While at Mammoth Hot Springs, he made it clear how many antelope they had gotten on their previous visit, saying they had provisioned themselves with five. They also hunted, and saw several groups of pronghorn without success near Mammoth Hot Springs on this second visit.

It is worth noting that the "miscalculation" Dunraven made was not his own. His guide was one of the few hunters intimately familiar with the region. Frederick Bottler probably would not have counted upon killing an adequate supply of meat had he not known it was usually to be had. Of course the accounts of many of the other travelers being considered here indicate that meat often was available.

Dunraven also commented on the Mammoth Hot Springs area, which was apparently more or less abandoned now, it being the end of the summer season:

On our former visit there were two or three people in the place, and it was possible to get something to eat, for the hunters had brought in some elk; but now there was not a solitary human being in the whole establishment" (Dunraven 1876:344).

Here is further suggestion that he was overstating the situation earlier when he said he subsisted for a week on flour and water at Mammoth Hot Springs. There had been elk available.

He also learned while there--apparently from Bottler--that "the black-tail pass in great numbers at certain times in the year, when moving to and from their winter pasturage, and we expected to be lucky enough to come across some, as it was the right time of year, and the weather had been stormy for the last few days; but, though we walked hard and fast for about four or five hours, we did not see anything, not even fresh tracks. It was evident that the herds had not yet come down" (Dunraven 1876:346).

Eating some more trout, they headed to Bottler's, seeing "a great many antelope" (Dunraven 1876:346) along the way. Hunting out of Bottler's, Dunraven again saw mountain sheep, at least two groups. He commented further on his bad luck, giving an amusing summary of how the hunting was always better right before the hunter arrives.

Hunting around Trail Creek, "Not a thing did we see except a few small sheep, two of which Jack shot, two or three antelopes as wild as hawks, and the dead carcass of a bear" (Dunraven 1876:362). He reported "plenty of old sign" (Dunraven 1876:368) of Moose at Trail Creek.

Bottler's presence on this trip makes it less likely that the party was missing wildlife through mere incompetence. Bottler had been successful in finding animals on other occasions--for example during the 1872 Hayden expedition--and apparently expected to this time. Judging from the number of parties who did see plenty of large animals, we must wonder if Bottler was just having bad luck, or if the growing number of people--

prospectors, sport hunters, skin hunters, and now tourists as well--were taking a toll and making the animals more wary. As the historical accounts progress through the 1870's and early 1880's, this factor--the increasing pressure on the wildlife--must always be kept in mind.

1875

The parties of Norris, Ludlow, Strong, and Maynard all left accounts of the park wildlife, as did Gustavus Doane, based on his earlier experiences. Additional short accounts appeared in local newspapers.

P.W. Norris made his first extended trip into the park this year, with a guide named Julius Beltizer and area old-timer Jack Baronett. Norris approached in July from the north, traveling to Mammoth Hot Springs, Lamar Valley, Canyon, and the Lower Geyser Basin. At times he was also accompanied by George Huston and H.C. Wyman.

Norris found the slaughter of Yellowstone wildlife in full swing, but he also saw wildlife. He commented specifically on "the winding Soda Butte Valley, with its ancient geyser cones, its emerald trout lakelets, its evergreen groves alive with elk and antelope" (Norris n.d.). Apparently Norris either saw, or saw evidence of, wolves and other animals. He noted "little trace of man; but animals [we did find] as elk, blacktailed deer, bighorn sheep, and several kinds of bear [,] wolves and foxes are anamulously [meaning unknown] plentiful and tame; staring at bearded man walking erect as a recent added wonder and [they] can be slaughtered almost at will" (Norris n.d.). Norris then commented at some length on the destruction of park wildlife. This statement has not been used by previous historians of this event:

The recent painting [taken from a photograph reproduced in Haines 1977:206] called the "Successful Hunter," represents my old comrade Frederick Bottler, in the act of skinning one of the five huge antlered bull elk lying around him, that he had just shot standing in [its] tracks amid the mists of the cascade [Lower Falls] when hunting for Prof. Hayden in 1872.

The Bottler Bros. assure me that they alone packed over 2,000 elk skins from the forks of the Yellowstone [mouth of the Lamar River], besides vast numbers of other pelts, and other hunters at least as many more, in the spring of 1875. As the only part of most of them saved was the tongue and hide, an opinion can be formed of the wanton, unwise, and unlawful slaughter of the beautiful and valuable animals in the Great National Yellowstone Park [sic.]. Although, as above stated, these animals are still plentiful around the falls and great geysers, which have never yet been seen by white man in winter, they soon will be, and those animals become, extinct, unless protected by a determined resident superintendent and police (Norris n.d.).

Thus Norris provided us with a firsthand account, in the form of an interview with a participant, of the extensive skin-hunting activities in the park.

It is worth pointing out that the park's superintendent at the time, Nathaniel Langford, already had a full-time job to attend to in Montana. He had no budget, and was able to visit the park briefly only three times during his five-year (1872-1877) superintendency (Haines 1977 I:449). Little wonder the park's wildlife were at the mercy of skin hunters.

At the Lower Geyser Basin, Norris felt earthquake shocks, and heard wolves and mountain lions, which, he believed, were responding to the earthquake:

We were startled from a brief sleep by the hollow rumbling a unusual earthquake shock, followed by the wild trumpet notes of the swan, frightened from its rest near our bubble cones, the loud, prolonged howl of the mountain wolf, the fierce scream of the California lion, and the whole valley of geysers and all else in nature seemed aroused to unearthly activity, rendering further sleep impossible. Altogether it was a night of nervous anxiety, unequaled [sic.] in all my mountain wanderings (Norris n.d.).

General W.E. Strong and a military party of dignitaries and escort, totalling at least 32 men traveled through Yellowstone this summer. Lt. G.C. Doane, who had also visited the park in 1870 with the Washburn Party and in 1874, was their guide. Strong's account of park animals was probably influenced by conversations with Doane, who was recognized as an expert on Yellowstone.

The party approached the park from the north. Like so many visitors, they stopped at Bottler's, where Strong commented on the success the brothers were having in their stock and produce operation, and further commented on Fred's success as a hunter:

The eldest Bottler, Fred., is a mighty hunter, and the trophies of his prowess, such as heads and skins of mountain sheep, elk, deer, bear, and mountain lions are abundant here (Strong 1875:33).

Strong apparently saw multiple trophies of mountain lions there.

On July 28, at Mammoth Hot Springs, Strong reported that dinner that day included teal and grouse (Strong 1875:36). At Blacktail Deer Creek, they fished and hunted. They saw "three black-tails, but it was too dark to shoot at or follow them" (Strong 1875:42). The next day, Strong said he expected "at every moment to start an elk or deer, but game was scarce. I saw at one time two deer on an open plain, five hundred yards away, but they discovered me at the same time" (Strong 1875:44). On the way to Tower, both Strong and Marcy hunted more or less continually, but "Neither of us killed anything or fired a shot, and the General saw no game or fresh sign. Lieutenant Doane says the elk and deer at this season are on the highest mountain ranges, where the snow lies all the year, to escape flies and mosquitoes. We have seen no elk as yet, and I am sure we were high enough up to-day" (Strong 1875:46).

Near the mouth of the Lamar, he met Jack Baronett, who offered to give them a hunt, apparently on upper Pelican Creek and the Mirror Plateau:

As this will give us three or four days among the grizzlies, elk, and black-tailed deer, nothing would please me better. Baronette [sic.] says there is very little game west of the Yellowstone and that we have a slender prospect of killing anything but grouse.

To the east of the Yellowstone, and particularly between his cabin and the head of Yellowstone Lake, including the Pelican Creek country, big game is still so very abundant that he says we will see elk in great bands, containing hundreds, and no end to mountain sheep and deer (Strong 1875:47).

Strong described Baronett as an honest man ("his word is as good as gold"). Baronett had been in and out of the area since 1864, and ranked with Fred Bottler as a knowledgeable local resident. We therefore have no reason to doubt Baronett when he said that there were large numbers of elk, deer, and sheep where he said they were. Unfortunately, the party did not accept his invitation, but continued on to Canyon. Near there, the party shot but did not kill a wolverine, causing Doane to comment that he had also seen a wolverine on his first visit to the park area, a fact not mentioned in Doane's journals.

The party fished the Yellowstone River and continued to enjoy grouse and trout, then moved to Nez Perce Creek, where Strong shot at a bull elk. While visiting the geyser basins, Strong commented about General Marcy's hunting:

We all think him very imprudent [Marcy was ill]. Has hunted very hard, sometimes riding miles away from the trail, working almost indefatigably, early and late, to kill an elk or deer; but this is the most barren country for game at this season of the year I have ever seen, and nothing has been killed by the party but grouse, with which our table has been well supplied (Strong 1875:81).

Statements of this type, though clear in their intent, must be used with care. Taken out of context, Strong's statement may seem to mean more than he intended. Kay (1990) quotes this statement and concludes that, "Strong made this comment about that part of Yellowstone Park around the falls, Hayden Valley, and [the] Firehole where today, thousands of elk and bison summer" (Kay 1990:270). Kay used this account to support his argument that Yellowstone had few large mammals at this time, and throughout the early historical period.

It is unclear just what area Strong intended to include in his statement, because he did not specify the area; indeed, he may have meant the entire park, or he may have just meant the geyser basins. However, if Kay has interpreted him correctly, Strong was discussing Marcy's hunting efforts during the three-to-four-day period of July 31 to August 3, during which time the party also spent much time traveling and fishing. As

well, Marcy was ill, having fallen into the Yellowstone River while fishing; by August 4, he was too ill to travel or be moved. This is why the rest of the party thought him "imprudent" to be hunting in the first place. Marcy's lack of success means no more or less than any hunter's similar lack of success (in utterly unfamiliar country) during such a brief period.

That said, a more likely scenario emerges when all the accounts given so far are considered. The primary attractions for early tourists were the Grand Canyon of the Yellowstone with its falls, the Lake, and the geyser basins. The route followed by Strong's party was already established as the most common travel route for tourists from the north (Haines 1977). We would, therefore, expect those to be the first areas where the wildlife would either be shot out or become wary.

We would likewise expect the heart of the present Northern Winter Range to be cleared of easily visible wildlife during the travel season because of the growing traffic to and from the mines near present Cooke City. Perhaps most important of all, the skin hunters had apparently by 1875 made serious inroads on animal populations, and were certainly another reason that animals would be wary. The mere fact that today, "thousands of elk and bison" summer in central Yellowstone, and that some of them are seen by visitors, is very nearly irrelevant when considering the fortunes of one party in 1875, a time when the animals, however many there may have been, had been shot at for several years.

Leaving the geyser basins, Strong mentioned a place called "Elk Crossing," another obsolete animal-related name associated with the park area (Strong 1875:86). On August 6, apparently camped along the Gibbon River (the "North Fork of the Madison"), Strong reported that "the men who left camp yesterday morning to bring up the supplies from Yellowstone Lake saw four grizzlies while passing over the Divide, and after a sharp fight killed one of them" (Strong 1875:87). That evening, "After dinner, and while we were sitting about the campfire, a band of elk was seen a few hundred yards from us, running about among our animals, which were grazing in the river bottom. Doane and I sprang for our rifles, but failed in getting a shot" (Strong 1875:88).

At Yellowstone Lake, the party was rejoined by two Lieutenants, who had just arrived from Fort Ellis. In the company of Baronett and a sergeant, they had traveled from Baronett's bridge to the Lake by way of the east side of the river:

Lieutenants Green and Quinton, Baronette [sic.] and Sergeant Anderson killed on the trip a grizzly, an elk, and six deer, and they saw a great many more, while on this side of the river we have seen very few (Strong 1875:92).

This appears to support Baronett's contention, quoted earlier, that large animals were still plentiful on the east side of the river.

To Strong's great regret, a shortage of time and Marcy's continued convalescence made the hunt Baronett had offered them, on Pelican Creek, impossible. Baronett did offer Strong a hunt on Mount Washburn, where "Baronette [sic.] thinks he can show me a grizzly" (Strong 1875:920).

Near Hedges Peak, Strong said that, "The fresh tracks of grizzlies were plenty, but those of mountain sheep and elk were scarce" (Strong 1875:98). The context does not allow us to know if he meant tracks were scarce or fresh tracks were scarce. They then saw three mule deer bucks and Strong shot one of them. Strong's last entry about shooting in the park involved 12 grouse killed with 13 shots the night before leaving.

Strong's last major statement in his text that relates to Yellowstone is an extended discussion entitled, "The Game and Fish of the National Park." This is such a primary source, apparently based on his own observations as well as conversations with residents (Bottler, Baronett) and at least one experienced traveler (Doane), that we must quote it in full.

In 1870, when Lieutenant Doane first entered the Yellowstone Basin, it was without doubt a country unsurpassed on this continent for big game. Large herds of elk, mountain sheep, the black and white-tail deer, and the grizzly, cinnamon, and black bears were numerous. The Yellowstone Valley was swarming with antelope, and the mountain lion was frequently killed. During the past five years the large game has been slaughtered here by professional hunter by thousands, and for their hides alone. When the snow falls and the fierce winter storms begin in November and December, the elk, deer, and sheep leave the summits of the snowy ranges and come in great bands to the foot-hills and valleys, where they are met and shot down shamefully by these merciless human vultures. An elk skin is worth from six to eight dollars, and it is said that when the snow is deep, and a herd gets confused, one hunter will frequently kill from twenty-five to fifty of these noble animals in a single day. Over four thousand were killed last winter by professional hunters in the Mammoth Springs Basin alone. Their carcasses and branching antlers can be seen on every hillside and in every valley. Mountain sheep and deer have been hunted and killed in the same manner for their hides. The terrible slaughter which has been going on since the fall of 1871 has thinned out the great bands of big game, until it is a rare thing now to see an elk, deer, or mountain sheep along the regular trail from Ellis to Yellowstone Lake. There is undoubtedly considerable game still left on the west side of the Yellowstone, which, in the summer months, seeks the highest mountain summits to escape the flies and mosquitoes; and on the eastern side of the Yellowstone, commencing at the Lake and following the gigantic mountains northward, large game is probably as plentiful to-day as it was on the western side when Doane first explored this country. But few years will elapse before every elk, mountain sheep, and deer will have been killed, or driven from the mountains and valleys of the National Park. Already the hunters are looking to the eastern shore of the Yellowstone, and without doubt this coming fall and winter immense numbers of

elk will be shot in this region for the paltry sum paid for their hides. It is an outrage and a crying shame that this indiscriminate slaughter of the large game of our country should be permitted. The act of Congress setting aside the National Park expressly instructs the Secretary of the Interior to provide against the wanton destruction of the game and fish found within the limits of the Park, and against their capture or destruction for the purposes of merchandise or profit. No attempt has yet been made, however, to enforce the act in the Park, and unless some active measures are soon taken looking to the protection of the game there will be none left to protect.

The time is coming when the whole world will visit this marvelous region, and if the game could be preserved from pot-hunters, there would be rare hunting sport found in this Park, for years to come, for those who shoot in season and in a proper manner.

How is it that the Commissioner of the Park allows this unlawful killing? The hunters who are doing this cruel and outrageous work are well known. Jack Baronette [sic.] can point out and name the men who glide up to bands of elk on snowshoes and shoot them down when too poor and weak to run away or when the snow lies on the ground to such great depth that they are unable to travel, and fall an easy pretty to their pursuers. In the name of humanity let this kind of hunting be stopped (Strong 1875:104-106).

We have already summarized a number of accounts (Peale, Blackmore, Henderson, Gourley, Jackson, Richardson, Bradley, Norton, H.C., Comstock, and others) that make it clear that large mammals were in fact seen frequently and were considered to be abundant in the park area in the early 1870's. We have already also summarized accounts (Norris, Bozeman Avant Courier, Comstock) and other evidence (Jackson photograph of great numbers of hides at Bottler's ranch in 1871) that indicate the slaughter was in fact occurring. This latter evidence includes Norris' interview with Bottler, in which Bottler said he took 2,000 hides from elk in the Lamar Valley. Strong's statements add significant new evidence, reporting on firsthand observations by a witness (Baronett), and on his own observations of the most telling kind of evidence, the carcasses and antlers of apparently large numbers of elk near Mammoth Hot Springs. We see no room to question the slaughter of thousands of elk, and many other animals, in this period as a bonafide historical event. Additional evidence emerges in later accounts.

As Strong's party was leaving the park, they met the arriving Ludlow party coming in. Captain William E. Ludlow, Chief Engineer of the Department of Dakota, spent 15 days in the park with a party of 22 men and 33 animals. The party included scientists Henry Dana and George Bird Grinnell. He followed what was becoming the most common route for tourists entering from the north: Mammoth Hot Springs, Tower, Canyon, and the geyser basins, but visited Yellowstone Lake as well.

Ludlow and his party have left us perhaps the most contradictory set of accounts of large animals. Ludlow mentioned that just before arriving at Tower Creek, "two deer were seen, the only game animals we encountered in the park" (Ludlow 1876:30). On the other hand, Ludlow seemed to believe that large mammals had been abundant, and like several other visitors, he concluded that skin hunters were responsible for the decline:

Hunters have for years devoted themselves to the slaughter of the game, until within the limits of the park it is hardly to be found. I was credibly informed by people on the spot, and personally cognizant of the facts, that during the winter of 1874 and 1875, at which season the heavy snows render the elk an easy prey, no less than from 1,500 to 2,000 of these, the largest and finest game animals in the country, were thus destroyed within a radius of 15 miles of the Mammoth Hot Springs. From this large number, representing an immense supply of the best food, the skins only were taken, netting to the hunter some \$2.50 or \$3 apiece, the frozen carcasses being left in the snow to feed the wolves or to decay in the spring. A continuance of this wholesale and wasteful butchery can have but one effect, viz, the extermination of the animals, and that, too, from the very region where he has a right to expect protection, and where his frequent inoffensive presence would give the greatest pleasure to the greatest number (Ludlow 1876:37).

Ludlow proposed that hunting should be disallowed in the park. According to Haines (1977), Ludlow's report was influential in creating concern in Washington for greater protection of the park.

George Bird Grinnell, then a graduate student at Yale, left much more information about park animals in reports and journals. First, the group apparently saw animals even before reaching the park:

From Ellis we rode over...to Bottler's ranch on the Yellowstone, where we camped. In the [surrounding] mountains were plenty of bears, deer and sheep. We killed some elk. Near Bottler's we saw young buffalo feeding with the cattle (Grinnell 1972:117).

Grinnell's accounts may have confused earlier investigators, because he left not only narratives on numerous species, but followed the narrative with a list of animals seen in the park by either him or Merriam (in 1872). This list, which at first glance could appear to be merely a species name list, in fact is keyed by the initials of the two men to tell which species each reported as being in the park.

Grinnell introduced his published report in part by saying that, "In making out this list, I have taken care to give only such species as I actually saw and identified either in life or by their remains" (Grinnell 1876:66). He then devoted considerable space to "the terrible destruction of large game, for the hides alone, which is constantly going on in those portions of Montana and Wyoming through which we passed. Buffalo, elk, mule

deer, and antelope are being slaughtered by the thousands each year, without regard to age or sex, and at all seasons" (Grinnell 1876:66). He added that, "It is estimated that during the winter of 1874-'75 not less than 3,000 elk were killed for their hides alone in the valley of the Yellowstone, between the mouth of Trail Creek and the Hot Springs. If this be true, what must have been the number for both of the Territories?" (Grinnell, 1876:66).

Forest and Stream, the sporting periodical with which Grinnell would have a long and fruitful association as editor, published a paraphrase of these remarks, possibly written by Grinnell himself, on October 12, 1876, one of the first notices of the slaughter of park wildlife in the popular eastern press (Forest and Stream 1876).

Ludlow and Grinnell provided some useful historical context here by pointing out that the slaughter of large mammals was endemic throughout the west; there is no reason to believe that Yellowstone Park, once access was gained, would be treated any different.

In the following excerpts from his report, we include comments about large animals only as they apply to Yellowstone Park or nearby. These accounts were based primarily on his unpublished field notes, the originals of which are now at the Southwest Museum in Los Angeles. With very few exceptions, the original notes do not add detail to what was published. Where there may be confusion over what species he meant, we include his species name parenthetically.

Mountain lion: "A single individual of this species was seen by our party on the Yellowstone River, near the mouth of Alum Creek" (Grinnell, 1876:66). His list (Grinnell 1876:87-89) indicates that Grinnell saw this species in the park.

Wildcat ("Lynx rufus"): "Very abundant in the mountains" (Grinnell 1876:67). His list indicates that he saw it in the park.

Canada lynx ("Lynx canadensis"): "I saw a few skins at Fort Peck, and was told that it was sometimes killed in the Yellowstone Park" (Grinnell 1876:67). His list indicates that he saw it, suggesting to us that he took a broad definition of "observations," meaning documented sightings rather than personal sightings.

Gray wolf: In his narrative, he discusses it and its poisoning, but does not say he saw it in the park. He includes it in his list of animals observed in the park.

Coyote: He believed the coyote was more common on the prairie than in the mountains. He listed it as observed in the park.

Marten: "The marten is said to be quite abundant in the mountains of the Yellowstone Park" (Grinnell 1876:68). It is on his list as having been observed in the park.

Grizzly bear: "In the Bridger Mountains and in the Yellowstone Park they were numerous, so much so that we would often see several sets of fresh tracks in a mornings ride. From their abundance in the vicinity of Fort Ellis and Bozeman, it was evident that they were not much disturbed by hunters" (Grinnell 1876:69). Grinnell does not include either grizzly bear or black bear on his list of animals observed in Yellowstone Park.

Black bear: "Not nearly so common as the preceding species. Only one living specimen was seen. At a ranch near the bridge of the Yellowstone River, however, I was shown a single skin of the so-called Cinnamon Bear, which, I was told, had been taken in the Park" (Grinnell 1876:69).

Beaver: He did not mention it in his narrative, and did not list it as observed by him (or by Merriam) in the park.

Moose: "This species is quite abundant in suitable localities in the Yellowstone Park, although, like all the large game, it has been driven away from the neighborhood of the trail by the constant passage of travelers. We saw signs of its presence in the Bridger Mountains, and were told that there was a famous country for Moose about fifteen miles from the mouth of Trail Creek" (Grinnell 1876:72). Grinnell was one of several writers to mention the moose of Trail Creek.

Elk: "Elk were rather abundant all through the country which we traversed. They were seen in considerable numbers along the Missouri River, among the Bridger Mountains, and in the Yellowstone Park" (Grinnell 1876:72). He listed the elk as having been observed by him in the park.

White-tailed deer: "they were seldom seen" on the trip (Grinnell 1876:72). He did not list them as seen in the park by either him or Merriam.

Mule deer: His narrative does not mention the park. He listed them as having been observed by him in the park.

Antelope: He does not mention the park in his narrative of this animal, and his list says that Merriam, not Grinnell, saw it in the park.

Bighorn sheep: "The Bighorn occurs in considerable numbers in the Judith Mountains and in the Yellowstone Park, away from the trail; but they are so wary that they are not often seen" (Grinnell 1876:73). He includes it on the list of animals he saw in the park.

Bison: "The so-called 'Mountain Buffalo' was abundant in the Yellowstone Park" (Grinnell 1876:73). He includes it on the list of animals he saw in the park.

A full examination of Grinnell's list, including the smaller mammals seen and discussed, should be of interest to those concerned with wolf restoration in Yellowstone Park. The

complicated dynamics and interrelationships of these species, including and sometimes especially the smaller ones, are all deserving of attention. In some cases, in our discussion and conclusions, we will address some issues involving the interaction of various species, but only in the most tentative of ways.

Apparently either Ludlow was not attentive, or Grinnell spent a considerable amount of time away from the party. Also apparently, Grinnell made a serious effort to examine evidence such as skins and other trophies. In any event, it is clear that the Ludlow party, rather than providing evidence of a scarcity of wildlife species in the park, concluded that many species were present, and were at the time or had once been abundant. So historically prominent a naturalist as Grinnell, even at the beginning of his career, is more difficult than most other early observers to distrust.

E.A. Maynard made another trip to the park this year. He killed an antelope near Targhee Pass, and heard an elk bugling near the mouth of Nez Perce Creek (Howard 1933:67). At Old Faithful, he shot a deer (Maynard 1932:10). He shot an antelope, apparently near Hebgen Lake, and heard elk bugling at Henry's Lake (Maynard 1932:24).

In an article on the Crow Reservation, Lt. G.C. Doane gave this brief description of the annual migrations of wildlife from the high country in the park and the Absaroka range:

During the severest storms of winter, the great herds of game leave these elevated pasture grounds, often coming down into the Yellowstone valley in countless thousands, and scattering over the wide pasturage between the Yellowstone and the Missouri until Spring opens, when the gnats and mosquitos drive them back again to their old haunts (Doane 1875).

Two reports on hunting in or near the park appeared in local newspapers early in the year. On January 29, the Bozeman Avant Courier reported that "Arthur McCarty was in town Monday with a wagon load of wild game from the Upper Yellowstone valley. He reports game plentiful in that section."

On the other hand, a few weeks later, a group of prospectors had less luck finding animals:

Messrs. Buchanan, Stuart, McKenzie, Wilbur, McDermott and Grounds are camped near the mouth of East Fork [Lamar River]. Jack Bean is near Cinnabar Mountain, and [Adam Horn] Miller is [at] Crevice Gulch. Game, with the exception of sheep, has been scarce so far (Bozeman Times 1875).

1876

Because of wars between whites and Indians, very little historical material was generated on Yellowstone Park this year. Military parties were needed elsewhere (the Battle of

Little Bighorn occurred in late June), and many persons were afraid to travel. M.A. Switzer, Ella Edsall, and Lt. G.C. Doane, did, however, leave accounts of visits to the park, and local newspapers also provided information.

The party of M.A. Switzer entered the park from the west and traveled to Old Faithful first, then east of Mary Mountain. They occasionally mentioned wildlife. After crossing "Tygee" (Targhee) Pass, they entered "the upper Madison Basin. This is one of the finest game ranges in the mountains" (Switzer n.d.:2). While still near the Madison River but probably not yet in the park, one of the party shot at two elk, and the party found "game signs plenty" (Switzer n.d.:3). In the same area, they, "lay over for the purpose of killing the elk. Some of us were out nearly all day but could not find any. John killed an antelope but lost him in the timber. Bacon is best anyway" (Switzer n.d.:3). The next day they saw two antelope and shot one.

Providing us with a sign of the increasing visitation and damage to park features, at Old Faithful they noted, "We find the names of perhaps one hundred written on the krust [sic.] and pebbles" (Switzer n.d.:4). Near Mary Mountain they saw a bear. They apparently fished and shot grouse regularly.

Ella Aylesworth Edsall and her family, who moved to Chico Hot Springs from Bozeman this year, claimed to have visited the park this summer (members of the 1877 Radersburg party mentioned finding her name pencilled onto the formation at Great Fountain Geyser, according to Guie and McWhorter 1935:55). She remembered a snowstorm on August 24, and the screams of a mountain lion, which stampeded the party's horses (Edsall 1919:5).

Gustavus Doane was back again in 1876, along with Sergeant Fred Server and four privates. They traveled through the park in October, attempting to float down the Snake River from near Heart Lake to Fort Hall, Idaho. Doane left a detailed journal, and Server left a shorter one. This was a curious and gruelling trip, made in deep snow and miserable traveling conditions, hauling a boat for parts of the trip.

But they did mention wildlife, and caught trout frequently along the way. On October 22, near the Canyon, "During the day it continued to snow very hard but cleared during the night. Hunted in vicinity of camp but found nothing.... As it was snowing continuously, the game was all hidden away in the forest" (Doane 1970:476). The next day Doane mentioned having to take care to keep the bears away from the supplies, "as these animals are affected with a childish curiosity in relation to government rations" (Doane 1970:476). South of Canyon, apparently near the north side of Hayden Valley, he saw elk:

I started in advance of the party on the Lake trail, and was riding along slowly with my eyes shaded when my horse shied violently, with a snort, and stood trembling. I jerked away the shade and saw that I had ridden close up to a herd of at least two

thousand elk. They had been lying in the snow, and had all sprung up together frightening my horse. In a minute the great herd was out of sight, crashing through the forest. The old bulls screaming their strange fog-horn cry. It was a magnificent sight as the bulls were in full growth of horns, and the calves all large enough to run freely with the herd" (Doane 1970:476-477).

At Crater Hills, Doane killed a deer.

On the night of October 24 (Server's account suggests it was October 23, but both agree it was at Yellowstone Lake), noises in the forest, including a loud roar and crashing, caused Doane and one private to investigate while the others calmed the horses. They found a bull moose that was tearing up young trees (Doane 1970:478-479, Server n.d.:2).

On October 26, Doane related that they, "Killed a deer and two geese. Murdered a lot of pelicans" (Doane 1970:480). They also visited Stevenson Island, and reported mountain lions and wolves that night:

Starr, Applegate, Ward and myself went out to Stevenson Island in the new boat. Saw fresh bear tracks on the island which is two miles from the shore. We felt sure that the bear must be on the island but could not find him. Found two beautiful springs of water gushing from the rock near the shore.

Another glorious night. Mountain lions in chorus beyond the river, and a pack of wolves howling far down the lake shore (Doane 1970:480).

On October 29, near the divide between Yellowstone Lake and Heart Lake, they surprised a large grizzly bear that got away before they could shoot. They reached the Heart Lake Geyser Basin, where, "Driving out a large herd of Elk resting there, we went into camp" (Doane 1970:490-491). Server corroborates Doane, saying they "Saw one bear and a herd of elk" (Server n.d.:2).

Doane sent two men, along with the extra animals that would no longer be needed, back to Fort Ellis on November 2. These men took a "side trip to the Geyser basin, forty miles, and back to the Grand Canon, forty more. Here they were caught in a heavy snow storm and delayed several days. Killed two elk" (Doane 1970:493).

On November 4, still at Heart Lake, they dined on porcupine, which Doane (1970:498) and Server (n.d.:3) agreed was good eating. Doane noted that Heart Lake's east side had "an extensive marsh full of Beaver dams and trenches" (Doane 1970:499). He also noted many beaver workings along the Heart River (Doane 1970:501).

On November 18, along the Lewis River near the present south entrance, Doane noted the shortage of rations they were soon to face: "With plenty of large game in range, this would have caused no uneasiness, but we were descending daily and leaving the game

behind" (Doane 1970:505). It is not clear why he thought there would not be game in the lower country to the south, but it is clear he believed there was game nearby at that point. That night, "a mountain lion prowled around the camp causing the horses to snort occasionally. In the morning we found his tracks in the snow within three feet of a poor old mule. He had gone round and round the mule, packing the snow to a trail and had crouched twice to spring, but had not ventured to do so" (Doane 1970:509).

On November 21, on the way to Jackson Lake, "An old Moose screamed at us during the darkness just after night fall, but made off before the moon arose, so we failed to get a shot at him" (Doane 1970:510). On November 22, they saw "Hundreds" of otter somewhere north of the inlet of Jackson Lake. On November 24, along Jackson Lake, they saw many beaver workings, and killed and ate an otter and more trout. The otter made them ill. On November 25, Doane shot and killed a deer as it swam in the Lake; Server called it "a black tail deer. The first one on the trip" (Server n.d.:5). It was their third, actually, unless Server meant that the others were not "black tail deer."

On November 30, somewhere near the outlet of Jackson Lake, private Warren "saw a large herd of Elk but was unable to get one" (Doane 1970:520), a sighting confirmed by Server (n.d.:6). The next day, near present Blacktail Butte, "Warren and White followed a herd of Elk till dark but did not get one" (Doane 1970:522). Server (n.d.:6) agreed on this sighting. By this day, December 1, provisions were poor:

Fishing good, but fresh fish is too thin a diet to subsist on alone. We now have no coffee, sugar, tea, bacon, and worst of all, no tobacco. Nothing but a few beans left. The game is scarce and shy. I cannot hunt and keep the observations at the same time (Doane 1970:522-523).

On December 2, "Our hunting was without avail. The animals were too weak to carry us far uphill, and the game was far up on the eastern foothills" (Doane 1970:524). It is not clear from this if Doane was assuming, or actually saw, the game in question. They ate a horse, grim fare according to Doane.

When possible, members of the party continued to hunt. On December 7, they encountered an old trapper who was wintering in the area. He gave them a quarter of elk:

He was trapping for fine furs only, mink, martin, fisher, and otter. Said it would not pay to go after beaver unless one had pack animals and these could not winter in the valley (Doane 1970:528).

Doane's impression of wildlife conditions in the Yellowstone area was that, though animals were present, they were difficult to get. He certainly seems to have encountered quite a few animals or groups of animals, including at least four groups of elk (including one very large herd), between Hayden Valley and Blacktail Butte.

On April 20, The Bozeman Times reported, in an article on the park, that "animals, such as elk, deer[,], antelope, bear etc., abound in the region of the National Park" (Bozeman Times 1876a). On June 8, the same paper reported that a party on their way from Bozeman to Emigrant encountered a large grizzly bear on the east slope of the Gallatin Range (Bozeman Times 1876b).

1877

The parties of W.T. Sherman, Mrs. George Cowan, W.D. Pickett, and P.W. Norris were in the park and left reports of animals. Robert Strahorn also made a general comment about animals, and Ernest Thompson Seton left a brief interview with an 1877 resident of the park area. Local newspapers left several accounts.

William T. Sherman, his son Thomas, and large party traveled through the park, entering from the north. The general, his son, and an aide named O.M. Poe all left accounts.

General Sherman noted that "there is little game in the Park now; we saw two bear, two elk, and about a dozen deer and antelope, but killed none" (Sheridan and Sherman 1878:37). Sherman also described the park as "a poor region for game," but without explanation of cause (Sheridan and Sherman 1878:33).

Thomas Sherman's account did not mention animals, but Col. Poe did in passing. He said they saw "an occasional band of antelope" near Tower, and chased some bears near Sulphur Mountain:

Whilst approaching Sulphur Mountain we caught sight of a large bear (Cinnamon) with two cubs. Colonel Bacon, Tom. Sherman, and three of the soldiers gave chase. The ground was open, but literally honey-combed by the works of moles, mice, &c., and over this the bears made good progress, while the horses were much impeded. The bears made for a forest of pine timber, and the chasers seeing that they were going to gain its shelter before they could be headed off, dismounted and fired several shots without effect (Poe 1878:74).

Near the Lower Geyser Basin, Poe said that "numbers of wild geese were seen, and a short distance beyond we started three elk, the first we had seen. To these Colonel Bacon and one of the soldiers gave chase, but without success (Poe 1878:79). On August 15, near the junction of the Lamar and Yellowstone Rivers, "Colonel Bacon went hunting without success, while Tom. Sherman went fishing and brought back a fine string of trout, caught at the junction of the East Fork with the Yellowstone" (Poe 1878:80). At the end of his visit, Poe said that "We saw but little game in the Park, though the grazing appeared to be of the very best, and the mingling of glade and forest, of mountain and prairie, just that which game would be likely to haunt" (Poe 1878:82).

The Cowan and Radersburg parties are now best remembered for their contact with the Nez Perce on their flight through the park. Mrs. Cowan did not mention animals in her

very dramatic account of the episode, but Andrew Weikert and Frank Carpenter did briefly. Weikert made this statement near Tower Fall: "A very fine morning; everything seems to be alive, birds are singing. Can see game skipping around occasionally" (Weikert 1900:169). He also mentioned sighting a bear at Mammoth Hot Springs.

Carpenter saw antelope in the vicinity of Sawtell's ranch west of the park, and mentioned that the Cowans went there, "in quest of deer or elk on the surrounding mountains." Later he referred to one of the Nez Perce chiefs killing a deer near Mud Volcano (Guie and McWhorter 1935:37-38,148).

William Pickett, a well-known hunter and Civil War Confederate Veteran, visited the Yellowstone area frequently, eventually settling near Greybull (Schullery 1988). In 1877, he shot his first grizzly bear on Mount Washburn, and saw antelope (more than one) in the Madison Valley and at the Lower Geyser Basin (one) (Pickett 1908:209-210). Pickett's memoirs of bear hunting were edited and published by George Bird Grinnell of the Boone & Crockett Club, and in one of the many footnotes, Grinnell gave us an extended discussion of the pronghorn population of the area, though it is not clear what he means by the "early days." We assume from the chronological context of his footnote that it was prior to 1880, at least:

In early days the open country in the Yellowstone Park was a great range for the antelope, and, as Colonel Pickett remarks, they were sometimes seen in the timber. We commonly regard the antelope as a frequenter only of open country, yet most people who have traveled much in the mountains have seen them in the timber, or among it, though perhaps never in very thick timber.

Because of its high altitude the Yellowstone Park was only a summer range for antelope, and at the approach of winter the herds migrated to the lower land, great numbers of them passing down the valley of the Yellowstone River, and so out on the plains. In spring again they worked up the valley and reentered the Yellowstone Park, where usually the young were born. As soon as the valley of the Yellowstone River became more or less settled, this annual migration resulted in the slaughter of great numbers of antelope, and a marked decrease in the number of those summering in the Park (Grinnell 1913:272).

In 1877, Philetus Norris, who had twice previously visited the park, became the superintendent. That year he started his campaign to save the animals from slaughter. In October of that year, he summarized the conditions as he found them, starting with a statement that the park area was one of the last areas in the West where there was "such an abundance of elk moose, deer, mountain sheep, and other beautiful and valuable animals" (Norris 1878:842) that were then being slaughtered:

From the unquestioned fact that over 2,000 hides of huge Rocky Mountain elk, nearly as many each of the big-horn [,] deer and antelope, and scores if not hundreds

of moose and bison were taken out of the park in spring of 1875, probably 7,000, or an annual average of 1,000 of them, and hundreds if not thousands of each of these other animals have been killed since its discovery in 1870.

As comparatively few of them were slain for food, but mostly for their pelts and tongues, often run down on snow-shoes and tomahawked when their carcasses were least valuable, and merely strychnine-poisoned for wolf or wolverine bait, the amount of most wholesome, nutritious, and delicious food thus wantonly destroyed is simply incalculable.

He concluded that it was already too late to protect the wildlife in the most traveled parts of the park, echoing sentiments earlier expressed by others that the area had taken big losses:

With the best-informed mountaineers, I deem the game in most of the park, especially along the main routes of travel, as too much decimated to justify extra efforts for its protection west of the Yellowstone Lake, River, and Grand Canon. But the wild eastern portion between them and the impassable snowy crests of the Shoshone Sierra, or Yellowstone range, from the base, say thirty miles, along the East Fork of the Yellowstone south, say fifty miles, to apex of a triangle at the head of the lake, contains fewer prominent wonders and more large valuable game animals than other portion[s] of the park or of the mountains.

Here is still a herd of three hundred or four hundred of the curly, nearly black bison, or mountain buffalo, with thousands of elk, deer, moose, antelope, bighorn and woolly sheep, beaver, and other beautiful and rare animals valuable for food, pelts and furs, while [probably should be "which"], inclosed by impassable natural barriers elsewhere, only during the deep snows of winter occasionally visit the deep-sheltered grassy valley of the East Fork--from two to five miles wide (Norris 1878:843).

Norris proposed an aggressive game-management program, with harvests and cullings and a protective force to guard the animals.

Norris also made the first mention, above, of the widespread use of strychnine to kill park scavengers. This is a subject that should be of special interest to those concerned with early Yellowstone wildlife history, and we will return to it.

While it is not clear that writer-publisher Robert Strahorn personally visited Yellowstone Park in 1877, he had apparently gathered information on it to include in his 1878 book *The Rockies and Beyond*. He stated that, "Fish abound in the lake, game of all kinds inhabit the surrounding forests" (Strahorn 1878:138).

Ernest Thompson Seton, the famed naturalist of the early 1900's, told of a conversation with an early resident of the park area:

In June of 1897, as I stood on a hill near Baronett's Bridge, overlooking the Yellowstone just beyond Yancey's, with an old timer, Dave Roberts, he said, "Twenty years ago, when I first saw this valley, it was black-speckled with Buffalo, and every valley in the Park was the same." Now the only sign of the species was a couple of old skulls crumbling in the grass (Seton 1913:82).

This would mean a sighting of bison herds in the vicinity of the junction of the Lamar and Yellowstone Rivers in 1877.

On February 8, 1877, the Bozeman Avant Courier ran an article entitled "Pot Hunters and the Park," urging that the slaughter of animals be stopped (Bozeman Avant Courier 1877).

On February 15, James McCartney, at Mammoth Hot Springs, wrote in the Bozeman Times that "there is plenty of game in this vicinity" (Bozeman Times 1877a). On March 8, the same newspaper ran a poem, "Yellowstone," which included these lines:

There's Six Mile [Creek], too, some say 'tis true,
Where sheep they got full grown;
And elk and deer multiply each year,
Upon the Yellowstone (Bozeman Times 1877b).

1878

Superintendent Norris (1879) made a brief mention of the slaughter of wildlife in his annual report for 1878. The Hayden party of the U.S. Geological and Geographical Survey of the Territories again visited the park, and other visitors who left accounts included the W.I. Marshall and Coalgate Hoyt parties. General statements were also published by Major James Brisbin, The Daily Graphic (New York), and John Mortimer Murphy.

Major Brisbin may or may not have actually visited the park himself. His statement about park wildlife appeared in a letter to his superiors dated June 5, 1878, and it disagreed to some extent with other writers of the time as far as the motivations of the hunters:

There are now in the park thousands of elk so tame a person can ride or walk about among them....They are not slaughtered for their meat or skins but....simply for the pleasure of killing them....There are many antelope, deer...grizzlies, cinnamon, brown and black bears, and flocks of 15 to 100 mountain sheep are met every day (Doane 1970:127).

An unsigned statement in The Daily Graphic of New York took a similar position:

The splendid game in the so-called National Park, on the Yellowstone, is being recklessly destroyed by hunters, simply for the pleasure of killing, notwithstanding the laws of Congress and of Wyoming and Montana. intended to protect the region from the spoiler. Elk, of which the Park contains thousands, are shot down, and the carcasses left upon the plain, not even the skin being removed. One hunter has slaughtered as many as seventy-five elk in one day. It is the duty of the prosecuting authorities of the Territories in which the Park is situated to see that such criminal and wanton waste be punished and repressed (Haines 1977, 2:57).

The brief statement was accompanied by five somewhat fanciful drawings. One showed the slaughter of elk (some of which have the antlers of moose) at the Grand Canyon of the Yellowstone (Fig. 6) while two, apparently the result of editorial sarcasm, suggest that the hunters could kill great numbers of animals even more efficiently through the use of cannons and buried explosives.

All other accounts of the slaughter refer to it as a skin-hunting operation, and of course accounts vary on how easy it was to approach the elk; Doane alone managed to spook a very large herd in the early winter of 1877. Brisbin's account may be original, or it may be derivative. It is likewise not possible to determine the source of the Daily Graphic story; Forest and Stream was also published in New York, and the Daily Graphic could just have been embellishing a report in that periodical.

John Mortimer Murphy, a travel writer, made a brief mention of Yellowstone wildlife in his 1879 book (which we assume was probably written by the end of 1878, and thus include it under that year):

The land game in the Park is unusually abundant, and embraces bears, panthers, buffaloes, several species of deer, wolves, and kindred animals (Murphy 1879:222). Of the accounts of the park produced by the Hayden party, those by Hayden, Peale, and Holmes, all in Hayden's official report volume, did not mention animals, being concerned with other subjects. However, separate accounts by Holmes, H. Gannett, W.H. Jackson, and J.E. Mushbach did discuss animals.

Holmes was a geologist on the survey. His accounts have been preserved in two places. His 15-volume Random Records, located at the National Collection of Fine Arts, Washington, D.C., has not yet been fully examined for animal references, but it does contain the following statements:

Up to 1869 this [Yellowstone Park] region was scarcely known at all, altho [sic.] it contained some of the greatest wonders in the world. it was an extremely wild country, with no trails save those made by bear, elk, deer, and a multitude of small game (Holmes n.d. 3/2:188).

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THE NIMROD OF THE YELLOWSTONE.

The splendid drive in the so-called National Park, in the Yellowstone, is being ruthlessly destroyed by hunters, despite the laws of Congress and of Wyoming and Montana, intended to protect the region from the spoiler. One of whom the Park contains thousands, are also down, and the enormous elk herd the state, but even the state being common. One hunter has slaughtered as many as seventy-five elk in one day. It is the duty of the governing authorities of the Territories in which the Park is situated to see that such reckless and wanton waste is checked and stopped.

Fig. 6. Illustration, "The Nimrod of the Yellowstone," from The Daily Graphic (New York), July 11, 1878. Reprinted from Haines 1977.

While in the park, in the Gallatin Range in 1878, he noted that, "As we went along we saw much small game and frequently tracks of mountain lion, bear, deer, and elk" and also mentioned seeing a bear somewhere in the park (Holmes n.d., 3/2:188).

Holmes left a diary as well, wherein he specified that there were eighteen people in his party (Holmes 1878). The diary also contains a few mentions of animals. Near Shoshone Lake, their hunter Jack shot "two fawns" on August 16, and Holmes himself shot a bull elk on August 24. At Violet Springs, Holmes mentioned that this was where Bottler "killed the fine elk," but we wonder if this is a reference to the 1872 trip (Holmes 1878).

Henry Gannett wrote the report on the geographical field work of the Hayden Survey of the park in 1878. He mentioned in passing that the Bechler region of the park "is one of the few remaining haunts of the moose in the Northwest" (Gannett 1883:468). Gannett's report also contains a woodcut, "Return from an elk hunt," showing two mounted hunters with a packhorse loaded with meat (Gannett 1883:488).

A fragmentary diary, a catalogue of his photographs, and two books by photographer William Henry Jackson have come down to us. His diary mentioned a bear on the trail between Mammoth Hot Springs and Tower on September 20, and a number of elk near Buffalo Fork (south of the park) on October 4 (Jackson n.d.).

Jackson's autobiography did not mention animals in the park, but his other book did indicate some encounters had occurred. Elk were seen in numbers, especially in the southern part of the park and south of there. At Heart Lake, he saw elk:

The isolation of this remote corner of Yellowstone Park was shown by the frequent appearance of the wild denizens of the mountains--elk, particularly, coming out into the open and gazing curiously at our encampment (Jackson 1929:296).

Traveling south from Two Ocean Pass to Buffalo Fork in present Bridger-Teton National Forest, Jackson again saw elk in numbers:

When we got over to the headwaters of Buffalo Fork and away from the elevated Two-Ocean Plateau, we were out of the snow for awhile. It was fine grassy country, and there we saw great troops of elk forsaking those high feeding grounds for lower altitudes in Jackson's [sic] Hole (Jackson 1929:303).

Jackson also told about killing a grizzly bear with Hayden (Jackson 1929:299-300).

J.E. Mushbach served as an assistant topographer to the Hayden party in 1878. He left a diary, parts of which were published in newspapers. His accounts corroborate Jackson's descriptions of numerous elk, and he also mentioned moose and fox.

On August 10, on the Falls River, his party saw five cow elk, and on August 12 they saw five more. On August 21, at Shoshone Lake, Mushbach killed a moose, and on August 25, his party killed an elk. On September 2, he reported that at Shoshone Lake, "bear and elk sign very plentiful," and on September 4, he reported that two elk were killed near Mount Sheridan (Mushbach 1878).

At Heart Lake on September 7, he described their meat supply:

With our overload of elk meat we were more slow in getting started this morning....We traveled with our usual elk escort as we could see elk through the trees following us and could hear their whistles as they called to each other (Mushbach 1878).

"Our usual elk escort" seems to suggest they routinely were accompanied by elk. On September 29, the party saw a fox and five elk at the Lower Geyser Basin, and they killed an elk there on October 2. Another elk was seen on October 12 at Lake of the Woods (Mushbach 1878).

Two ministers, brothers Coalgate and Wayland Hoyt, visited the park this year, mentioning only that when they left the park, they, "moved homeward enjoying the hunting and fishing exceedingly" (Hoyt 1879:102).

W.I. Marshall, a professional lecturer from the east, made several trips to Yellowstone Park in the 1870's and 1880's. The date of his first trip is not known, but it occurred prior to 1879 because Robert Strahorn's two 1879 books quoted Marshall extensively. Concerning the abundance of fish and game, Strahorn quoted Marshall as follows:

There are scores of miles of beautiful valleys traversed by rivers of the purest water, swarming with trout, grayling and whitefish, and furnishing the finest hunting-grounds for ducks, geese, swans, and other water-fowl. These valleys are generally covered with fine grass, on which numerous antelopes pasture, while the greater part of the mountains which bound them is covered with the forests (interspersed with those great grassy slopes which are so marked a feature of the timbered areas of the Rocky Mountains) in which those fond of rifle shooting can find elk and black-tailed deer and white-tailed deer and mountain sheep, and occasionally a band of mountain buffalo and other large game (Strahorn 1879a:212, repeated verbatim in Strahorn 1879b:75, and paraphrased in Marshall 1880a:2).

Marshall also mentioned that the beaver "still builds his dam" in Yellowstone Park (Marshall 1880a:2).

Strahorn further quoted Marshall, in an periodical article that was in good part quotations of Marshall, as follows, about Yellowstone Lake:

Its waters...furnish coverts and feeding grounds for elk, antelope, black and white-tailed deer, bears and mountain sheep (Marshall 1880a:2).

And again about park wildlife, Strahorn quoted Marshall as follows:

Herds of deer, elk and mountain sheep throng the forests and mountain meadows about the lake. Buffalo signs, grizzly bears and California lions are far from uncommon, while the smaller lakes and creek valleys of the basin are fairly alive with otter, beaver, mink and muskrats. Scientists have observed several unnamed and undescribed species of squirrels and weasels, and doubtless there are many other new varieties of animal life peculiar to this little-known region (Marshall 1880b:5).

Luther S. "Yellowstone" Kelly also visited the park in 1878, entering from the east, apparently up the Shoshone River. Somewhere in the mountains, apparently near the head of the river, Kelly saw a black bear eating grasshoppers on a snowbank, but "As there were fresh elk sign in the vicinity we had no intention of firing at the bear (Kelly 1926:217). "Ten or twelve miles" east of Yellowstone Lake, he shot "a noble buck, whose horns were in velvet" (Kelly 1926:200). The next morning, near the "pass" into the park, "a band of elk started in plain view and we ceased our labor a moment to watch them" (Kelly 1926:220). Later that day, near a small lake, perhaps Sylvan Lake, Kelly shot an otter.

They proceeded to Mount Sheridan, where they killed "a fine buck, and we had meat galore for two or three days" (Kelly 1926:221). Near the mouth of the Yellowstone River at Yellowstone Lake, he "ran plump onto a big bull elk" and shot him. The soldiers he was camped with were short of meat (as well as flour), and were "mighty glad" to have it (Kelly 1926:226). Kelly also noted that, as this party moved through the woods "a long line of horsemen and packs made a heavy trail, for all traveled in single file, the mules stopping to nibble at the wayside brush and then racing each other to get second place to the bell mare that led the train and scared all game within sound of its brazen appendage" (Kelly 1926:227).

1879

At least nine parties left accounts of park wildlife this year; from this year on, more and more accounts were written as visitation increased. In addition to the nine accounts, Superintendent Norris also left information. The accounts were those of Augustin Sequin, R.B. Hassell, G.O. Shields, Archibald Geikie, Charles Blackburn, S. Weir Mitchell, Henry Drummond, W.B. Pickett (accompanied by Joseph Cochran), and "Texas Jack" Omohondro.

Norris and his crew opened trails and roads for thirty eight days this summer. Norris wrote that, "Aside from a fair supply of bacon, trout from the cold springs, not mineral, the flesh of deer, elk, antelope, bear and other animals, and birds killed with the rifles, were our only, but excellent and ample, supply of animal food" (Norris 1880:7).

He also summarized the animals killed in this way:

But, of the animals killed during the past seasons, were some very large and fine elk, deer, sheep, and antelope, and a mountain lion, shot in the night to prevent his molesting our animals, which measured nearly 9 feet in length from lip whiskers to tip of tail, and the last of the six grizzly killed by myself during the past season, was a remarkably large and fine one (Norris 1880:8).

He also reported progress in protecting park animals:

I have not allowed the killing of bison, and so checked the wanton slaughter of elk, deer, sheep, and antelope, mainly for their pelts and tongues, by the mountaineers, that, although grown shy of the usually harmless fusilade [sic.] of tourists along the main routes of travel, I have, save near the Mammoth Hot Springs, seldom failed to find in secluded parks near our roads abundance of game for our largest parties. But as the flesh, if not dragged down and devoured by bear, wolverine, or mountain lion, will keep perfectly, hung up unsalted in the forest, for at least two weeks at any season of the year, there is little wasted, and I am confident these choice animals have increased, rather than diminished, in numbers within the park since my management thereof. But with the rapid influx of tourists and demand for such food this cannot long continue, and hence the more evident and pressing necessity for systematic and permanent protection of all, and domestication of some of the most rare and valuable of animals in the eastern portion of the park... (Norris 1880:21).

He concluded by saying he was pleased to see that Montana had outlawed bison hunting. Norris initiated what became something of a trend, a sort of unintentional tradition, among park superintendents over the next thirty years, of announcing that the wildlife was doing fine and increasing. Whether or not the worst of the market hunting was over is difficult to tell, but it could be that the most easily reached animals had been taken from certain areas, and the rest had learned to avoid the hunters a little better.

William Rideing is unknown to us except for an article he wrote about Norris. It appears from the article that he interviewed Norris, or otherwise researched his exploits. We are unable to judge his accuracy, beyond saying that some of the events appear to be loosely based on incidents in Norris's annual reports. His 1882 article dealt with Norris's experiences in 1879 and 1880. He referred to Norris as "The Keeper of the Yellowstone."

Here are to be found vast flocks of wild geese and swans, herds of sharp-eyed, fleet-footed antelope, the "blacktail," the "big-horn," the superbly antlered elk, the crouching mountain lion, and the ferocious grizzley [sic.]. The game is so abundant, indeed, that it is a common thing for a hunter to bag one of each of these in the morning of a single day (Rideing 1882).

Rideing's overstatement may have been unintentional, or it may have been for dramatic effect for the juvenile audience his article was aimed at in the periodical *Golden Days for Boys and Girls*. In addition to portraying the park as a wonderland of game, he described the Mammoth Hot Springs area as a most convenient hunting ground:

Almost within a stone's-throw of headquarters they fell in with flocks of geese, swans, pelicans, and grouse, and herds of antelope and "black-tail" deer; but in the teeming Yellowstone a hunter can choose his own game, and they left these unmolested to persue [sic.] the elk and grizzlies, which they particularly desired.

Before long they found the trail of a herd of elk, evidently numbering more than a hundred, of all ages and sizes (Rideing 1882).

Rideing described how Norris and an assistant chased the herd, killing one bull. Then Norris killed three more. He saw some bighorn sheep, but was unable to follow them in an October snow squall. Rideing said that Norris nearly died trying to cross an icy precipice, and that Norris imagined "daylight breaking and discovering his own dead body lying at the foot of the mountain, a prey to vulture, wolf and grizzley [sic.]" (Rideing 1882). From this we gather that either Norris, or Rideing, or both, assumed wolves were available for such work. The next day Norris killed a large grizzly.

French traveler Augustin Seguin entered the park from the north and noticed many beaver dams and workings at Swan Lake Flats (Seguin 1881:72). At the Madison River Canyon, he commented on the animals of the park:

At dusk we try in vain to hunt; it is impossible to see anything, despite the countless signs of wild animals, which pass by us in all directions; these valleys are full of bears, buffalo, superb elk, an infinite variety of deer, wild sheep and antelope; and one also frequently meets the California lion and the panther (Seguin 1881:78).

After a few dozen of these recitations of the abundant game, the phrasing begins to sound familiar; we suspect that some of the travel writers in the 1870's and 1880's, including Seguin, simply paraphrased previous writers.

Richard B. Hassell and three companions entered Yellowstone Park from the west in 1879, traveling to the Upper Geyser Basin, Mud Volcano, Yellowstone Lake, and Canyon before leaving by the west entrance. Near present West Yellowstone, he reported, "one of the earth's most beautiful valleys, forested like a park, with plenty of running water and full of game....We needed some game. We did not intend to slaughter anything for the sport of it but we had set our hearts on some elk meat" (Hassell 1928:4).

Hassell described the first day's hunt as a disappointment: "The others of the party saw no game and came to camp declaring there were no antelope or deer or elk in the valley" (Hassell 1928:5). But Hassell chased a "great antlered" bull elk, possibly

wounding it, and his friend "Doc" shot two. (Hassell 1928:5-6). At that point, "While we were good natured [sic.] and satisfied it was agreed that no more big game should be killed. We could only take the hind quarters with us but part of the meat was jerked and we had plenty for the rest of the trip" (Hassell 1928:6).

Before leaving the area, however, they "discovered an open part of the valley that was alive with antelope," and Hassell wrote this:

We took our horses and had great sport chasing the graceful creatures. They would run up one canyon, cross over a hog-back and come down another canyon on to the same plain. We were often close upon their heels but had no camera. There must have been a thousand antelope in this herd (Hassell 1928:6).

On the return trip from the Lower Geyser Basin, they, "met a party of miners" who had a shotgun, allowing the party to add game birds to their diet: "We hunted and fished along the trail and lived on grouse, fool hens, ducks, elk, venison, and trout" (Hassell 1928:9). The mention of venison suggests they shot at least one more large animal after the elk hunt.

George Oliver Shields, a prominent journalist and sportsman, wrote an article in Harper's in which he told of three men, tourists and hunters, who were trapped in a blizzard in Yellowstone Park in October of 1879. Their situation, according to Shields, was grave, and "They had already set about making snow-shoes from the skin of an elk which they had saved" (Shields 1888:860). Then one of them found a herd of elk, "thirty-seven in the band" and the men followed the herd to lower country, letting the elk break trail through the deep snow. Shields seemed to have a confused understanding of Yellowstone geography, describing, "a ranch between the upper falls of the Yellowstone River and Yellowstone Lake, on the Stinking River, which was kept by a 'squaw man' and his wife" where the men recuperated. He was relating a second-hand story, at best.

Geologist Archibald Geikie visited the park in 1879, accompanied by Rev. Henry Drummond. They entered from the north, visiting Mammoth Hot Springs, Tower, Canyon, Mary Mountain, and the geyser basins, and left by the west entrance. Geikie wrote mostly about the geological features, but did make a general statement about the wildlife as he discussed the trip from the Canyon to the Firehole River. He said the country was so wild that "it seemed as if no human foot had ever preceded us; not a trail of any kind was to be seen" (Geikie 1882a:227), but he did notice signs of wildlife:

Here and there, however, we noticed footprints of bears, and some of the trees had their bark plentifully scratched at a height of three or four feet from the ground, where, as Jack said, "the bears had been sharpening their claws." Deer of different kinds were not uncommon, and we shot enough to supply our diminishing larder. Now and then we came upon a skunk or a badger, and at night we could hear the mingled bark and howl of the wolves. Andy's rifle was always ready, and he blazed

away at everything. As he rode at the head of the party the first intimation those behind had of any game afoot was the crack of his rifle, followed by the immediate stampede of the mules and a round of execration from Jack. I do not remember that he ever shot anything save one wild duck, which immediately sank, or at least could not be found (Geikie 1882a:227-228; this account also appeared in Geikie 1881 and 1882b).

Henry Drummond's diary of the trip, not published until 1901, contained more details. He noted that on September 2, they "Camped at Bottler's, just opposite Emigrant Peak; a hundred prospectors gulching for gold and silver" (Smith 1901:170). In Yankee Jim Canyon they visited Yankee Jim and saw "Deer hanging in the willows. Meteor, camp talk, buffalo robes" (Smith 1901:170-171). Much of the diary is in cryptic phrases like this, which often make only tantalizing references to events and things.

Near Devil's Slide, they "Passed waggon [sic.] with magnificent head of elk, passed dead rattlesnake" (Smith 1901:171). On the Blacktail Plateau, they saw "elk-heads and horns of deer and buffalo scattered everywhere" (Smith 1901:173), apparently the leavings of the skin hunters, or more evidence of shed antlers.

On Mount Washburn they smelled a skunk, and then near the Grand Canyon, Drummond provided another cryptic entry that seems to suggest someone got some fresh elk meat:

The squirrel; Jack off hunting, Andy ditto; the cranes. Return to camp. "There's Jack," a minutest figure in the distance--"Has he got anything?" Nothing--another week on bacon! "Something white? A crane? What--a sack. What have you got?" "Elk!" The unpacking--the choice bits, the supper! (Smith 1901:174).

This entry suggests they had not had fresh meat for some time. On September 8, while crossing from Canyon to the Firehole, Drummond noted, "Lunch, bathe, bear, theological discussion with Jack" (Smith 1901:175-176). This was apparently the day on which Geikie noted the bear tracks, as well. On September 10, apparently still at the geyser basins, they shot a skunk and had "mock-turtle soup, brandered elk steak, bread, and tea" for supper:

Andy cut down two trees for the firewood. Put one bodily on fire. Intense cold. The wolf barking, the red squirrel cracking in the wood below (Smith 1901:183).

This corroborates, and gives a more exact location for, Geikie's similar mention of wolves.

The barking and howling of wolves is questionable evidence unless the observer's skills are known. There is always the possible confusion of coyote and wolf sounds. The best

that an analysis of historical materials of this sort can do is accumulate as many as possible and use them cautiously.

Just downstream from the Madison River Canyon, probably still in the park, the party spent an afternoon on an antelope hunt. They saw several groups or individual animals (one group of six), and killed "four antelopes--all does" (Smith 1901:185). Farther down along the Madison River, they saw many beaver workings and "abundant game, antelope, everywhere for twelve miles" (Smith 1901:186).

Charles Blackburn spent nearly two years prospecting "in the country lying about the headwaters of the Yellowstone and the other great rivers that have their sources in the Wind River Mountains (Blackburn 1879). The dates are uncertain, but he probably began in the region in 1877, and his article was published in July of 1879. In a section entitled "Zoology," he described the wildlife:

Elk and mountain sheep are very plentiful through all the ranges of the Yellowstone country, being generally found near the snow in the summer, where the grass is new and tender. The mountain goat (*Aplocerus montanus*) was not observed in any of the ranges, but has been reported by Indians to exist in the mountains farther north. Only two specimens of moose were seen. Deer are very plentiful, antelope being generally found around the foothills and on the plains in large herds, also in the National Park....Bear are very abundant in this region (Blackburn 1879:2904).

He added, speaking about the area in and around Yellowstone, that, "The mountain lion, wolf, coyote, lynx, and a great variety of the minor carnivorous genera inhabit this region" (Blackburn 1879:2904).

Dr. S. Weir Mitchell, traveling with a military party headed by a Major Gregg and consisting of 25 troopers and the guides Billy Jump, Jack Baronett, and George Huston, entered the park from the north. They moved east to Tower, climbed Mount Washburn, passed the Grand Canyon, visited Mud Volcano and Old Faithful, then backtracked to the canyon. They then went to Yellowstone Lake and up Pelican Creek to the Mirror Plateau, and up Soda Butte Creek and out of the park.

Mitchell described Bottler's ranch as "a log house full of game-trophies" (Mitchell 1880a:690).

They killed two deer and four elk just north of there, "so that we were well supplied" (Mitchell 1880b:30-31). The party apparently also killed one or more bighorn sheep, because Mitchell mentioned they were eating mountain sheep, and one or more antelope, because Mitchell spoke of a mule falling down a slope while, "laden with fresh antelope and deer meat" (Mitchell 1880b:31-32).

South of Specimen Ridge, Mitchell remarked upon the "scared doe and dappled fawn which fled through the coverts near us" (Mitchell 1880b:32). On the Clark's Fork, the party saw a deer and a fawn and killed seven bears: "Hold up! That valley's full of bears" (Mitchell 1880b:37-38).

Bear hunter W.D. Pickett returned to the park in 1878, traveling with Joseph M.V. Cochran. They traveled from the head of the Gallatin River to the Madison River, on to Old Faithful and then across the Lamar River and up Soda Butte Creek to the Clark's Fork.

On the upper Gallatin, they camped "in order to secure a supply of elk meat," and apparently did so, because Pickett declared that he "took pleasure in visiting" the park without having to worry about Indian attacks as he had in 1877: "now...there was plenty of food, no known dangers, and...pleasant companions" (Pickett 1913:139-140). Their success at elk hunting was confirmed by Cochran, in an article about and partially by him:

Colonel Pickett was out for bear trophies on this hunt and they killed only enough other game for camp use.... Game was plentiful and there was no trouble to find elk, deer and mountain sheep. They saw only three buffalo on the entire trip. Colonel Pickett killed one of them (Billings Gazette 1931).

Pickett killed a bear at Trout Lake and another at Lake Abundance. At Elk Lake on the upper Clark's Fork, the men found "game here...very abundant especially elk in the pine timber country north of this [well-known salt] lick" (Pickett 1913:143).

"Texas Jack" Omohondro is known to have visited the Yellowstone area in 1874 (with the Earl of Dunraven), 1877, and sometime later. The account of the third visit was published late in 1879, and so we include it here. That year he took a bighorn sheep hunt, chasing a herd of bighorn sheep about "eighteen miles" from "Bartler's [sic.] Rancho on the Yellow Stone" (Omohondro 1879).

1880

Superintendent P.W. Norris, Harry Yount, W.D. Pickett, E.A. Maynard, Wilbur Sanders, Marion Eltonhead, and Carrie and Robert Strahorn all left information on park animals from this year.

The account of animals provided by Norris in his annual report, submitted in November of 1880, is one of the documentary milestones in the early history of Yellowstone fauna. It represents the first official attempt to summarize the abundance, distribution, and condition of park wildlife. Norris was an avid if unschooled naturalist, as well as a vivid and sometimes melodramatic writer, much in keeping with the literary fashions of the times. He apparently worked very hard to gather information, and presented it as best he knew how.

Norris reported that "A good and well-located house was also constructed for the gamekeeper at the mouth of Soda Butte, a branch of the East Fork of the Yellowstone [the Lamar River], and a favorite winter haunt of elk and bison" (Norris 1881a:6). He further explained that in November, before leaving for the winter, he was able to help stock his gamekeeper (Harry Yount, at Soda Butte) and his assistants (four men at Mammoth Hot Springs) with meat and supplies for the winter:

Elk, deer, and other game being driven by storms into the sheltered glens and valley, we were enabled to secure an abundant winter's supply of fresh meat, and also fine hides of the bear, wolf, and wolverine. Although severe and dangerous, hunting in the Park was excellent sport, and the only recreation I enjoyed during the season (Norris 1881a:6).

Notice especially the collecting of at least one wolf hide at this time.

Besides his extensive report on park animals, discussed below, Norris made other comments about them. While discussing the Hoodoo region on the east boundary, he mentioned that "big-horn sheep hide in safety" there (Norris 1881a:8). Of the Gallatin Mountain Range, he said that "It is also an excellent as well as an accessible region for game, the presence of the big-horn upon its crests, grizzlies in its deep timber-bordered gulches, countless water-fowl in the emerald lakes of its terraced foot-hills, elk, deer, antelope, and occasionally bison, in its charming parks, glens, and lovely open valleys, constituting it a most prolific field for sport" (Norris 1881a:9). At Natural Bridge, he said that "The well-worn game trails over the bridge are evidence of its long and constant use as a crossing for elk, deer, and antelope; while from the actions of a huge grizzly, which I shot while rearing from his lair in a fallen tree-top, upon the western abutment, it is, I judge, used by bears as an ambuscade" (Norris 1881a:23).

Norris also recommended that hunting, at least with rifles for large animals, be discontinued:

I would add that there are now in the Park abundance of bison, moose, elk, deer, antelope, and big-horn sheep; besides fine summer pasturages, there are winter haunts for these animals, where, with little care of expense other than protection from wanton slaughter, they would rapidly diminish (Norris 1881a:26).

Norris was also an enthusiastic antiquarian, and he made many studies of Native American artifacts and structures in the park area. He noted numerous apparent game-drive sites:

Countless drive-ways and coverts in every stage of decay are still found in favorable localities throughout the Park, and are often crossed unobserved by ordinary tourists (Norris 1881a:36).

In the dialogues about wildlife abundance in the park area, relatively little has been said about these many signs of Native American hunting activities in the present park area, but the evidence does at least suggest that some Native Americans found sufficient animals to justify the effort. We consider Native American influences on the Yellowstone setting to be an important issue, one that deserves a great deal of further attention. As mentioned above, Native American activities in the park area were probably influenced by EuroAmericans throughout the nineteenth century. In general, we might say that the travelers whose accounts are reviewed in this paper did not frequently encounter Native Americans, and when they did they usually reported small numbers of them, but it is also clear that Native Americans were accustomed to traveling through and using the park area in the 1800's.

In his report, under the heading, "Animals of the Park," Norris reviewed the history and status of the large animals as he found it. He said there were three herds of bison:

The first, numbering about two hundred, pasture in summer in the valleys of the Crevice, Hellroaring, and Slough Creeks, and the mountain spurs between them, descending with the increasing snows, to winter in the deep, sheltered grassy valleys of the East Fork of the Yellowstone [Lamar River] and Soda Butte, and as the snows melt, accompanied by their young, returning to their old haunts.

The second, numbering over one hundred, summer in the elevated and abruptly broken, little-known section of the Park, extending from the Hoodoo region to the Grand Canon, and from Amethyst Mountain to Pelican Creek, near the foot of the Yellowstone Lake, and winter occasionally upon the East Fork of the Yellowstone and on Pelican Creek. Their other winter haunts are unknown.

The third herd, numbering about three hundred, roams in scattering bands. This season they were discovered upon the Madison Plateau and Little Madison River. Their winter haunts are unknown, though it is probable they are on the Pacific side of the Continental Divide, and, if so, they are not permanently occupants of the Park, and are therefore likely to be slaughtered by advancing settlers.

Norris concluded that the bison required protection during the winter and when their calves were new, but otherwise they were "the most keen of scent and difficult of approach of all mountain animals" (Norris 1881a:38).

Norris said that moose "were seen during the past season near the Lake of the Woods, and a few others in the various Fire Hole Basins. Their main haunts are in the densely timbered, swampy region around the various fingers and the thumb of Yellowstone Lake. They also frequent the boggy inlets of Shoshone, Lewis, and Heart Lakes and the Snake River regions to the Tetons without the Park, but nowhere are they numerous" (Norris 1881a:39). He concluded that their scarcity makes them more prized as meat.

Norris wrote at length of elk:

This animal is one of the largest, most beautiful, interesting, and valuable of those that inhabit this continent, and, so far as I have any knowledge, in no part of the United States were they ever found in greater size, symmetry of form, stateliness of antlers, or in greater number than in the great National Park at the period of its discovery in 1870.

As stated in my first report, at least 7,000 of these valuable animals were slaughtered between 1875 and 1877 for their hides, or perhaps for their carcasses, which were stripped and poisoned for bear, wolf, or wolverine bait. Since the first appropriation, however, for protection of the Park in 1878, notwithstanding the numbers since killed by our laborers, as well as by numerous tourists and raiding Indians, they have not seriously diminished, and but for the unprecedented severity of the past winter would have greatly increased; their increase hereafter, however, is assured if properly protected. They are inoffensive and harmless, and frequent all portions of the Park, often high up amid the mountain snows in summer, and in the most sheltered valleys in winter, in herds of a hundred or more (Norris 1881a:39)

Norris continued, with a discussion of elk antlers, wondering if perhaps some of the unusual antlers he had seen were the result of a cross between elk and moose.

He said that white-tailed deer "usually frequent the densely timbered valleys and foot hills, are more shy, sharp-eyed, and fleet, and less migratory than the black-tailed variety" (Norris 1881a:39). He did not comment on their numbers. Of the "Black-tailed deer," he expressed strong opinions as to the nomenclature of the day and to species presence:

This is essentially a mountain animal, choosing the broken foot-hills or terraced slopes for pasturage and rest, and is difficult of approach excepting from above. It is frequently called mule-deer by tourists, and is so named in museums, though incorrectly, I think, since, while there are no two varieties of the deer family, in my opinion, more dissimilar, none of the latter inhabit the Park (Norris 1881a:39-40).

Of pronghorn, he said this:

The National Park is, as a rule, too moist and thickly timbered to be a favorite resort of antelope, but they were once numerous in the open valleys of the Upper Gardiner River, the open grassy region thence to the Forks of the Yellowstone, and up its East Fork to the Soda Butte, as well as on the main stream between the Great Falls, around the Sulphur Mountain Westward to Mary's Lake, and in the Madison Valley. No other animal has suffered such severe slaughter, not alone within the Park, but upon the great plains, below the Gate of the Mountains, and upon the Yellowstone, where in their migrations they were wont to winter (Norris 1881a:40).

He described six varieties of bears, breaking the park's two species into an engaging if unconvincing list of grizzly bear, silver-tipped bear, cinnamon bear, smut-faced bear, black bear, and silk bear. He then described the wolverine, but made no comments about its abundance or distribution beyond saying that "His chosen haunts are the most densely timbered foot-hills of the mountains, where he is ever ready to steal what the bear, wolf, or lion slaughters" (Norris 1881a:41). Norris's routine mentions of the presence of these other predators reinforce his more specific statements about their abundance in the park.

He described a great abundance of mountain lions when the park was created:

These animals are much larger, coarser-haired, and more ferocious than the animal known as the eastern panther, and during my first explorations in the Park were exceedingly numerous and troublesome, less, however, from actual attacks upon our men or animals than by their sudden terribly sharp and prolonged screams, which reverberated in frightful intensity around our evening camp-fires in the deep and crag-hidden mountain defiles. This tantalizing tendency to start false Indian alarms and stampede the animals has led to persistent efforts of the mountaineers, with rifle, tap, and poison, to exterminate them, and so successful have their efforts proved that now the comparatively few survivors usually content themselves with slaughter of deer, antelope, and perhaps elk, at a respectful distance from camp (Norris 1881a:42).

Of wolves, he was sure there had been many:

The large, ferocious gray or buffalo wolf, the sneaking, snarling coyote, and a species apparently between the two, of a dark-brown or black color, were once exceedingly numerous in all portions of the Park, but the value of their hides and their easy slaughter with strychnine-poisoned carcasses of animals have nearly led to their extermination (Norris 1881a:42).

Norris further found foxes "numerous and of various colors, the red, grey, black and the cross varieties (most valuable of all) predominating in the order named" (Norris 1881a:42). Skunks were very common, and badgers were "numerous in most of the valleys and terraces of the Park, but are less abundant than is indicated by their countless burrows, which are annoyingly evident to horsemen long after their abandonment" (Norris 1881a:42).

After enumerating a variety of small mammals, Norris turned to the beaver:

Few regions, even less elevated, are so favorable as a haunt for the sagacious beaver or are so fully occupied by it as the National Park, which is one of the largest, as well as one of the most densely timbered regions of North America. Well supplied with rivulets invariably bordered with willows, and having numerous creeks of cold water,

it also has countless geyser and other hot-spring outlets with a flow of tepid water as well as a surface elevation alike remarkably uniform. These outlets, relatively clear of ice, afford unusual advantages for burrow habitations in their banks, or for the construction, in their sloughs, of the ordinary two-story brush-and-turf houses of these animals; the sloughs and streams being used as canals for floating their winter food supplies of brush and small timber, dams being far fewer and smaller here than are usually necessary elsewhere. Unmolested by man, who is ever their most dangerous enemy, the conditions here mentioned are so favorable to their safety that soon they would construct dams upon so many of the cold-water streams as literally to flood the narrow valleys, terraced slopes, and passes, and thus render the Park uninhabitable for men as well as for many of the animals now within its confines. In consideration of this I have not seriously interfered with the trappers, who have annually taken from the Park hundreds, if not thousands, of the valuable skins of these animals, without payment for the same--a custom, however, which should not be permitted to continue, since some revenue should be derived by the government from these furs. A law should therefore be enacted or some regulation prescribed with a view to this end; but without a small police force it would be difficult to enforce any restriction in this respect (Norris 1881a:43-44).

Setting aside his rather apocalyptic view of beaver behavior--the animals had inhabited the park area for many centuries prior to his arrival without flooding it--we find his account extremely interesting, and consider it further below.

Norris concluded his discussion of mammals by saying that "Neither otter, mink, nor muskrat are numerous in the Park; nor are marten, sable, or ermine plentiful" (Norris 1881a:44).

Previous investigators have generally cited Norris, but we suspect have not fully heeded some of his messages. Judging from his statements about other animals, and from his general trustworthiness as a reporter of actual events (as differentiated from his reliability as a naturalist), we are inclined to take his statements to heart.

He told us that by 1880 the wolf had nearly been eradicated, and that the beaver had been greatly reduced. These two events alone, not even considering the slaughter of other park animals, may have had significant impacts on the park's ecological processes in the decades that followed. We see reason to believe they did, but will leave it to ecologists to project the many possibilities. In our discussion section, we will propose some directions for thought.

Harry Yount was, as mentioned, appointed the park's gamekeeper in 1880. The relevant portions of his first report, dated November 25, 1880, follow:

Returning to Mammoth Hot Springs [from the Clark's Fork] I outfitted and proceeded, via the Great Falls, to the foot and thumb of the Yellowstone Lake, and

thence in a nearly direct route past Lake Riddle and a flat, open country, to Heart Lake at the foot of Mount Sheridan, some twenty-five miles from the Shoshone trail at the thumb of Yellowstone Lake. From Heart Lake I crossed over to Barlow Valley at the foot of the Red Mountain range near the southern border of the Park, finding deer and elk in abundance, and some moose, and Heart Lake as well as all the cold streams teeming with extra fine trout and countless water-fowl....

Returning via the Yellowstone Lake and Falls to the Mammoth Hot Springs, I proceeded with men and animals to construct a cabin for my winter quarters at a good spring on the terrace commanding a fine view of both the East Fork and the Soda Butte Valleys. Here I purpose wintering so as to protect the game, especially elk and bison, in their sheltered chosen winter haunts, from the Clark's Fork and other miners.

I have, during the season, found elk, deer, and bear in all portions of the Park, antelope in most of the open regions, and moose in the willow beaver-swamps of the southern portion, and excellent trout in abundance in all the cold-water streams, excepting the Yellowstone where, as well as in the lakes, this fish is infested with worms, and the Lewis and Shoshone, the waters of which, although remarkably cold and clear, are not inhabited by any species of the finny tribe.

Much of the game in the Park occasionally ranges over some of the adjacent regions, endangering their slaughter in the constantly advancing border settlements. Hence I would strongly recommend that all portions of the Park be well protected, that the game may remain, increase, and much of it soon become domesticated. But this cannot be done by any one man, and I would respectfully urge for the purpose the appointment of a small, active, reliable police force, to receive regular pay during the spring and summer at least, when animals are liable to be slaughtered by tourists and mountaineers. It is evident that such a force could, in addition to the protection of game, assist the superintendent of the Park in enforcing the laws, rules, and regulations for protection of guide-boards and bridges, and the preservation of the countless and widely scattered geyser-cones and other matchless wonders of the Park (Yount 1881a:50).

Their reports indicate that Yount and Norris did not consider park animals to be in short supply, but except for bison, it is impossible to estimate from their statements any precise numbers.

It is worth noting that throughout the 1870's, it was in fact legal to hunt in the park for food and recreation, and illegal to hunt for commercial purposes. Norris (1878:993) quoted the regulation as follows:

All hunting, fishing, or trapping within the limits of the Park, except for purposes of recreation, or to supply food for visitors or actual residents, is strictly prohibited; and

no sales of fish or game taken within the park shall be made outside of its boundaries.

This is interesting language, because its effect, as time would show, was to allow commercial harvest of park animals for sale to park visitors. For example, fish were taken from park waters by professional fishermen to feed hotel guests until well after 1900 (Varley and Schullery 1983). Of course, this situation allowed for a gray area to exist, in which one's activities in the park could be difficult to define at a given moment, whatever one might hope to do later with killed animals.

William Pickett, traveling with George Herendeen and Isaac Lionberger, again visited the park in 1880. He spent about month sailing on Yellowstone Lake with guide Billy Hofer, and then traveled east and down the Shoshone River. He reported killing eight bears in the Yellowstone area, most outside the park, and at least two elk and one deer.

At Turbid Lake, Pickett shot a sow grizzly bear. Between the lake and Jones Pass, he said that, "As we were out of meat, I had killed a fat black-tail, brought it near the trail we should probably follow, and hung it up in a tree out of reach of wolves and foxes" (Pickett 1913:160). He apparently knew or assumed that wolves and foxes were present. Later, he found a wolverine eating the deer carcass, which he had hung in a tree, and said that "this was the third time during my travels in the mountains that I had seen this animal in life" (Pickett 1913:160).

On September 30, camped on a tributary of the Shoshone River not far from Jones Pass, he said that "The reason [we camped here]... was that the woods appeared to be full of elk, whistling" (Pickett 1913:161-162).

They remained there for six weeks, until November 14. He reported that "Game of all kinds, especially elk and mountain trout, were found in great abundance" (Pickett 1908:368). He described killing two bears and two elk, and said that at one place the men found so many shed elk antlers that they named the nearby stream "Elk Horn Creek" (Pickett 1913:163,167-168).

Near present Wapiti, Wyoming (32 miles east of the present park boundary), the men had their horses stampeded by a herd of 150 elk (Pickett 1913:178, Pickett 1908:368).

Despite these successes at seeing wildlife, Pickett reported that "Game was difficult to obtain at that season because the flies were such a pest as to [keep] game to the depths of the forest during the daylight hours" (Pickett 1908:370).

E.A. Maynard again visited the park in 1880, but his reminiscences are brief and only mention that he killed a deer at Castle Geyser (Howard 1933:70).

Wilbur E. Sanders, so noteworthy in the early history of Montana Territory, visited the park in 1880 with two companions. They entered from the west, visited Old Faithful, took the Mary Mountain trail to Yellowstone Lake, and then followed the Yellowstone River to Mammoth Hot Springs. His journal unaccountably ends at Yellowstone Lake.

On August 1, near Henry's Lake, Sanders "saw from 25 to 50 head of Antelope, and his party shot one on August 3 somewhere between Henry's Lake and Riverside. They shot a deer near Old Faithful, and killed a wolverine on August 11 at Yellowstone Lake (Sanders 1880).

Carrie and Robert Strahorn, who claimed to be the first commercial travelers in Yellowstone Park, entered the park in October from the west. They were conveyed in a wagon driven by a hired guide, George Marshall. Both Strahorns wrote accounts of the trip.

Robert saw deer at Sentinel Meadow (Strahorn 1881:8). Carrie saw bear tracks "as large as a man's hat" at Old Faithful, and heard elk bugling at Gibbon Meadows (Strahorn 1915:268, 270). They both mentioned signs of animals at Yellowstone Lake, Robert declaring that the "trails of wild animals betrayed their presence in large numbers" (Strahorn 1881:25), and Carrie saying that the "tracks of wild animals were too many for comfort" (Strahorn 1915:277). Robert also noted that beavers were in evidence at the lake, and that in the park there were "for the rifle, elk, antelope, deer, bighorn or mountain sheep, bears and occasionally a band of mountain buffalo" (Strahorn 1881:32). This is a repetition of a statement earlier attributed by Strahorn to Marshall, in Strahorn (1880).

Marion Eltonhead, a young woman from Philadelphia, left a journal of a visit to the park in 1880. Her party approached from Bozeman, and at Bottler's, she met Frederic Bottler, "noted as a famous hunter and [who] told many stories of his prowess and showed many trophies of his rifle about the house" (Eltonhead 1918). She spoke generally of the wildlife, apparently referring to animals seen in the northern part of the park (her narrative is a little confused, so it is difficult to be sure just where she is describing):

Back to the road once more--and animals every-where amonf [sic.] the timber--sghaggy [sic.] awkward buffaloes with tiny bead like eyes, splendid Moose with wide spreading Antlers--Elks with wide and many pronged horns and they certainly added to the Menu--they were broiled over the hot coals--they were Roasted in the three legged Camp oven--they were jerked Indian fashion for future use and the Antlers carried East and hung in Hall and Dining Room to remind one of the West and all the good times for-ever-more[.]

There were white tailed and blacktailed deer--the gentle eyed antelope was seen in some quiet place with the lovely little kids around them--a startled look and they vanished into the timber--

There were the cruel old Grizzly Bear--and the Cinnamon and the more good natured black bear and on some summit out-lined against the blue back-ground of sky--was the Big-horn Sheep, the Warrior of the Peaks. Coyotes slink in and out the Timber. There was Trout in the Streams, grouse in the underbrush and the comical Jack Rabbit always on the "JOB" (Eltonhead 1918).

1881

Accounts of park animals were left for this year by P.W. Norris, Harry Yount, L.P. Brockett, George Marshall, H.B. Leckler, W.E. Sanders, John Sherman, Francis Francis, S.C. Kellogg, and James Gregory.

Norris did not devote much of his report to wildlife directly, but did mention them in various contexts. While in the canyon of the "East Gardiner" (Lava Creek), about four miles from Mammoth, apparently in late April or early May, he said this:

Here, beneath cloudless skies, the stately bighorn, the ferocious grizzly, and the royal eagle watched us from the cliffs, while grouse, deer, and elk were ever in sight and often within pistol-shot of our campfire (Norris 1881b:6).

On July 4, one of his road-building parties celebrated the holiday at Willow Park "in welcome rest and successful hunting" (Norris 1881b:8). The other party, on Blacktail Plateau, enjoyed "the use of the rod and gun in securing a good supply of trout and elk meat" (Norris 1881b:9).

On a trip in the Absarokas, near Jones Pass, "Yount killed a blacktail, myself an elk" (Norris 1881b:15).

There are numerous mentions of fishing, including what is a very early reference to "salmon flies," the local name for stoneflies, used for bait (Norris 1881b:20).

Norris reported finding "proof positive that a band of bison wintered" near Mary Lake (Norris 1881b:22). He also again discussed Indian hunting techniques in a lengthy section on artifacts, and briefly mentioned the need to prevent the slaughter of animals. If emphasis is any indication, he must have believed that the worst of the slaughter was past, for he did not repeat previous dire comments on the subject. This impression is strengthened by the report of his gamekeeper.

Harry Yount resigned this year, but in his report dated September 30, 1881, he gave indications that the scale of the slaughter of wildlife was much reduced, if partly for reasons of weather. The relevant portions follow:

The snowfall was unusually great, and remained very deep high in the mountains, but the winds and hot vapors from the Fire Hole Basin at the foot of Mount Norris [he is apparently referring to the hot springs along the Lamar River upstream from the mouth of Soda Butte, mentioned earlier] kept the snow pretty clear along its western slopes, where there were abundance of mountain sheep, and some elk, all winter. Elk in the number of about 400 wintered in small bands in the valleys of the East Fork and Soda Butte, where the snow was about knee-deep. The Slough Creek and Hellroaring Bands of bison did not venture near the cabin until February, nor did those of Amethyst Mountain at all; and the most of the deer and antelope descended into the lower Yellowstone Valley early in the winter. The most of the Clarke's [sic.] Fork miners seemed disposed to kill only what game they needed for food, and preserve the rest from slaughter for their hides only, and hence I returned to the headquarters in the spring, which opened very early and continued warm and pleasant. This allowed me to visit many other portions of the park, sometimes in snowshoes and sometimes with saddle and pack-horses. I found that very few of the deer or antelope wintered anywhere in the park; that a small band of bison wintered on Alum Creek [This may be the herd Norris referred to, above], and another on the South Fork of the Madison; that there were elk in nearly all of the warm valleys, and moose around the Shoshone and the fingers of the Yellowstone lakes; big-horn sheep on all the mountain slopes, wolverine, marten and various kinds of foxes, who do not leave the park in winter, nor do the bears of all kinds, as they hibernate. During the remainder of the season I have been active in the various duties of killing what game was necessary for our various parties of laborers, and protecting the rest from wanton slaughter by some of the tourists and a band of Bannock Indians on the North Madison (Yount 1881b:62-63).

George Marshall, his wife Sarah, and their four children spent the winter of 1880-1881 at his hotel in the Lower Geyser Basin, becoming the first people to winter over in the geyser basins. In January, Marshall wrote a letter to his friend Robert Strahorn, who had visited the park earlier. Marshall mentioned animals near his establishment, where Nez Perce Creek enters the Firehole River:

The bison, elk, and deer are all around in large bands, and I have no doubt this is the regular wintering ground for all the game of the mountain region for hundreds of miles around....You should be here to hunt or fish with us. Seven elk, four antelope and one bear was the result of a day's hunt over on the Madison last week (Strahorn 1881:41).

In the spring of 1881, while George Marshall was away, Sarah Marshall discovered two bears attempting to break into the storehouse behind the hotel. She followed one of them and shot it (Whittlesey 1980:45).

L.P. Brockett's large book, *Our Western Empire* (published in 1882) was probably based at least in part on 1881 information. Brockett's section Yellowstone Park included the following comment about the "wild eastern portion" of the park:

The elevated plateau enclosed between this mountain range [Absaroka Range] and the Yellowstone Lake and river affords a fine pasture-ground for the elk, black buffalo, deer, bighorns, and moose, which on the other side of the Park, are so ruthlessly slaughtered by wanton tourists...and...are left to be the prey of wolves, panthers, and coyotes (Brockett 1881:1231).

Like many of these general statements, made on the basis of the author's own opinions and information and without reference to sources of information, this one could be based on original knowledge or merely on other published accounts, including Norris' published reports.

Wilbur E. Sanders of Montana Territory returned in 1881. His only mention of animal evidence was on August 22, when he found fresh deer tracks in the Mount Washburn area (Sanders 1881).

U.S. Senator John Sherman visited the park in 1881 with a party that included artist Albert Bierstadt, Chief Justice Strong, and Alfred Hoyt. They entered the park from the west, traveling to the Upper Geyser Basin, across Mary Mountain to Crater Hills and Canyon, over Mount Washburn, and down the Yellowstone River to the north. Sherman's general statement about the wildlife follows:

When we were there the park was truly a wilderness. Game was very abundant. Elk, deer, antelope and bear were plentiful, and we had no difficulty getting all the fresh meat we wanted (Sherman 1895:826).

Colonel Philip Sheridan's large military party visited the park, entering from the northeast and exiting from the west. The general spoke glowingly of the hunting in early August along the route from Tongue River to the Beartooth Mountains, "for elk, deer, antelope, mountain sheep, bear, mountain grouse[,] Richardson grouse, sage chickens, and trout were abundant on the whole line of our march..." (Sheridan 1882:7). Sheridan also spoke well of the hunting trip made from a camp on Crandall Creek on August 17:

A party was at once organized...to go over to the frozen lakes near the foot of the Bear Tooth Range, and take an evening's hunt for elk. The distance was about 10 miles. They killed, in the evening, seven elk, and could have killed many more, as the country was occupied by hundreds of these beautiful animals. One herd of 150 amused them by swimming with their young in the lake, taking, as it were, an evening bath. The party did not kill any more, as the orders were that no more game should be killed than could be consumed by the command. The elk killed were very fat, and

of fine flavor. Previous to this time we had killed twelve or thirteen along the route... (Sheridan 1882:7).

Lt. James Gregory, Sheridan's aide, corroborated this story in his own report (Gregory 1882:17). The party spent from August 20 to August 24 in the park, but Gregory did not comment on the park's large mammals. He mentioned that the miners from Cooke City were in the habit of netting tons of fish from "Soda Butte Lake" (now Trout Lake), and said that his party gave elk meat to a party of tourists that was running low of provisions because the pack mule carrying their food had run away and "scattered their rations" (Gregory 1882:19). This suggests that they were well stocked with meat, and, considering the General's statement about limiting hunting to that needed for food, may explain why no mention was made of any time spent hunting in the park.

Captain S.C. Kellogg, another member of the Sheridan party, left a few comments on wildlife near the park. He reported "scarcely any animals" on the plains west of the Tetons, and said that, "although said to be a fine elk country, we saw only a few antelopes" (Kellogg 1882:25). In Jackson Hole, he was more impressed:

With such a view to feast the eye, and such a valley teeming with trout, game, and water-fowl, an artist having a sportsmanlike turn would pronounce Jackson's Hole Paradise (Kellogg 1882:25).

After traveling to the Gros Ventre valley and then to the Wind River range, he concluded as follows:

With the exception of great numbers of antelope and a few bear, we saw no large game, although the country, in many places, especially on the Wind River Mountains, was fairly cut up into elk tracks, and undoubtedly there are vast numbers of them to be found at the proper season. Trout abound in all the streams, and ducks, geese, and cranes are constantly to be seen. Antelope are more abundant than in any section I have ever visited, and the trappers say beaver also are plentiful (Kellogg 1882:26).

British sporting and travel writer Francis Francis entered the park from the north and visited Old Faithful. He mentioned "regiments of antelope" at Henry's Lake, but was disappointed in the park's wildlife:

As a game country the Yellowstone Park is a mistake. You may kill a few antelope, an occasional elk or deer; it would not be utterly impossible to happen on a stray bear or bison; but to go there merely for game is to court certain disappointment. Besides which, hunting is restricted in the park. Beyond its boundaries good game countries are easy of access; within them summer tourists have scared away all the game. Nevertheless it is always possible to kill enough birds and antelope to vary the camp fare (Francis 1882).

Without knowing more about his travel route, we cannot determine if he searched for game beyond the tourist trails. Hunting was restricted only in the sense that commercial hunting was illegal, and commercial hunting would not have interested him. Hunting for sport and food were still allowed, so it is unclear what restriction he found troubling. In any event, Francis' account stands out as a rare complaint of actual wildlife scarcity in the park in this period.

H. Banard Leckler left one of the foremost accounts of Yellowstone in its early years as a park, in a long series of articles in *American Field*. His party entered the park from the west, visited the geyser basins, crossed Mary Mountain to Canyon, went to Mammoth Hot Springs by way of Mount Washburn, and left the park down the Yellowstone River to the north. While in the park they met Norris, Yount, Marshall, and the Sherman party, all cited earlier. Some of Leckler's information on wildlife probably was gained from these encounters.

At Marshall's Hotel in the Lower Geyser Basin, the party decided to hunt for elk, "which were said to be in the neighborhood" (Leckler 1884a) but which they could not find. Moving a few miles to Old Faithful, they had more success. First, they reported an extremely unusual sighting:

After entering the woods we did not speak for perhaps a mile, when an animal about the size of a wild cat, but as dark as a beaver, ran from almost beneath our feet like lightning, and disappeared in the distance. George [Graham, their guide] whispered that it was a fisher, and that is was very seldom they were seen alive, as it was almost impossible to get anywhere near them without making sufficient noise to warn them of your approach. They are a carnivorous animal of the weasel order, and grow from three to four feet in length, and have a very pretty skin, bearing a resemblance to that of an otter and about as valuable (Leckler 1884b).

Leckler shot a bull elk near Old Faithful, and the party packed the meat and head with them (Leckler 1884b). On September 10, the party again found a "fresh elk track" but did not follow it (Leckler 1884c). They returned to Marshall's Hotel, then moved up Nez Perce Creek to its head, where a bear wandered into their camp, frightening their horses. Leckler said that the area was a favorite one for bears:

There were several small swamps about us, which, with the rocky ridge nearby, made the little valley we were in a favorite haunt for bears, and George said that, although many had been killed, the place was still full of them (Leckler 1884d).

On September 14, the party climbed the hill that would later be called Devil's Stairway, to Mary Lake:

The woods were very dense...and seemed to be full of game--a few tracks were seen in the road; and, if we had been in want of meat, we should have given them a trial.

It was hard to resist the temptation and go on, but George promised that we should pass through country within a few days where game was much more abundant and the chances of deer almost certain. I had shot an antelope and an elk, and to get a black-tail deer was now my great desire (Leckler 1884d).

In a chapter called "Hunting on Mt. Washburn," Leckler detailed the chase of bighorn sheep, elk, deer, and fox all east and north of the mountain. Their guide spotted two bighorn sheep on the southwest slopes of Mount Washburn, and "several fresh elk tracks" were seen as well. The guide encouraged Leckler to continue traveling to the northeast slopes of the mountain because a snowstorm seemed to be approaching from the southwest:

It required some little persuasion from the ladies to induce us to postpone the hunt; but George greatly assisted them by saying he would guarantee us game below, and that he had this [past] Spring, while making the trail along there [east of Washburn, working as part of Norris' crew], killed in a morning's tramp two deer and an elk to supply meat for the men (Leckler 1884e).

While camped east of Mount Washburn, the party was awakened in the night by the "call of a bull elk" (Leckler 1884e). The following day, the party saw "several fresh tracks" and then "many fresh tracks" and took shots at two deer without success. Leckler then noted:

The ground was completely covered with deer and elk tracks, in many places cut up like a barnyard, and most of the tracks were fresh. Game trails were all about, generally running with the stream along the hill at every thirty to fifty feet of elevation (Leckler 1884e).

Leckler saw a buck and killed a doe deer, both east of Mount Washburn, and a third deer eluded him.

Two other party members, Bob and Ellis, hunted separately there. They struck "a fresh trail of a band of eleven elks" and saw them run away. Ellis "heard several deer jump" but did not see them. Putting down his rifle, Ellis saw "an elk with immense antlers" that ran away before the gun could be retrieved. This all occurred near the top of the Washburn Range, and while enjoying the scenery, Ellis saw "a flock of mountain sheep" but they disappeared (Leckler 1884e).

On September 19, the party moved, leaving what Leckler called, "probably one of the finest hunting camps in the country," but still east of Mount Washburn and about eight miles from Tower, he said that, "A few hundred yards from camp, we came upon a large and beautiful red fox, but he made away so rapidly that we could not pick him off with our rifles" (Leckler 1884f). West of the canyon called the Cut, the party stopped for dinner:

We had been seated at the table but a moment or two, when, upon glancing out of the door, two large red foxes were seen romping and playing not two hundred yards distant. I ran for my rifle, Mr. Ellis for his gun, and we both fired, but the foxes got away without a hair being disturbed (Leckler 1884f).

The following morning, September 20, 13 miles southeast of Mammoth Hot Springs, Leckler saw another fox:

Half a mile out from camp, I came close upon a beautiful red fox with a magnificent tail sweeping the ground. I saw him before he noticed us, and he was a sure shot, but unfortunately Mr. and Mrs. Ellis...were about in line, and I was afraid to venture a shot. Along the Grand Canon trail, red foxes abounded. They soon find out where a camp is set up, and hang around till it departs, in order to capture the leavings (Leckler 1884f).

Notice that the Leckler party, much like "Andy" in the 1879 Geikie party, above, apparently "blazed away at everything." That was more or less common practice among recreationists of the day, making it seem all the more remarkable that so many park visitors saw the animals they did.

Near Tower, Leckler reported that "the track of a large bear was plainly seen along the bank" of the Yellowstone River. At Mammoth Hot Springs, Leckler's party rested and heard a story from one of George Graham's fellow guides of a party who had walked the entire distance to headquarters at Mammoth from Yellowstone Lake because their horses were driven away by a bear. The leader of this party was an "English general," who "was so pleased with the account of our trip and the success we had in getting game, that he purchased another horse, and started back for our hunting ground to try to capture an elk" (Leckler 1884g). Also at Mammoth, Leckler talked with Norris, who showed Leckler the rifle with which Norris claimed to have killed 19 bears.

On September 21, when the party discharged Graham, he presented each of the ladies with a "pup beaver skin" (Leckler 1884g). The group then moved down the Yellowstone River. They spoke with Fred Bottler:

We spoke with him about the hunting roundabouts, and he said that there was plenty of game in the Gallatin Mountains, twenty or thirty miles back [west] of him, and that he would guarantee to take a party that distance to where they could find plenty of elks and bighorn mountain sheep (Leckler 1884h).

Their last sighting of an animal in the area is now especially significant. It occurred near the head of Trail Creek, about 40 miles north of the park:

as we turned the point, quite a stretch of canon came into view. In a moment I noticed, two hundred yards ahead and standing in the center of a small meadow,

what I took to be a large dog. It soon saw us, and with a dozen jumps and a last look disappeared in the bushes. I had missed the opportunity for a fair shot at an immense wolf (Leckler 1884*h*).

Leckler summarized the park this way:

If our Eastern people only knew of the glorious , bracing, health-restoring air of the high mountainous country surrounding our National Park, not to mention the magnificent scenery, wonderful sights and bona fide hunting, they would flock to it by the thousand....Hunting and fishing in the Adirondacks, Maine, or Florida, is child's play compared to what one has in and around the National Park; and, if some of our dandy sportsmen would make one trip out there, they would never more waste their time in our damp, hunted-out eastern woods. Nearly all the game on the plains and mountains of the Far West go to the high region about the Park during the Summer, and you obtain better hunting there in the Summer time than almost anywhere else in the middle of Winter. Game of all kinds, and plenty of it, is in the Park; but it will not be there many years; only very few I am afraid, as it is being slaughtered by the thousands in the surrounding country (Leckler 1884*i*).

DISCUSSION

1882 provided a convenient stopping place for this paper for several reasons. Events set in motion in 1882, including the prohibition of hunting in the park in January, 1883 (Avant Courier 1883*d*) and the creation of the first park police force, seem to have resulted in a great decrease in the destruction of park animals after that year. In 1886, when the U.S. Cavalry began its 32-year stay in the park, illegal mass killing of park wildlife became nearly impossible, though poaching continued to be significant with some species and has continued to the present.

Interpreting the Historical Record

We are struck by the nearly unanimous view of those who expressed any opinion at all that large animals were abundant. Even those who saw few animals believed many were nearby, either because they saw other evidence or were told so by others or just assumed it to be so for other reasons. Descriptions of the area as a "hunter's paradise," and in other glowing terms, were common. These reports of game abundance or scarcity are analyzed below, under the heading of "Game Abundance."

We are also struck by the extent to which early park visitors routinely "blazed away" at park wildlife. If the many accounts presented here are at all representative of the average park visitor, we must be impressed with the resilience of park wildlife populations. Not only were the ungulates being killed in large numbers by skin hunters, and killed regularly by the region's miners and other settlers, but they were subjected to an indiscriminate but apparently substantial amount of recreational hunting.

The traditional view of the game having been "pushed back into the mountains" continues to intrigue us. Though the evidence here, which is persuasive that in the earliest historical period large animals were present and often abundant in the park, renders the question moot, we think it worth consideration, if only because it is so pervasive and will no doubt endure as part of the body of public "common knowledge" for a long time.

We find important things lacking in the theory that the park's wildlife were forced into the park area by settlements. First, the mechanism by which such a thing would occur is unclear. The theory seems to imply that when settlement occurred, animals occupying the settled area abandoned their native range and moved, more or less wholesale, to an entirely new one that had, apparently, been unoccupied or only lightly occupied prior to that point. This suggests that usable vacant habitat existed for some indefinite period prior to the migration, and brings up the question we have noted earlier, of why that habitat was not occupied all along.

Viewing the theory as sympathetically as possible, we might propose that the vacant habitat was of much poorer quality, and therefore only of marginal interest to the animals until they were compelled to abandon better habitats. But recent studies of Yellowstone's Northern Range (for example, Merrill et al. 1988, Frank 1990) do not support the idea that the park is poor habitat. Long-term and short-term climatic changes no doubt made it quite variable both as summer and as winter range, but the historical accounts give us no reason to doubt that it was used as winter range then, as it is now, by large animals as conditions permitted.

What we find least acceptable about the theory, however, is the supposed cause of the migrations. Where were the settlements that forced the animals into the park? The historical accounts presented here suggest that large numbers of ungulates inhabited the park area through the earliest historical period. Settlement in the Greater Yellowstone Ecosystem was slight until the 1880's. Fort Ellis, and later Bozeman, existed on the northwest corner of the Greater Yellowstone Ecosystem from prior to the time of the park's creation, but as a small outpost. Livingston, Montana, and Jackson, Wyoming, did not exist before about 1883, and Cody, Wyoming, was founded in 1895; West Yellowstone was not established until 1907.

If we must attribute the presence of the park's large animals to settlements, we must go hundreds of miles in order to find settlements and land uses of a magnitude sufficient to displace the animals. The search quickly approaches absurdity: If the elk that Osborne Russell reported as "swarming" at Yellowstone Lake were forced there, it must have been by the urban sprawl of St. Louis.

As far as animals being forced one way or another by settlement or human activities, the opposite pressures existed in Yellowstone. As numerous accounts reveal, human inhabitants of and travelers in the region, such as early tourists, the Bottlers, the miners

in the Cooke City area, did their game killing in the heart of the supposed "safe" habitat, taking large numbers of animals from the Lamar Valley--the very place the theory proposes that the animals were supposed to be driven for refuge.

It is important to point out, however, that there remains the issue of whether later settlement, that is settlement of the Yellowstone region after 1882, somehow affected animal densities in the park, especially after 1886, when the U.S. Cavalry arrived to protect the park itself from poaching, thus turning it into a more genuine refuge.

Historical Evidence for Wintering Elk

As pointed out early in this report, Hadly's (1990) paleontological evidence is suggestive that elk used habitats in the Lamar Valley prehistorically much as they do now. Historical accounts also suggest that the present park area was used as winter range by substantial numbers of animals--thousands--in the 1880's (Avant Courier 1883c, Hofer 1887, Harris 1887). These accounts made rough estimates of numbers of wintering elk. In the period covered in the present report, however, we have fewer quantified reports but much general information.

Houston (1982:206) considered Blackmore's observation of an "abundance" of cast elk antlers on the Blacktail Plateau as evidence of wintering elk. Doane reported "thousands" of elk antlers in 1874 near Mount Washburn, and reported that "there are many such places in the park..." (Doane 1970:473). The relative rarity of such large accumulations of antlers in the park today is a sad indication of the extent to which humans have subtly altered the landscape. The modern markets for antlers have made such accumulations impossible because of the intensity of illegal "horn hunting."

Perhaps the most important evidence of wintering elk may be the details of the slaughter as provided by Strong, Grinnell, Norris, Ludlow, and Baronett, who made it clear the animals were being killed in the winter when they were defenseless in the deep snow. Though these accounts leave no doubt that thousands of elk were being killed in the park, and were sometimes killed in winter conditions, they do not usually contain the detail in dates, numbers, or location that the later reports (after 1883) do. For example, Norris, discussing his 1875 visit, said that the Bottlers took more than 2,000 elk skins from the "forks of the Yellowstone" (the mouth of the Lamar River), but he said they did so "in the spring of 1875" (Norris 1875), so we cannot absolutely know if this was proof of wintering elk or elk on their spring migrations into higher parts of the park.

Park gamekeeper Harry Yount gave us some of the first useful winter observations, reporting that some animals did winter in the park despite an apparently severe winter in 1880-1881. Yount said that "about 400" elk wintered on the Lamar River and Soda Butte Creek. Houston (1982:11) commented on Yount's report, saying that "only 400 animals remaining in this upper portion of the range during a severe winter is not unusual." Houston (1982:210) interpreted Yount's reports of winter conditions that year

as follows: "Apparently a very severe winter as Yount's own weather records show snow falling on 66 of 90 days from December 1880 to February 1881.

Sorting out the hide-hunting period is going to require an appreciation for the work. If we conservatively estimate the weight of an adult elk hide at 20 pounds, Bottler's 2,000 hides would have weighed 20 tons. If these were taken prior to snowmelt, then sleds of some sort might have been involved, or the skins might have been rafted down the Lamar River to the Yellowstone, and thence down to the Bottler ranch. Later, wagons could have been used for at least part of the trip. Perhaps the hides were stored and guarded until the weather made movement easier.

In short, the accounts of the park prior to 1882 demonstrate that elk and other animals wintered in the park, but only rarely provide meaningful information on their numbers. Houston (1982:23-25) reviewed interpretations of wintering elk numbers from this earlier period into recent times, suggesting, in contrast to earlier investigators (Cahalane 1941, Craighead et al. 1972), that prehistoric elk populations down the Yellowstone River Valley to the north of the park may have actually constituted a "biological barrier" to the migratory movements of elk that wintered in the park. Houston also acknowledged the "...possibility that densities [of wintering elk in the park today] are somewhat different now (either higher or lower) for other reasons, e.g. climatic changes, plant succession, [or] levels of predation" (Houston 1982:24).

We can only concur that the many variables that affect animal distribution surely were in effect throughout the early historical period.

Observability of Wildlife

Observability of wildlife is another central issue in this analysis. The accounts demonstrate not only that success in seeing wildlife varied greatly from party to party within the same year or week, but also that reporting of observed wildlife varied greatly among members of the same party. It is only through an examination and comparison of as many accounts as can be acquired that the actual story of wildlife observations is fleshed out, and even then the material very quickly runs up against all the limitations that have been discussed, including observer reliability, the informality and incompleteness of the sources, and the imponderable vicissitudes of animal behavior.

Of nearly equal interest is the behavior of the wildlife once seen. Past investigators have attempted to use one or another account in which animals did not flee from travelers as proof that travelers should have been able to see wildlife routinely. But the historical accounts reveal that wildlife then, as now, are often unpredictable. One man might spook a huge herd of elk by himself, while another party might ride past another herd without displacing it at all.

Wolves

Wolves are the foremost focus of this paper, and so we will summarize the historical record of them in greater detail than that of the other species reviewed here. Though many of the references to wolves being present were not specific as to a particular location in the park, others provide reports of sightings, howls, or other evidence of wolves in named locations (Fig. 7).

The historical record provides several sightings of wolves in the Greater Yellowstone Area, including in the present park area. William Clark stated that he saw wolves in the Gallatin Valley (Thwaites 1905, 5:260); that sighting was probably outside most definitions of the Greater Yellowstone Ecosystem (Glick et al. 1991). As well, Russell (1955:35) reported that at Ray's Lake, in the Snake River Valley southwest of the present park area, he "was awakened by the howling of wolves who had formed a complete circle within thirty paces of me and my horse at the flashing of my pistol however they soon dispersed." These sightings provide some background for the additional evidence from the Greater Yellowstone Ecosystem itself.

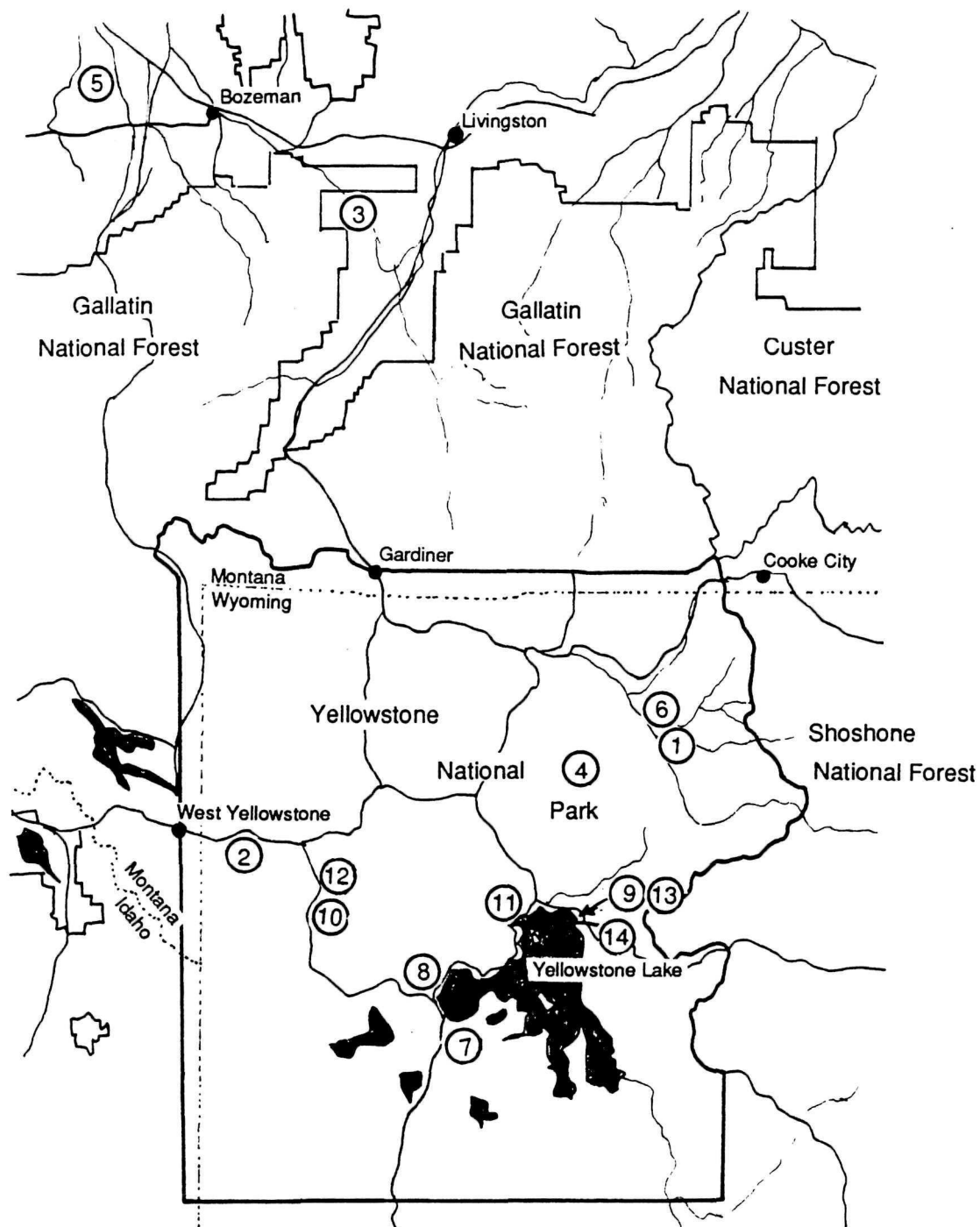
The first reported sighting in the present park area in the historical record is from Henderson (1894:57), who said that on August 3, 1870, somewhere in the upper Lamar Valley, probably near the mouth of Cache Creek or Miller Creek, his camp was "attacked by wolves," leaving us to wonder exactly what form the attack took. We assume that this meant he or his party actually saw the wolves near camp.

Norton (1873:8) said that in the Madison River Canyon, his party saw "two dour-looking timber wolves, who scampered affrightedly away at our approach."

Grinnell (1876:90) reported that during his 1875 visit he saw a wolf in the park, but he did not give a location. As we discussed earlier, we consider this an exceptionally reliable sighting, coming from a trained professional naturalist, but we are unable to determine from the context of the reports he left if this was a living wolf or some proof of a wolf, such as a skin.

Leckler (1884*h*) reported seeing an "immense wolf" near the head of Trail Creek, north of the park, in 1881.

Superintendent Norris, in several accounts, asserted that wolves were common in the park until the mid-1870's. He left a report of at least one specimen in his possession, saying that in the early winter of 1880, while gathering a supply of meat for his assistants, he and they were able to collect "fine hides of the bear, wolf, and wolverine" (Norris 1881*a*:6). We cannot determine if this means one hide of a wolf, or more than one. Most important of Norris's mentions of wolves is his official report of their destruction:



- | | |
|--|---|
| 1. sighting, group of wolves, 1870 (Henderson 1894:57) | 8. howl, 1871 (Clawson 1872a, Raymond 1873:274) |
| 2. sighting, pair of wolves, 1872 (Norton 1873:8) | 9. howl, 1873 (Comstock 1875:92) |
| 3. sighting, single wolf 1881 (Leckler 1884h) | 10. howl, 1875 (Norris n.d.) |
| 4. howl, 1836 (Russell 1955:46) | 11. howl, 1876 (Doane 1970:480) |
| 5. howl, 1863 (Stuart 1976:159) | 12. howl, 1879 (Geikie 1882a:228; Smith 1901:183) |
| 6. howl, 1969 (Haines 1965:27) | 13. bedding site, 1873 (Comstock 1875:92) |
| 7. howl, 1870 (Everts 1871:3) | 14. track, 1872 (Norton 1873:37) |

Fig. 7. Locations of wolf sightings, howls, and tracks of known location, 1836-1881. Note: This figure only includes reports for which a specific location was given by the observer. Other reports, of sightings with no specified location, of collected skins, and general statements about the presence or distribution of wolves, are reviewed in the text.

The large, ferocious gray or buffalo wolf, the sneaking, snarling coyote, and a species apparently between the two, of a dark-brown or black color, were once exceedingly numerous in all portions of the Park, but the value of their hides and their easy slaughter with strychnine-poisoned carcasses of animals have nearly led to their extermination (Norris 1881a:42)

Excluding the Clark and Russell sightings, we have a minimum of 5 sightings of wolves in these accounts. That this is a minimum must be emphasized; the context of Norris's remarks suggests that he saw wolves more than once, possibly on numerous occasions. We are counting only his specific mention of at least one wolf hide as a sighting, but obviously his experience, whether it was with hides, poisoned carcasses, living wolves, or some combination of those led him to assume wolves were common.

Even without the numerous other historical accounts we are presenting here, we regard the Norris reports, alone, as reasonable proof that wolves inhabited and were relatively common in the park area at the time of its establishment. Though as we have pointed out Norris was not a formally trained naturalist, he was a very enthusiastic observer of nature, and we have no reason to doubt that he was seeing wolves, both alive and poisoned.

A second category of historical accounts of wolves includes howls and other noises heard and attributed to wolves. Some of the descriptions of wolf howls are almost as compelling as evidence as are the actual sightings. We counted twelve reports of at least ten different episodes of wolf howling.

Russell, on the night of August 19, 1836, on the Mirror Plateau, reported that "all is silent except for the occasional howling of the solitary wolf on the neighboring mountain whose senses are attracted by the flavors of roasted meat but fearing to approach nearer he sits on a rock and bewails his calamities in piteous moans which are re-echoed among the Mountains" (Russell 1955:46).

Stuart, on April 19, 1863, in the Gallatin Valley near the present site of Bozeman, reported that he "was serenaded by a full band of wolves last night" (Stuart 1876:159).

Folsom, on September 16, 1869, while camped near the mouth of Calfee Creek, reported that "the wolf scents us from afar and the mournful cadence of his howl adds to our sense of solitude" (Haines 1965:27).

Everts, during his 37 days of wandering alone the present park area in the fall of 1870, mentioned that he heard the "dismal howl of the gray wolf," probably south of Yellowstone Lake (Everts 1871:3). Later, after he had moved north to some unknown location between the lake and the Tower Fall area, he reported that "the prolonged howl of the wolf" was one of the things that made him "insensible to all other forms of suffering" (Everts 1871:8).

Clawson, late in the summer of 1871, reported that one night, apparently near West Thumb, "a band of hungry wolves sat upon a point some distance away and howled and yelled a most heart-rending war song, that seemed to terrify even our dog, who was a wolf-hunter by profession" (Clawson 1872a).

Clawson's account was generally corroborated by Raymond, a traveler in the same party, who said that "the prairie wolf, or coyote, and his larger cousin, the mountain wolf, howl plaintively o'nights" (Raymond 1873:274).

Comstock heard the howling of a wolf near Steamboat Point (on Yellowstone Lake on August 6, 1873, and then saw sign of it the next day: "Being much fatigued, I turned in early, but, when fairly in a doze I was aroused by the frightened movements of my mule picketed near by, and I presently heard the doleful howl of a large wolf, which was slowly approaching along the trail. In anticipation of a trifling adventure, I lay down again with my carbine close at hand. It was late in the morning when I woke, and all was quiet; but a little investigation showed that the animal had been lying in the grass at the edge of the bluff, just above my head" (Comstock 1875:92).

In 1875, Philetus Norris, on his second visit to the Yellowstone area but prior to his superintendency, reported the "prolonged howl of the mountain wolf" at the Lower Geyser Basin (Norris n.d.).

On the night of October 26, 1876, Doane reported "a pack of wolves howling far down the lake shore" of Yellowstone Lake, near present Bridge Bay (Doane 1970:480).

In 1879, probably along or near the Firehole River, Geikie reported "the mingled bark and howl of the wolves" at night (Geikie 1882a:228). Drummond left a diary of the same trip, in which he seemed to corroborate Geikie by mentioning "the wolf barking" while the party was near the Firehole River on September 10 (Smith 1901:183).

We recognize that it may be difficult for unschooled listeners to know a wolf howl from a coyote howl. We also recognize that prior to 1900, there was some overlap in the naming of the two animals; coyotes were at least occasionally known as prairie wolves. We have here, however, some very credible observers. Grinnell was a professional naturalist, Doane was a seasoned and respected western traveler whose other writings do not lead us to doubt his reliability, and Geikie and Comstock were both professional scientists. The others also seem trustworthy. We see no reason to doubt that some, if not all, of these writers were reporting the howls of actual wolves.

Besides Comstock's report of the bedding site of a wolf, Norton (1873:37) reported tracks of a wolf on Stevenson Island.

We also counted 17 general statements about the presence of wolves in the Yellowstone area. These assertions that wolves were present started as early as Gunnison (1852).

We consider this combination of sightings, reports of howls, and general statements to be compelling proof that wolves were widely distributed through the park and surrounding areas prior to 1882.

The slaughter of wolves in the 1870's requires additional comment at this point. The destruction of wolves during that period may be the most significant single event to date in the history of wolf-human interactions in Yellowstone Park. Norris said that "their easy slaughter with strychnine-poisoned carcasses of animals have nearly led to their extermination" (Norris 1881a:42). The slaughter of Yellowstone wildlife was in fact no more or less intense than in many other areas of the west at the time, and wolves were being destroyed, especially by poison, in numbers that now seem nearly fabulous. Curnow (1969:31) reported that in Montana a "conservative estimate" of the number of wolves killed between 1870 and 1877 would be 100,000 per year. This number, however, suggests a density of wolves in Montana that is literally incredible; perhaps the number included coyotes and other predators. In any event, recent estimates of the number of wolves that would inhabit the park area once fully restored are around 150 (Koth et al 1990), and if even comparable levels existed in 1870, all historical evidence suggests that Norris was right to presume their "easy slaughter." Curnow, reporting on wolfing techniques in Montana, said that "Up to one hundred wolves were found dead at one bait" (Curnow 1969:28). Unless one has been exposed to historical accounts of the wolf poisoning campaign of the 1870's and later, it is difficult to imagine the extent to which the idea of wolf destruction seemed to obsess people; killing wolves was seen as a civic duty, done proudly.

Weaver (1978:7) reported that few sightings were made of wolves between 1881 and 1908; though much more remains to be done with historical sources from this period, we suspect that these relatively few sightings may reflect a dramatic decrease in the number of wolves present due to the poisoning campaign of the 1870's. Weaver also reported that the population, at least in northern Yellowstone, apparently began to increase after that, and that in the 1914-1926 period, "...a minimum of 136 wolves--including about 80 pups (59%)--were removed from dens, trapped, shot, and probably poisoned in the park" (Weaver 1978:7-8). After this period, the wolf was essentially, though not totally, gone from the park area.

If in fact the park was and is capable of supporting more than 136 wolves at any given time (and we recognize this as educated conjecture), then it seems most likely to us that the notorious wolf-killing era of 1914 to 1926, which shocks the sensibilities of many modern people, was not much more than a mopping-up operation of a job almost finished by 1880. Additional study, as well as the restoration of wolves to Yellowstone and the subsequent study of their fortunes, would shed more light on these early times.

Game Abundance

Before reviewing the evidence for the presence of various other large mammals, we will comment on the statements of early park-area visitors regarding the abundance or

scarcity of such mammals. As mentioned early in this paper, it is widely assumed that if these mammals were abundant, their predators would also be present.

We counted 77 general statements about "game" in which it was not possible to determine what species were intended. Of these, 21 were specific references some particular feature or area, such as a comment on a "game trail" being followed. The others were broader statements about game being abundant or scarce.

As pointed out earlier, some parties believed game to be abundant even if they did not see it; they saw tracks or other evidence, or they were told of its abundance by others. What we sought to determine in the present exercise was this: how many parties did believe game was scarce? The answer was, very few. Of the remaining 56 general statements about game abundance, 5 reflected the belief that game was rare in the park and 51 supported the belief that game was abundant. The writers of the 5 did not give reasons for their belief; that is, they did not say that game was scarce because it had always been scarce, or because of overhunting, or for some other reason.

We consider this an especially important exercise. It shows the extent to which the early travelers and authorities who should have known the park best differed with the viewpoint that arose around the turn of the century, a viewpoint that held that game was scarce in the mountainous regions of the west. The many early writers who described the park area as a "hunter's paradise" and in other equally glowing terms might have been surprised at how quickly their firsthand observations would be forgotten or dismissed.

This review of general statements about game also serves as a useful introduction to a review of the accounts of the other species of large mammals.

In the following review we have adopted a simple tabulation system, by which we were able to identify the types of reports. There are, for most species, seven categories of reports.

1. Sighting of an individual animal. In this category we included any sighting or killing of an individual animal. If two or more members of the same party saw the same animal, we counted it only as one sighting. In all cases, we sought to use the most conservative number; if we suspected, but were not sure, that two different accounts were discussing the same animal, we counted the two reports as one sighting.

2. Sighting of a small group. In this category we included all reports of 10 or less of an animal. This category became a convenient catch-all for the common reports that made such vague statements as, "We saw 3 moose during the day," or "during our march yesterday we shot 5 antelope." It is not possible in these contexts to determine if the animals were seen or shot singly or all at once, and so to simplify the tabulation (and,

again, because it is the most conservative course in totalling number of sightings), we treated these small groups as single sightings.

3. Sighting of a herd. Many writers used terms such as "band," "group," "herd," and other words without mercy on historians. It was often difficult to know how large a group they meant. Through careful review of the context, including other reports by the same writers in which they were more specific, we attempted to sort out small groups from large. Most of the time, it was obvious that they meant more, or less, than 10. As in other categories, we sought not to count duplicate sightings of the same herd as more than one sighting.

4. Sounds. Several animals besides wolves made noises readily identifiable by these early travelers. Elk bugles and mountain lion screams may have been the most noteworthy.

5. Reports of meat, skin, bones, antlers, or other parts. Sometimes in these historical accounts, the first mention of an animal occurred after its death, as when a writer reported that a member of the party brought in a load of elk meat, or that camp dinner consisted of venison. These are legitimate reports of animal presence. In some cases, as in the reports of great numbers of cast antlers on the Northern Range, they are especially significant evidence, at least as useful as sightings of the live animals. In the above review of wolf reports, we considered a report of an animal's skin as a sighting of at least as high a reliability as a sighting of the live animal. Below, because of the larger number of reports involved, we have broken skin reports into their own category with meat, bones, and antlers.

6. Reports of tracks, trails, scat, or other signs of animals. Tracks and trails were frequently mentioned in the early accounts, and though we sometimes must question the skills of the writers at identifying different kinds of tracks, these are important evidence. For example, when Leckler (1884e) described the area near Mount Washburn in 1881 as "completely covered with deer and elk tracks, in many places cut up like a barnyard," the extent of the tracks is in itself significant, regardless of which species or set of species made them. However, these very broad statements of track abundance are treated as one report, again to take the most conservative approach. It may be an indication of the changes in public tastes and tolerances that observations of feces (and its numerous euphemisms) go more or less unmentioned by these early travelers; in this instance, publishing styles and social codes tended to deny us access to an entire class of wildlife information that we would now find quite useful.

7. General statements of the presence of a species. These statements include such things as listings of animals believed to be in the park, where it is not possible to know for sure if the writer saw them. They also include some of the most important reports of animals that were seen. For example, when Raynolds reported that in the Madison River Valley, "antelopes have been visible in large numbers upon all sides" (Raynolds

1868:100), or when Drummond reported that along the Madison River in 1879, there was "abundant game, antelope, everywhere for twelve miles" (Smith 1901:186), there is no category that will fully portray that abundance of antelope. If such statements described the great number of animals as a herd, specifically, or referred to "herds," then one or two sightings of herds were added to the tabulation. If the statement was less specific, as are these by Raynolds and Drummond, it was tabulated as a general statement of presence, again tending to understate the impression given by the writer. If an official report of the park, such as a superintendent's report or a government survey report, made repeated general statements of animal abundance in the same document, only one of those was counted as a general statement. If, on the other hand, such a report mentioned animals present in one part of the park, and then elsewhere in the report mentioned their presence in another part of the park, those two mentions would be tabulated separately.

In short, these categories and their tabulations as given below must be seen as absolute minimum representations. They are not presented here to suggest precisely how often early visitors saw animals, but only to allow some simple generalizations.

Mountain Lion

The accounts suggest that either the mountain lion was once much more common in Yellowstone than it is today, or it was once much more willing to reveal its presence, especially by vocalization. Some parties heard lions screaming night after night, Everts (in 1870) was treed by a lion, Norris (in 1875) and Bottler (in 1871) had skins, and Strong (in 1875) said lions were "frequently killed." They were reported, interestingly enough, in several regularly visited portions of the park.

Lions are less inclined to carrion feeding, and so may have been less susceptible to the poisoning campaign. Murie (1940:15), however, reported that 121 were killed by government trappers and hunters in the park between 1904 and 1925, at which point they were regarded to have been more or less eliminated for many years. They are now (1992) known to be widely distributed on the Northern Range (Meagher 1986, Murphy and Felzien 1990).

We counted 3 sightings of lions, 9 reports of sounds, 2 reports of skins, 3 of tracks, and 17 general statements that indicated their presence.

Coyote

Reports of coyote observations were striking in their rarity. We found 1 sighting, 1 report of barking, and 8 general statements about presence.

There may be any number of explanations for this, and probably several are partly true. For some observers, the coyote was perhaps just on the line between the large animals worth mentioning and the small ones not worth mentioning. If coyotes were common, like ground squirrels or rabbits, perhaps some observers would take little note of them.

For other observers, the confusion between the wolf and the coyote (known in some circles as the prairie wolf) may have caused them to call coyotes wolves.

But perhaps most intriguing, and certainly quite plausible, is the possibility that coyotes were far less abundant then than now. In areas inhabited by robust wolf populations, coyote numbers are generally much lower than when wolves are absent (Fuller and Keith 1981, Carbyn 1982, Paquet 1991). The presence of wolves in the Yellowstone area may, in that respect, have dramatically affected the abundance of another predator--the coyote.

Bears

Bears were seen regularly by early visitors, and many were reported killed, both in the park and in the surrounding country. Schullery (1990, 1992) suggested that, whatever losses bears suffered due to hunting or poisoning during the 1870's, they were still reasonably abundant by the early 1890's, but beyond that it is difficult to draw any conclusions. Bears are not generally gregarious, and often quite secretive (Schullery 1992). More observers mentioned grizzly bear by species than black bear, but most just said "bear," leaving it unclear if one or the other species was actually more common. Determining relative abundance of the two species is further complicated by differences in behavior and habitat use, and the black bear's known tendency to avoid grizzly bears when the two species coinhabit a region.

Grizzly bears were reported as individuals 14 times, as small groups (almost always sows with cubs) 7 times, from tracks or other traces (including 1 den) 3 times, and in general statements of presence 9 times, for a total of 33.

Black bears were reported as individuals 5 times, in small groups 3 times, from tracks 1 time, and in general statements 7 times, for a total of 16.

Unspecified bears were seen as individuals 24 times, in small groups 20 times, in meat, skin, or other parts 5 times, from tracks or other sign 16 times, and in general statements of presence 47 times, for a total of 112.

Bears of both or unknown species were therefore reported on 161 occasions, overwhelming evidence of their widespread presence in the Yellowstone Park area.

Wolverine

Considering the infrequency of modern sightings, wolverines were seen surprisingly often. We counted 8 individual sightings, 1 report of a hide, and 7 general statements about their presence. Wolverines might have been very hard hit by the strychnine poisonings of the 1870's.

Fox

Norris's statement that foxes of four colors were "numerous" is buttressed by 4 sightings of individuals, 1 sighting of a pair, and 6 general statements of fox presence.

It is known that foxes thrive more in the presence of wolves than in the presence of coyotes (R. Crabtree pers. commun. 1991).

Lynx and Bobcat

One lynx sighting was reported, along with two general statements that lynx occurred in the area. Grinnell (in 1875) did add that lynx were "sometimes killed in the Yellowstone Park," and also provided the only bobcat sighting.

Other Small Carnivores

Eight sightings or killings of skunk were reported, as well as 1 report of scent and two general statements that skunk were present. The most interesting observation concerning skunks was Norris's statement (1880) that he killed "hundreds" of them at Mammoth Hot Springs in order to be able to sleep peacefully.

Comstock (in 1873) provided us with our only four sightings of raccoon from the period. They, like the skunk, would be hard hit by a strychnine poisoning campaign.

Two sightings of mink were reported, along with one report of tracks and five general statements of their presence. Doane said they were "abundant" south of Yellowstone Lake (in 1870), and Norris (in 1880) said they were "not numerous" in the park.

Two sightings of individual otters were reported, along with 8 general statements, some of which suggested that otters were very numerous in some parts of the park.

Marten, fisher, and badger were rarely mentioned.

Elk

The historical record has neither the resolution nor the depth to establish with any precision the number of elk inhabiting the park area prior to 1882. The historical record does, however, make it clear that elk were common throughout the park, and were observed at various times in large numbers in virtually every part of the park where large numbers now occur. The one exception is the geyser basins along the Firehole River, where elk were sometimes seen or shot but never reported in the herds observed elsewhere. We suspect that part of the reason for this may be that the geyser basins, being the foremost park attraction, and being so open, were among the first areas to be hunted heavily. Unlike the Northern Range, which most of these travelers crossed with relatively few stops, the valley of the Firehole River was a destination, and thus was visited more intensively by those interested in the park's main attractions.

The evidence of the earliest observers--for examples, Russell's comment (in 1837) that the country around Yellowstone Lake was "swarming with elk," or his obviously justifiable confidence (in 1839) at Yellowstone Lake that even with 2 arrow wounds he could easily find and kill 2 or 3 elk, or Henderson, Gourley, and Blackmore's comments about large numbers of elk in the northeastern area in and near the park--were supported by many later observers. The large numbers killed during the 1870's--such as Bottler's admitted kills--indicate that the northern range was inhabited by thousands of elk at that time. Early in 1883, two years beyond our study period, the Bozeman newspaper reported 5,000 elk between Mammoth Hot Springs and Cooke City (Avant Courier 1883c), as well as an abundance of other wildlife (Avant Courier 1883a). After that, as mentioned earlier, the park was routinely thought to contain many thousands of elk.

There were 43 sightings of individual elk, 53 of small groups, 35 of herds, 9 of sounds, 25 of meat, hides, bones, or antlers, 31 or tracks, trails, or other sign, and 84 general statements of presence, for a total of 280 reports.

We consider the volume, extent, and detail of this material sufficient to allow us to say with confidence that elk were abundant throughout the Greater Yellowstone Ecosystem prior to 1882.

Bison

Various observers reported bison in most regions of the park inhabited by them today. The observations cause us to suspect that bison numbers might have been lower than today, but we are not entirely confident about this, partly because of the skin-hunting of the 1870's. In 1880, for example, Norris believed there were about 600 in the park, in three herds; if there were that many then, there may have been more prior to the hunts and a decade of visitation. In 1881, Yount reported bison still in Slough Creek, Hellroaring, and the Amethyst Mountain area, as well as smaller groups on Alum Creek and west of the park.

There were 6 reports of individuals, 8 of small groups, 17 of herds, 8 of meat, skin, or bones, 9 of tracks, trails, or other sign, and 26 general statements of presence.

Moose

Moose were commonly observed and reported in southern Yellowstone Park. Gray (in 1872) found them in the northwest corner of the park, and Clawson (in 1871) and Bradley (in 1872) mentioned them west of the park. Norris reported that "scores if not hundreds" were killed in the spring of 1875, and they seem to have become rarely seen by the late 1870's.

We are intrigued by the accounts of Henderson (in 1870) and Norris (in 1880) that suggest that moose were at least occasional inhabitants of northern Yellowstone Park.

There were 4 reports of individuals, 2 of small groups, 2 of sounds, 2 of tracks or other sign, and 23 general statements of presence.

Pronghorn

Pronghorn were apparently very abundant in most suitable habitats in the Greater Yellowstone Ecosystem, and were mentioned as appearing, often by the hundreds, in the Madison Valley west of the Park, down the Yellowstone River through Paradise Valley, and in the Lamar Valley. Norris (in 1880) also said they appeared on the Blacktail Plateau, Sulphur Mountain, and Mary's Lake areas. Houston (1982) reported that their early historical numbers (1860's and 1870's) may have been as high as 1,000 or more in the park.

Norris (in 1880) and Grinnell (in 1875) agreed that pronghorn were slaughtered by the thousands, though Yount (in 1880) thought them still common in "most of the open regions" of the park. We counted 18 reports of individuals, 24 of small groups, 24 of herds, 7 of meat, 1 of tracks, and 45 general statements of presence.

Pronghorn might present us with a visual bias in the historical record, being more often an open-country animal (though some observers did express surprise at finding Yellowstone pronghorn in forests) and therefore more easily seen.

Mule Deer

Deer also seem to have been very abundant. Russell (in 1839) offered the tantalizing observation that there were "vast numbers" of them in the geyser basins, and many other observers seemed to see them routinely, some seeing them (or reporting them) more often than they reported elk. Grinnell (in 1875), Strong (in 1875), and Norris (in 1877) all reported that thousands were slaughtered during the 1870's.

Barmore (1980) has suggested wintering mule deer numbers were "...grossly similar from the early 1900's and, perhaps, since primeval times to the present." It appears to us that, if anything, they were more numerous in 1870 than now, but were at least as common. If, by "vast numbers," Russell meant that thousands of mule deer were living in the geyser basins, we must doubt him just on the basis of available habitat in that area. Herds of mule deer were rarely reported by other observers. Russell's comment is too incomplete to do much more with it than consider the ecological realities of the situation.

There were 38 individual sightings, 29 reports of small groups, 3 of herds, 1 of sounds, 10 of meat, hides, or bone, 18 of tracks or other sign, and 70 general statements of presence.

Bighorn Sheep

The accounts provide limited suggestive evidence that bighorn sheep were more numerous, and possibly present in more locations, during the 1830-1881 period than they

are now. Though many were reported killed during the 1870's, they were also reported as still abundant at the end of that period by Norris (in 1880) and Yount (in 1881). Because of their susceptibility to domestic stock diseases, changes in numbers of bighorn sheep in the historical period may be more difficult to interpret than those of other species.

There was 1 report of an individual animal, 9 of small groups, 15 of herds, 8 of meat, hides, or bone, 9 of tracks or other sign, and 34 general statements of presence.

White-tailed Deer

White-tailed deer seem not to have been common in the park area during the period we studied. Some observers saw or killed a few. Strong (in 1875) implied that Doane told him "herds" of white-tailed deer lived in the park in 1870.

Murie (1940), Barmore (1980), and Houston (1982) all agreed that the park seems to "...represent the extreme upper limit of marginal winter range" white-tailed deer (Houston 1982:182). If that is correct, it has been more or less continually the case as far back as the historical record reaches.

There was 1 report of a small group of white-tailed deer, and 10 general statements of presence.

Beaver

Beaver were considered very abundant by travelers who mentioned them, though actual sightings are far rarer than are mentions of dams, lodges, and other workings.

Meek (in Victor 1870) said that the Yellowstone country "abounded" in beaver in 1830, but their numbers declined due to trapping. Russell hunted for them at various locations during his travels in the present park area, apparently finding enough of them to continue trapping, but giving us little information about his actual success. He did leave us the tantalizing observation that in 1835, the local Sheepeater Indians had killed nearly all of the beaver in some portion of the Lamar River drainage.

Some of the reports give an idea of beaver distribution. Russell spoke of trapping them at several locations around the park area, but did not say how many he and his companions caught, we assume from their extended efforts that they were successful in finding at least some beaver. Hamilton reported beaver caught in "large quantities" on Pelican Creek in 1839, and Doane reported that they were "abundant" south of Yellowstone Lake in 1870, the same year Everts saw them swimming "unscared" at Heart Lake. Peale (in 1871) and Raymond (in 1871) found numerous dams south of Yellowstone Lake and at Burnt Hole. Stanley (in 1873) reported beaver evidence "everywhere" in the park, especially on the tributaries of Yellowstone Lake. By 1873, according to Comstock, they were "still common in portions" of the park but were in trouble from trapping. Seguin found dams and lodges at Swan Lake Flat in 1879, as did

Drummond in 1879 at Henry's Lake, Strahorn in 1880 at Yellowstone Lake, and Doane again in 1876 at Heart Lake.

Note that in the above summary, none of the accounts said exactly how many beaver they actually saw. Because of that we had to list most of these reports under the heading of general statements of presence. We counted no sightings of individual beavers or of small groups, 1 sound (tail slapping), 4 reports of meat or hides, 6 reports of tracks or other sign (workings and dams), and 21 general statements of presence.

Norris proudly reported that he had saved the park from inundation by allowing extensive trapping, saying that trappers were taking "hundreds, if not thousands" from the park every year.

This record gives us reason to wonder about both EuroAmerican and Native American influences on Yellowstone beaver in at least two periods between 1830 and 1880, and thus to wonder about the fortunes of the beaver thereafter. If during the trapping era beaver were substantially reduced (or, as Russell suggested for the Lamar Valley, essentially eliminated), then the beaver numbers of the 1870's may have been a reflection more of that earlier event--that is, a response to that event--than representative of prehistoric numbers. If Norris was right that beaver numbers were greatly reduced in the 1870's, then the history of beavers in the park area since then must be evaluated with extreme caution.

For example, the poacher Ed Howell, apprehended in 1894, maintained that clandestine trapping was still routinely conducted at that date. In an interview published in *Forest and Stream*, Howell reportedly said this:

There are trappers in the Park all the time during the fur season. I occasionally saw men fishing, and one of them I knew was trapping and used the fish line as a blind. The soldiers did not see through his device, for it takes a mountaineer to see all the signs (*Forest and Stream* 1894).

If trappers not only reduced beaver in the 1870's but kept their numbers down until nearly the turn of the century, then the reported irruption of beaver after 1900 becomes an even more interesting event.

The historical record of beaver after this period is confused. Skinner (1927) estimated there were 10,000 in Yellowstone Park, but two years later Sawyer estimated about 800 (Seton 1929). Warren (1926) studied the beaver of the region around Yancey's Hole at a time when the population was thought to be causing a "problem of overstocking" and was also thought to be in the process of destroying the aspen on that portion of the northern range.

Recent investigators (Glick et al. 1991) have used the 1920's as a benchmark by which to emphasize current low levels of beaver numbers in Yellowstone National Park, when, as Warren reported, the 1920's appear to have been a time of exceptionally high beaver numbers. It is difficult for us, without more historical information and the assistance of ecological specialists, to evaluate these apparent swings in beaver abundance in Yellowstone, but it is clear that not enough attention has been paid to human-caused reductions of beavers, perhaps in the early 1800's and certainly in the 1870's, the consequences of which must have been substantial. Considering the beaver's ability to influence riparian landscapes, these reductions should be of interest to ecologists attempting to understand the changes in those landscapes on the Northern Range since the 1870's.

Mountain Goat

We counted one reported sighting of a goat, near the northeast corner of the present park area in 1864 (Vaughn 1900:35), by a party of men who had not seen a goat before. This sighting, though of considerable interest, is not conclusive because of the possible confusion of a goat with a bighorn sheep. We also counted one general statement of mountain goat presence in the park, Calfee's (1896:2) problematic statement that he could find a mountain goat within five miles of Mud Volcano. If mountain goats occupied the park area during the early historical period, they were apparently quite rare.

CONCLUSIONS

We offer two sets of conclusions. The first concern the historiography of this material, that is what the historical accounts have taught us about their nature as evidence.

1. As a general rule, the more accounts that are evaluated from a particular party's experience in the park, the more the story of their experiences with park wildlife is fleshed out. One observer in a group frequently noted animals not noted, or even observed, by another member of the same group. On rare occasions, members of the same group disagreed dramatically about wildlife observations, but most of the time they corroborated and complemented each other's accounts.
2. There were sometimes large differences in the success of different parties in the same year at observing wildlife.
3. Large, noisy parties were able to frighten wildlife and decrease their chances of observing it; members of those parties often saw more wildlife when traveling alone.
4. The behavior of animals when first observed by, and observing, early travel parties was widely variable. Sometimes animals fled, sometimes they didn't.

5. Most writers of accounts of the park prior to 1882, with a few notable exceptions among sportsmen, were far more likely to discuss the park's most famous features (geysers, waterfalls, canyons, and the lake) than they were to report on animal observations. Multiple accounts from single parties suggest that animal observations were often incidental. This leads us to a general conclusion that reports of wildlife observations--whether of tracks, actual animals, or other evidence--in these early accounts will tend to understate the number of animals observed.
6. The historical record as used by previous investigators, and limited to no more than two dozen accounts, is perilously slight for the purposes of more than anything but the most general of comments about animal presence and abundance.
7. Even the much larger historical record we employed in the present study lacks the depth or resolution to allow accurate estimates of animal numbers. The record is not sufficiently detailed, for example, to allow us to say with any confidence that elk numbers on the Northern Range during any given year in that period equalled, exceeded, or were less than, at present.
8. The historical record will, however, allow for meaningful general impressions of the relative abundance of various species of animals over the course of the period 1830 to 1881, and in the case of some species, may permit arguable hypotheses regarding their comparative abundance then and now.

Here, then, are our conclusions about the abundance and distribution of wolves and other species in the period 1830 to 1881.

1. Wolves were present and distributed throughout the present Greater Yellowstone Ecosystem.
2. Other predators and scavengers, including mountain lions, bears (both species), wolverine, coyote, fox, and smaller mammals were present. In the case of mountain lions, their numbers or willingness to encounter humans (or some combination of the two) made them more evident to travelers than they are today. Wolverine and fox may have been more abundant, and coyotes less abundant, then than now.
3. Almost all (more than 90%) observers who commented on the abundance of wildlife in the park area expressed the belief that it was very abundant. This included almost all of the observers who did not actually see many animals. For a combination of reasons, including the observation of tracks and other signs, communication with other travelers and residents of the area, and some received knowledge or standing presumptions, even those who did not personally see animals in numbers assumed them to be present.
4. Elk were widely distributed throughout the park area, and were observed, often in groups and occasionally in large herds, in every portion of the park where such

observations would be expected today. Bighorn sheep may have been more abundant then than now, especially in the earlier part of the period. Mule deer were common. Bison were present in several parts of the park, and still survived in the hundreds in 1880. Moose were common in the southern part of the park, and were even rarely reported near or on the Northern Range. White-tailed deer were never common, and mountain goats apparently did not occur in the park.

5. The historical record suggests that the park was winter range prior to 1882, and at times this winter range was occupied by large numbers of animals. After 1882 the historical record is clearer, and even more convincing that thousands of animals wintered in the park. Then, as now, severity of winter conditions had a great effect upon the number of animals present.

6. The combination of skin-hunting, recreational hunting, subsistence hunting by residents, carcass-poisoning, and commercial trapping dramatically affected the wildlife regime in Yellowstone in the 1870's. The apparent effects included a great reduction, perhaps even the near-extirpation, of wolves, and a great reduction in beaver. Other effects that might be inferred but which are not supported as clearly by the historical record include reduction of smaller carnivores, especially wolverine and fox. The effects of these human activities on the native ungulates are less clear, but probably included short-term reduction in numbers, and changes in habits, movements, or distribution to adjust to increasing numbers of visitors along popular human travel routes.

The historical accounts, then, will not provide satisfaction for those who want precise answers to such questions as, "How many wolves and elk were in the park in 1800?" They do, however, provide an important piece of the puzzle when used fully and carefully. We hope to refine these interpretations with future research, especially in the period between 1882 and 1916.

We offer a last impression, not about the park but about the Greater Yellowstone Ecosystem. As we reviewed the accounts of early travelers to this region, we were often struck by their reports of wildlife abundance: large herds of pronghorn to the west and south of the present park area and down the Yellowstone River Valley; vast bison herds along the Yellowstone River on the north edge of the Ecosystem and smaller herds in many other locations in and near the park; large herds of elk along the Yellowstone River, along the Rosebud and the Clark's Fork, in the Shoshone to the east of the park area, and elsewhere around and in the park.

Frank (1990), in an evaluation of herbivory on Yellowstone Park's Northern Range, said that, "It is surprising that this study represents only the second ecosystem possessing a large complement of its native large herbivore fauna where primary production and consumption have been measured. The novelty of such data is likely a reflection of the woeful worldwide rarity of these ecosystems." To that we would add an equally troubling thought, that by their very rarity these ecosystems tend to look unusual even to educated

observers; the perturbations and even destruction that humans have visited on such ecosystems generally occurred before the ecological sciences were out of their infancy.

There is a sad irony here, one that the park has often suffered under as America has attempted to care for it. Today, there is considerable public conviction that Yellowstone is in some sense overpopulated with large animals. No doubt there is still much to learn about these animals and their range, and there is ample evidence that EuroAmericans have tampered with both in significant ways. We still have a lot to learn, and don't yet fully understand just what effects we have had here. But the irony remains that, if those early travelers returned today and traveled across the Greater Yellowstone Ecosystem, they would probably tell us that as far as the animals go, the park is the only place that still looks right.

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ADDENDA AND ERRATA NOTES

to

THE DOCUMENTARY RECORD OF WOLVES AND RELATED WILDLIFE SPECIES IN THE YELLOWSTONE NATIONAL PARK AREA PRIOR TO 1882

Paul Schullery and Lee Whittlesey

August 1992

INTRODUCTION

We include below some additional accounts of park wildlife prior to 1882 that we have gathered since the preceding report went to press. These additional sources provide us with no reason to change any interpretations. In some cases they reinforce interpretations made in the report, and in others they simply add more details. We follow the same format used in the report, presenting the accounts chronologically.

1796

Jean Baptiste Trudeau (also spelled Truteau), a Canadian voyageur, left a document describing the upper Missouri Valley and related drainages in this year. He said this about the Yellowstone River:

At fifty leagues above the Gros Ventres, to the west of the Missouri there discharges a large river, called the river of the Yellowstone, which is almost as broad and deep as the Missouri. This great river has its source in the mountains of rocks [Rocky Mountains?] in the western part. Its banks are well supplied with wood. There are found firs, pines, North American firs, birches, cedars, and every other tree. The buffalo and other wild animals rove in herds along its banks. Many little rivers that flow into it abound in beaver beyond all belief (Nasatir 1952:381).

1835

In our review of the journal of the trapper Osborne Russell, we omitted one important reference from his account of July 29 in the Lamar Valley. In our report we said that Russell mentioned meeting local Indians and acquiring "a large number of Elk Deer and Sheep skins from them of the finest quality" (Russell 1955:27). We neglected to quote the rest of the statement however, which continued as follows: "...and three large neatly dressed Panther Skins in return for awls axes kettles tobacco ammunition etc." (Russell 1955:27). This is an important early reference to mountain lions in the Lamar Valley area. Russell's description of the mountain lion later in his journal (Russell 1955:130) makes it clear that he could distinguish it from other species of cats, so we have no reason to doubt that these were in fact mountain lion skins.

1870

In our review of the accounts left by the Washburn-Langford-Doane party of this year, we neglected to cite one important reference to evidence of wildlife. On September 20, the day after leaving their camp at junction of the Gibbon and Firehole Rivers, the party headed down the Madison River Valley. Probably west of the present park boundary, Doane made the following observation along the Madison River:

In the narrow bottoms are numerous small lakes swarming with water fowl. The river channel is extremely crooked and full of islands and the woods abound with game of various sorts (Doane 1970:376-377).

1873

We review a number of accounts of the slaughter of game in the park in the 1870s. Additional accounts by locals include this one by a prominent local citizen. On November 4, H.R. Horr, a resident of the upper Yellowstone Valley, wrote to the Secretary of the Interior as follows:

I have the honor to report that there are several parties now in the Park engaged in the killing of game solely for their skins. They leave the Elk and Deer where they were slain simply taking the tongues and skins. If this indiscriminate slaughter of game in the Park is allowed to be _____ [word unclear] in two years the game will either be killed or driven out of the great Park. I would suggest that Mr. Jack Baronette now residing near his bridge not far from Tower Falls be authorized by you to act in the _____ [word unclear] and keep hunters from slaughtering the game (Horr 1873).

On December 9, 1873, a group of 71 Montana citizens, most from Bozeman, sent a petition to the Secretary of the Interior stating that "the preservation of the great national Yellowstone Park demands the appointment of a salaried commissioner and assistants, and an appropriation by Congress for the building of roads through and for protecting said park" (H.R. Exec. Doc. 241:6). They explained their reasons as follows:

We are urged to this request by the vandalism that is rapidly denuding the park of its curiosities, driving off and killing its game, and rendering it a disappointment to all those who desire to see this grand domain left in a state of nature (H.R. Exec. Doc. 241:7).

We find in these and subsequent accounts below substantial additional evidence, agreed upon by many local citizens, of the widespread slaughter of park wildlife in this period.

1874

On May 25, H.R. Horr again wrote to the Secretary of the Interior, reporting that "parties are now engaged in catching Buffalo, Elk, & Deer Calves, while others are

hunting for skins, i.e. they take nothing but the skins from the game killed leaving the meat a total waste" (Horr 1874).

1877

On April 18, Philetus Norris wrote to the Secretary of the Interior, offering his services on behalf of the park. Norris was appointed park superintendent later that year. In his letter, Norris noted the need for an "agent of the Government to prevent wanton slaughter of the beautiful and valuable animals," stating that he based this observation on his "recent extended explorations" (Norris 1877) in the park. We assume this refers to his second, 1875, visit.

1878

On February 11, Philetus Norris notified the Secretary of the Interior that "Bison, Elk, antelope, bighorn sheep, and other beautiful and valuable animals have been slaughtered by the thousands merely for their _____[word unclear; probably "tongues"] and _____[word unclear; probably "hides"] (Norris 1878).

In April of that year, another group of Montana citizens, 148 in all, sent a petition to the Secretary of the Interior, complaining of the "unquestioned constant destruction of _____[word unclear] and valuable animals, and wanton spoilations [sic.] of the matchless wonder within the Yellowstone National Park, and requesting additional protection for it (Montana citizens 1878).

1880

Beatrice Avery, a resident at that time of Pony, Montana, visited the park this summer as part of a large party (30 wagons and some horseback riders). She was 9 at the time of her visit. In a reminiscence interview conducted many years later, she said that "we had all the fish and game we wanted..." (Park County News 1953).

Superintendent Norris wrote to the Secretary of the Interior on October 20, stating in part that he had "a good supply of Elk and Bear meat..." (Norris 1880).

1881

In the preceding report (p. 1-135), we quoted an article by Francis Francis, a British travel writer, in which he expressed disappointment in hunting in the park. Since completing the report, we have found a more extended version of the Francis visit, in his book *Saddle and Moccasin*. In this version, the story continues through his visit to the southern part of the park and beyond. Somewhere near the southwest corner of the park, Francis reported that he saw and shot a bull elk, and also saw white-tailed deer (Francis 1883:32). He also said that "although tracks were fairly numerous, we saw no game" (Francis 1883:33-34). This seems to suggest that not all of the park area was "a mistake," as Francis asserted in the other reference, but that Francis's own fortunes as a hunter were not as good as he would have liked.

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ERRATA

As of August, 1992, we are compiling a list of minor typographical errors. Only two errors of substance have come to our attention so far.

Page 1-143, fourth paragraph, first line, the quotation should read, "two sour-looking..." not "two dour-looking..." This quotation was correctly given on page 1-81.

Page 1-157, second paragraph, first line, the sighting of the goat occurred near the northwest corner of the present park area, not the northeast.

