

A History of Native Elk in Mount Rainier National Park

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PREFACE TO THE 2004 WEB EDITION

I researched and wrote this report as a contract researcher for the National Park Service in 1983. Distribution by the National Park Service was limited to a few administrative and file copies, as far as I know. My project was part of a much larger research initiative then underway in Mount Rainier, to investigate several aspects of elk ecology and distribution in the park. It was a special treat to be associated with this fine team of specialists.

This report was the largest study I had yet undertaken in the fields we now know as environmental history and ecological history. For the most part I am still satisfied with it. At the very least, it is a reasonably thorough compendium of the relevant sources of wildlife information from an all-too-remote and poorly documented period in the history of an important national park. At best, it still seems to me to address most of the basic issues, both historical and historiographical, that must be faced in such a quixotic inquiry as recreating an ecological setting from fragmentary written records of often dubious reliability. Besides, it was a lot of fun, and I think the stories it tells still are.

I will offer a thought or two, however, based on my experiences with ecological history research since 1984. The question of what influenced the numbers and distribution of native elk of the Mount Rainier region prior to the creation of the park has often come to mind, and I have many times thought about how I dealt with that question in this report. I am most surprised that neither I nor any of the others who studied the early history of elk in Mount Rainier seem to have given much consideration to the possible influences of introduced European diseases—both human and livestock—on the region's biological community in the eighteenth and nineteenth centuries.

I was well aware of the catastrophic impact various European epidemics had on native people throughout the New World, and (as my discussion of bighorn sheep population declines in Appendix IV suggests) I was also aware of the potential effects of imported domestic livestock diseases. The lapse in my analysis is thus mystifying to me, but there it is. In the late 1700s and early 1800s, epidemics repeatedly swept through many parts of western North America. Human populations were in many locations substantially reduced, then hit again and again by subsequent waves of any of several lethal diseases. Native political and cultural institutions sometimes collapsed or were restructured.

The effects of this relentless series of disasters (which have been justifiably called the "American Holocaust") on the ecological setting were potentially profound. Among many other things, they could have included dramatic changes in the abundance of certain wildlife species that had been released from some or all human hunting pressure. Given the limited state of our knowledge of human civilizations in this region prior to white settlement, our chances of sorting out just how this complex situation played itself out are fairly slim. But at least we can recognize that exotic diseases are very likely another complicating factor in our attempts to determine how elk fit in the historic ecological scene. I hope that some other student of Mount Rainier's history might consider the question, and I also hope that the information in the present report will serve such a study well.

On a less satisfying note, I am amused to see that at certain points in the text I seem to subscribe to a view of ecological systems as tending toward some ideal or inevitable "balance," a notion I have since learned to distrust if not generally discard.

I should also note later publications that resulted from this study. I informally recounted this research project in a popular article, "Sketches from Nature: Lumping the Elk," *Country Journal*, 1988, 15(2):68-

70. This then appeared as a chapter in my book, *Pregnant Bears and Crawdad Eyes: Excursions and Encounters in Animal Worlds* (Seattle: The Mountaineers Books, 1991). My extensive review of early accounts of the Mount Rainier area enabled me to collect many of the most interesting such accounts into a book, *Island in the Sky: Pioneering Accounts of Mount Rainier* (Seattle: The Mountaineers Books, 1987). The information and experience I gained by conducting this research was of use to me in a number of other projects, but especially in a more recent book, *Lewis and Clark Among the Grizzlies: Legend and Legacy in the American West* (Guilford, Connecticut: Falcon Press/Globe Pequot, 2002).

Thanks to Harry Butowsky, energetic manager of the [NPS history website](#), for his pursuit of so many documents and books that would otherwise never have a chance at such a large and enthusiastic audience as he has attracted.

Last, thanks to Jean McCreight, of Bozeman, Montana, for typing the text of this report into a computer so that it could be placed on the NPS history website.

What follows this preface is, as far as I know, the exact text of the original 1984 report.

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INTRODUCTION

Mount Rainier National Park was established in 1899 to preserve the scenic beauty and geological values of one of this continent's premier volcanic peaks. A second important value perceived by early proponents of the park was the spectacular beauty of the subalpine meadows that encircle the peak; John Muir called them the "lower gardens of Eden" (Muir 1888).

Even before the establishment of the park local residents expressed concern about excessive killing of game in the area; once the park was established protection of wildlife became a pressing concern of administrators. Elk have often been foremost among those concerns.

Few records of elk in or near the park in the early 1900s have been uncovered. Following a series of introductions of elk from the Rocky Mountains starting in 1912 near the present park, administrators perceived a gradual increase in elk numbers and occasionally expressed alarm that the park was being invaded by "exotic" elk. In 1962 a wildlife census flight over the east boundary of the park revealed hitherto unacknowledged numbers of elk, and since that time park administrators have been greatly concerned about the heavy use of the park, particularly (in recent years) the subalpine meadows for which the park is so famous.

Though extensive research into the movements and other activities of these elk has been conducted in recent years, basic underlying questions have remained.

One has been the uncertainty expressed in many quarters about the exact classification of the elk in the park. Though it is widely agreed that present elk numbers are predominantly the result of the transplants that have occurred since 1912, there is considerable confusion over the distinction being made between native elk, traditionally classified as Roosevelt wapiti (*Cervus elaphus roosevelti*), and introduced elk from the Rocky Mountains (*Cervus elaphus nelsoni*). Current studies, the results of which will be available soon, are questioning the traditional distinction between the two animals. As is summarized by Dunnagan (1983), "analysis of skull morphology and of protein electrophoresis (a blood and tissue analysis) suggest that they are not different subspecies."

There is, incidentally, more than a little irony in the prospect of the two animals being reclassified as one. C. Hart Merriam (1897) named the Pacific Coast elk for Theodore Roosevelt, in honor of the latter's many contributions to our knowledge of the hunting and natural history of American game. Roosevelt, however, carried on a cordial debate with Merriam for many years, and was as avid a "lumper" as Merriam was a "splitter." Upon reading of some new grouping of wild animals, Roosevelt once remarked "I have certain instincts which are jarred when an old familiar friend is suddenly cut up into eleven brand new acquaintances" (Roosevelt 1983).

A second uncertainty has involved the historical status of elk in Mount Rainier National Park. As this paper will report, many writers have maintained that the native elk did not use the park area, and many others have maintained that they did. The primary purpose of this report is to evaluate the evidence and make some judgment on the question of whether or not elk were native to the area currently in Mount Rainier National Park.

The foremost responsibility of managers to the natural resource of a national park is to maintain it in as near pristine a condition as is compatible with other park purposes, especially human use and enjoyment of that resource (Houston 1971; Leopold, et al. 1963). The presence of any exotic life form in a park is

cause for concern, and becomes particularly so when that life form shows signs of threatening native life forms or causes management conflicts with neighboring agencies. Recent studies of elk in Mount Rainier (Bradley and Driver 1981; Bradley 1982) have explored the management options available to managers in Mount Rainier based on those researchers' conviction that elk were not "part of the resident fauna at the turn of the century." Management of the elk as an unavoidable exotic can differ in some important respects from managing those same animals as natives, of course; as part of the current studies of the elk the Park Service has included a thorough review of the historical evidence to establish, as well as possible, the presence or absence of elk among the pristine native fauna of Mount Rainier.

The following report is primarily the result of a literature search of both published and unpublished materials. The bibliography will suggest the breadth of the search. Routine searches of scholarly journals of obvious regional concentration (such as the *Oregon Historical Quarterly*, *Pacific Northwest Quarterly*, *Washington Historical Quarterly*, and *The Pacific Northwesterner*) and of more popular magazines of that time and since (such as the *Sierra Club Bulletin*, *Mountaineer*, *Mazama*, *The Coast*, *Out West*, and the *Northwest Illustrated Monthly Magazine*) were supplemented by surveys of key mid- and late-nineteenth century sporting periodicals of national interest (*American Turf Register and Sporting Magazine* and *Forest & Stream*). Of particular use in tracking down early accounts of the park and nearby areas were several detailed bibliographies: National Park Service, Western Museum Laboratories, *A Bibliography of National Parks and Monuments West of the Mississippi River* (U.S. National Park Service, 1941); National Park Service, Branch of Interpretation, *Bibliography of Mount Rainier National Park* (National Park Service/Public Libraries of Seattle and Tacoma, 1937); and the bibliographies compiled by Haines (1962), Smith (1964), and Thompson (1981). In addition to periodicals, a thorough search of books relating to the park was made, including especially travel accounts of the years before 1915; many of these are listed in the bibliographies, and many others proved unfruitful.

The extent of use of archival materials and newspaper files is more difficult to express because so little of what is examined is finally used. The earliest territorial newspapers were checked for material on the mountain or on elk activity or hunting, as of course were many later papers as referenced by previous authors. Again, the bibliography is illustrative of the types of materials covered.

The field notes of early survey parties were of especial value, being our most accurate link with the status of park fauna as early as 1897. The most useful of these notes were located—by long distance—at the Smithsonian Institution Archives, and are listed in the bibliography. Extensive searches of other archival materials, such as the administrative archives of the park and the really rich McWhorter collection at Pullman, were occasionally fruitful.

Where questions arose a number of knowledgeable people were consulted, many of whom are thanked and listed in the acknowledgments.

In several cases lines of communication have been established with researchers in related fields who may come up with information relevant to the subject of this report at some time in the future. If that happens I will of course notify the park.

CHAPTER ONE: ELK NEAR MOUNT RAINIER BEFORE ITS EXPLORATION

The presence of elk in or near the central Cascades of Washington prior to the arrival of white men has been suggested by several writers, most giving only the vaguest of explanations and not attempting to establish numbers or habits. Larsen's remarks concern the Yakima Valley:

Early records indicate that elk were once native residents of the Yakima River drainage. The exact species is unknown and the date of when the last animal disappeared is questionable. It is probable that they had left before white settlement. Evidence of their existence is based upon weathered relics and the reports of local Indians. (Larsen n.d.)

Larsen's report is apparently based on Mitchell and Lauckhart (1948), as follows:

History and a few weathered relics bear witness to the early existence of elk in the Yakima River drainage on the east slope of the Cascade Mountains in central Washington. Just what species existed there or exactly when the last animal disappeared is unknown. It is known, however, that this occurred before the arrival of the first white settlers.

We will turn to the suggested disappearance of the elk "before the arrival of the first white settlers" later in this report.

Other modern writers have discussed the range of the elk in the Cascades. Murie (1951) believed that elk did not originally inhabit the Columbia Basin but occupied the Cascades. Graf (1955) quoted Washington State biologist Burton Lauckhart as saying in 1943 that elk originally occupied the Cascades; Lauckhart was apparently uncertain about the exact extent of that occupation, and was in any case more concerned with the population status in 1943. Dalquest (1948) also maintained that elk were present, apparently in good numbers, in the Cascades. Taylor and Shaw (1927) maintained that "the Roosevelt elk is probably the species which formerly occurred throughout the Cascade Mountains."

These and other authors established in the literature the conviction that elk were indeed native to the Cascades, but did so with caution and uncertainty about numbers and range. It is with an equal degree of uncertainty that we must approach an investigation of elk presence in any one area of the Cascades, such as the region near Mount Rainier.

Summary of Archeological Evidence

Prehistoric levels of elk must have varied, as do modern levels of wildlife, depending on the hospitality of the habitat. Variations in climate, occurring gradually or abruptly, would naturally affect levels of wildlife populations. Therefore it is probably impossible to establish, even if information were available for the last 12,000 years, any single "natural level" of elk use.

Because of hospitable conditions the presence of elk in prehistoric times west of the Cascades is assumed by most authors. However, Gustafson (1972) has argued as well for a similarly common presence of elk in the Columbia Basin east of the Cascades:

Elk bones, along with those of deer (*Odocoileus spp.*) and pronghorn antelope (*Antilocapra americana*), are among the most common faunal remains found in archeological sites throughout the Columbia Basin.

The fragmentary, and often fire-charred, remains of this species testify to the fact that elk were a major source of food for people living in this arid region. Elk bones are common in all cultural sediments throughout the last 10,000 years, even in the most arid parts of the Columbia Basin. The Columbia Basin is not included in the range of modern elk, yet its frequency in archeological sites argues that this species must have been more than a casual wanderer into this region until recent times. Elk remains from archeological sites include teeth, skull fragments, and bones of the feet. These probably would not have been transported any great distance, so they are best interpreted as having come from the vicinity of the site rather than from the mountainous region surrounding the basin proper.

Daubenmire (1970) has suggested that the numbers of grazing ungulates in eastern Washington have gradually declined for at least 2,000 years:

Bison became extinct about 2,000 years ago. By the time the first white men came to eastern Washington, any antelope that might still have been present were very few and confined to the driest part of the steppe. The few deer and wapiti remained close to the forest border or to riparian thickets, and a few bighorn sheep lived on the basaltic ledges of the Columbia Valley from Grand Coulee southward. Thus the niche for grazing ungulates seems to have been fairly well occupied in late glacial time, but then became abandoned progressively.

Similar climatic conditions may have applied generally to the Columbia Basin, including the lowlands immediately to the east of the Cascade crest near Mount Rainier. Reports of the first white surveyors and explorers in the area seemed to support this, and will be examined later.

Paradoxically, determining the presence of elk in and around Mount Rainier in the last few centuries is sometimes more difficult than establishing earlier presence. Archeological investigations can be confounded in studying the recent past because such recent sites are often obscured by later—even present—uses and are furthermore within the range of plows and similar equipment. Thus, our knowledge of elk presence in the Mount Rainier area since, say 1500, is primarily based on anthropological evidence.

Very little archeological work has been done in Mount Rainier National Park itself, by no means enough to establish anything affirmative or negative about elk presence there. This may be partly because many archeologists have been attracted to richer coastal sites, but it also could be "in part attributed to the difficult terrain and almost impenetrable vegetation." (Lewarch, Reynolds, and Jermann 1975) of much of the region. The tentative examination of the Fryingpan Rockshelter by Rice (1965) mentioned only deer bones, which have since been reexamined and reclassified as bighorn sheep bones (Gustafson pers. comm.). Much more work at all elevations is necessary in order to establish even general patterns of human use and elk exploitation by humans in the present park area in ancient times.

Summary of Anthropological Evidence

A brief overview of known human-elk interactions involving native American groups near Mount Rainier is useful for understanding levels of elk presence. The present discussion will be limited primarily to the period before whites first explored Mount Rainier.

Elk were not a primary food source for tribes in the Mount Rainier area; fish most often assumed primary importance, often supplemented by sea mammals among Puget Sound tribes (Thomas and Toweill 1982). Haeberlin and Gunther have summarized the variations in food habits among Puget Sound tribes:

The tribes of this area subsisted chiefly on roots, berries, fish and meat. The chief tribal differences in regard to food were the proportion of seafood to meat. For instance, the Nisqually who lived on the Sound had large quantities of clams, while those of the interior only secured them occasionally through trading camas and dried meat for seafood. The Snohomish lived principally on seafood and, in contrast to the Snuqualmi, did little hunting. The Snuqualmi were the best hunters of the Puget Sound tribes and went far into the mountains on snowshoes in pursuit of game. There was much trading in food as well as in other things between the Snohomish and the Snuqualmi. The Skagit carried this even further. They were also good hunters and after drying large quantities of meat, they would load it on canoes and travel down the Sound, trading their stores of meat for other supplies. (Haeberlin and Gunther 1930)

We can assume from this a certain trade in elk meat, which probably increased the actual harvest of elk beyond the needs of those tribes whose lands supported elk in good numbers. The demands of this trade may have thus kept elk numbers lower than would seem necessary to meet the needs of tribes most known for hunting.

Only a few tribes or tribal groups are of immediate concern to a discussion of the Mount Rainier area. Terms like "boundary" and "territory" are used guardedly in the following generalizations and recognized for their limitations; individuals and groups often intermingled, and the edges of a tribe's perceived "territory" may have been more a matter of geographical necessity than formal decision.

To the east of Mount Rainier were the Yakima and Kittitas, who used the Yakima valley and probably considered the Cascades the western limit of their domain, though they crossed the crest frequently to hunt and trade. The Nisqually, who occupied the land to the south of the Nisqually River from the Sound to the present park area, also seemed to have considered the crest their boundary in the Cascades (Smith 1940). And, like the Yakima, they frequently crossed it. The Puyallup were most properly the "proprietors" of Mount Rainier; at least the bulk of the mountain itself occurred within the borders of Puyallup territory (Smith 1940). Their north border in the vicinity of the mountain was the White River, and their south border was the Nisqually (Haeberlin and Gunther 1930). Like the Nisqually, the Puyallup had the crest of the Cascades for an eastern border (Smith 1941).

These three tribal groups—the Yakima/Kittitas, the Nisqually, and the Puyallup—occupied land that now comprises the entire Mount Rainier National Park. Other tribes nearby—the Muckleshoot and Snoqualmie to the north and the Cowlitz and Klickitat to the south—were also close enough to use the park and any elk that may have existed in it.

Yakima/Kittitas

The label "Yakima" was imposed by anthropologists on a "nameless but identifiable group" of people in the Yakima Valley east of the present park who did not perceive themselves to be a single political unit. Ethnohistorian Morris Uebelocker has summed up the historical attachment of the Yakima groups to elk by saying that these groups "see elk as something that's been there forever" (Uebelocker, pers. comm.). Studies currently underway by Uebelocker should provide much more detailed information on elk presence and use in the Yakima Valley, but use of elk by Yakima groups was noted as early as Lewis and Clark (Thwaites 1969). According to Lyman (1919), they hunted elk regularly, not only on the plains but in the Cascades. McWhorter (1923) recorded at least three customs relating to elk, particularly to the handling of freshly killed elk; these customs were apparently of long standing, in effect prior to the first introductions of elk from the Rocky Mountains. Warren (1968) documented a probable antler wedge and other elk materials from the Wenas Creek site east of the Naches River.

Yakima and Kittitas traded regularly with tribes west of the Cascade crest (Lewarch, Reynolds, and Jermann 1975; Prater 1981), crossing both north and south of the present park. It could be that some of the elk artifacts and recorded elk uses were the result of that trade rather than the result of native elk in residence east of the crest, but considering the widespread acceptance of prehistoric elk presence by Yakima tradition we should assume that the Yakima Valley did contain some elk and that the Yakima groups were accustomed to using them.

Nisqually/Puyallup

These two tribes shared many of the same habits regarding elk. They used clubs made of elk horn, split cedar planks with elk horn wedges, wrapped bodies in elk and deer hide for burial, made "parfleches" of untanned elk skin for use as containers, and of course ate elk (Haeberlin and Gunther 1930). Their hunting methods were described by Smith (1940);

Deer, elk and some bear were taken with snares set up along the runways. A spot was chosen from near a grove of hazel. A strong young hazel was twisted from the upper end, in the same way as when making withes, as far down as possible. The sapling was bent over, a noose was made, tied with a slip knot and fastened to the ground. Several of these nooses were set along the runway, close together, and the animal could not escape them all. When its legs were caught, the saplings jerked erect and the animal was frequently lifted right off its feet. The entire root system of the trees used for the nooses lent their strength to keeping the animal ensnared. Hunters often drove deer toward snare set-ups of this type so that their watchfulness was dulled.

When game and fresh food were scarce, four or five men of the same village might make a "surround," i.e., leave separately for distant points, move on different paths to an appointed spot, separate again and reunite at another spot.

As a whole, however, hunting was a one-man occupation, a hunter going out alone or taking with him only a young relative for instruction. Regular hunters used bows and arrows to kill game. Care was taken to make the shot effective. Standing targets were preferred and when a deer or elk bounded away it could frequently be brought to a stop and made to turn in curiosity if the hunter gave a shrill whistle (Smith 1940).

Hunt (1916) elaborated on another form of hunting known to be practiced by the Nisqually:

The site of South Tacoma and the vicinity were known as "Cahk-humd." The Indians used to build corrals or traps of logs and brush about bogs where elk and deer were wont to drink and find tender shoots. The Indians surrounded the bogs, and with the assistance of the traps cornered and killed the animals. Such a trap, or "cahk-humd," once stood in the bog to the south and east of Rigney Hill.

In 1833 Dr. William Fraser Tolmie encountered three "Tekatat" (probably Klickitat) families a dozen or so miles northeast of Fort Nisqually, in the heart of Nisqually-Puyallup country. He recorded in his journal that "their sheds were made of bark resting upon a horizontal pole supported at each end by tripods & showed an abundance of elk's flesh, dried, within. Two kettles were filled with this & after smoking my indians made a savage repast on the meat and bouillon..." (Tolmie 1833)

Other Tribal Groups

The other tribes near the present park—the Snoqualmie, Muckleshoot, Cowlitz, and Klickitat—were all known to use elk. Of these, as mentioned earlier in the quotation from Haerberlin and Gunther (1930), the Snoqualmie were considered the "best hunters of the Puget Sound Tribes." The Cowlitz were reported by Curtis (1913) to be efficient elk hunters, especially in winter. Jermann and Mason (1976) reviewed references to Cowlitz hunting activities, pointing out that Cowlitz used elk hides for garments and shields. Furthermore, Cowlitz groups traded meat of elk as well as consuming it. According to Smith (1964) both Muckleshoot and Klickitat were good hunters and presumably used elk when available. We have already noted Tolmie's reference to Klickitat eating elk meat near Fort Nisqually, and the famous guide Indian Henry, after whom Indian Henry's Hunting Ground was named, was variously reported as having been a Klickitat, Cowlitz, or a Nisqually.

From this brief survey of archeological and anthropological sources, we can assume that elk were present in that portion of the Cascade Range near Mount Rainier as well as in the lower country both east and west of the park. We cannot safely generalize about either their numbers or their distribution, but it would seem logical to assume, based on this known presence of elk in the vicinity of the mountain, that at least some elk were using appropriate habitats within the present boundaries of Mount Rainier National Park.

Comments on Historical Information about Elk Habits and Range

The likelihood of prehistoric elk use of the Mount Rainier area would appear to be buttressed by developments in the twentieth century. When, after 1900, native elk were regarded as almost gone from the Cascades, elk from the Rocky Mountains were repeatedly introduced near the park. These animals very quickly began to show up within the park; their ability to use the park in great numbers today is, of course, the cause of the present management dilemma. But long before the changing land use practices that Bradley and Driver (1981) have described, and which have been blamed for the great increase in elk numbers in the park since the 1950s, some elk were using the park regularly.

Though it will be up to ecologists and managers to settle the issue of whether or not the transplanted elk use the park as the native elk would have, a few observations are in order based on the historical record. The record is revealing in at least two specific issues, elk migration and available winter range.

It has been suggested that native elk did not have the same "migratory habit" that the introduced elk have displayed, and that for this reason the introduced elk may be using the park differently, or more intensively, than native elk would have (National Park Service 1977). Both modern and historical evidence seem to contradict this thesis. Consider, for example, the elk of Yellowstone Park, which were used for many of the transplants and which have long been famous for their extended migrations. Though many elk in the northern Yellowstone herd do indeed make lengthy seasonal migrations, some herd members remain on the high summer range all year (Houston 1982). Others are year-round residents on low elevation "winter" ranges. Moreover, the Madison herd, having their needs satisfied in the upper Madison drainage of Yellowstone Park, are formally described as "nonmigratory" and move very little during the year (Craighead et al. 1973). As well, Houston (pers. comm.) reports that some native elk in the Olympic Mountains of Washington travel considerable distances seasonally. In these cases the tendency to migrate seems to be a function of need rather than simply an inherent drive to move seasonally.

Murie (1951) suggested that before native elk were hunted heavily and denied unhindered access to traditional summer range in low country, such longer migrations may have been common. Murie cited comments by Suckley and Gibbs (1860) and Cooper (1860), to which I add Gibbs (1855):

Elk are found in the Rocky, Cascade, and Coast ranges of mountains. They are most abundant on the last mentioned chain throughout its whole course through Oregon and Washington Territories. In the latter they are especially abundant on the headwaters of the branches of the Chehalis river, and also upon the northern slope of the Coast Range, back of Port Discovery and Sekwim Bay. Near the last locality they are very abundant during winter, being driven down by the snows on the mountains. They run in large droves, following well beaten trails, and at that season are an easy prey to the hunter. In January, 1857, two men in the vicinity of Sekwim Bay killed eleven fine elk in one day (Suckley and Gibbs 1860).

The elk is abundant in the dense forests of the Coast Range, and found in less numbers in the other wooded portions of the Territory. It is very wary, and difficult to kill at most times, but is often shot on the small prairies, near the heads of rivers, where it feeds in the evening and early morning. In severe winters, also, when they leave the mountains, and in large herds descend to the warmer prairies along the coast, they are tracked in the snow to their lairs, and shot. Many frequent these prairies every winter, returning in early spring to the mountains (Cooper 1860).

Of game, there is but little left. The deer and elk are almost exterminated throughout the country, the deep snows of winter driving them to the valleys, where the Indians, with their usual improvidence, have slaughtered them without mercy (Gibbs 1855).

These vague accounts do not of course establish anything precise about the migratory habits of native elk, but they do suggest that seasonal migrations of some length were fairly common among these elk before white influences began to limit their range more than natives may have.

In another regard, historical records of the distribution and abundance of elk range require reevaluation. An important issue in modern elk management in Mount Rainier National Park is the extent to which modern land practices have altered elk use of the park, specifically the possibility that extensive clearcutting of forests near the park boundary in the past thirty years have provided additional winter range, thus making summer use of the park possible for greater numbers of elk (Bradley and Driver 1981). The historical records on the levels of elk near the park, especially to the north and northeast, provide illuminating examples of the treachery of the available evidence.

Though historical accounts generally agree with Bradley and Driver (1981) that "the historical vegetation from the crest of the Cascades to the foothill area of the Puget Sound trough" was "an endless blanket of conifer vegetation," those same accounts are not conclusive about the presence or absence of wildlife. For example, Bradley and Driver (1981) cite Johnson (1850) and Winthrop (1913), both of whom reported the region along the northern boundary of the park to be practically barren of wildlife. Winthrop's account is perhaps the most illustrative of the strengths and weaknesses of these early records. It is worth a careful examination here and will be discussed in another context later.

Winthrop's *Canoe and Saddle* was apparently a very popular travel book in the 1860s, and was praised for the liveliness of the writing and the excitement of the experiences recounted. Winthrop traveled up the White River Valley in 1853 in company with a native guide, crossing Naches Pass and coming down Wenas Creek to the Yakima Valley. According to Bradley and Driver (1981), Winthrop "was only able to shoot one grouse for food during his trip and his horse almost starved for lack of palatable forage." This

oversimplifies what Winthrop actually reported. For example near Naches Pass he and his guide visited an open area identified as the prairie of "Sowee, mighty hunter of deer and elk, terror of bears" (Winthrop 1862). Within two days after that Winthrop shot at a bear, further evidence that the country was not without large game.

The true test of Winthrop as evidence comes in reading his journals of this trip. The journals were published as an appendix to a later edition of his book, and they undermine not only his published description of the region he traveled but also his very reliability as an observer. I quote at length from this journal, which was the working material for the writing of the book. We join him Saturday, August 27, shortly after he left the road from Fort Nisqually. He left the fort on August 25.

The road ended, and we climbed by the trail up terribly steep hills, with the first grand view of Rainier, the summit of which, seen at this angle, is saddle-like, and perhaps smoking, with a huge cavity below. The high buttresses of the snow-peak are covered with the profoundest forest that one can conceive.

The splendid prairies on top of the pass are like a Swiss Alp after late snows. From here on, the road is very bad—hardly well blazed,—with a steady descent, occasionally over little mountain grass prairies. I pick up an exhausted United States horse, fallen under a log. Encamp late on Sowee's prairie. I had shot four fine grouse, which were spoilt dried, Indian fashion, before fire. Find water in a little swamp.

Sunday August 28. Start at 5 a.m. Valley of the Nachchese becomes more open; fine grass, with scattered yellow pines; rather desolate. Sometimes the mountains came very near, making a canyon of the valley; and we were then obliged to take to the hills. Early came to a deep, cool, green pool in the river; water clear, differing from that of the White River, on the west side, which was muddy white. Sometimes these hills become too steep for vegetation, and their slopes are rock slides, along which the terrible path leads among the wildest scenes imaginable, with gigantic, precipitous, ragged, burnt cliffs overhead. The rocks are of the richest red brown. The sky is brilliant. Minter starts up from under a bush. [J.F. Minter, member of McClellan's survey party] Noon; horses eat pea vines. McClellan rides up well. Descending the valley, the plains become broader, covered with fine bunch grass. Just at evening, come upon Captain McClellan's camp, in a very wide plain. Now we ride fast, among hills that are rolling masses without forest, and by the side of the river rushing over its rocks. Splendid immensity of landscape. It is an unfinished world, this; and when the next great convulsions come, who knows what places we shall take? The sun set clear, and the light of evening was grand over the broad view. A bear is seen by my guide, who follows. At 9:30 we encamp just on the river; sleep on the stones. The wind blows a gale. Picturesque fire; wild night.

Winthrop was a typically romantic adventure writer of the time, and in the case of his trip over the pass he evidently embellished the hardships considerably. In the course of this two day record of what was the roughest part of the trip (according to his book), he found prairies and grass on both days, and found water on both days as well. No doubt the forest was often quite dense, but he, like Johnson, traveled an established route used by the Indians and therefore perhaps less likely to show large game than other country nearby. Still, he did manage to kill four (not one) grouse. Worse, the stirring encounter he and his guide had with the bear (according to his book), seems not to have happened.

William Brackenridge, a botanist who accompanied Johnson across Naches Pass in 1841, also reported bears near the upper end of the White River Valley:

Game on these mountains is exceedingly scarce, and although we had three excellent Indian hunters in our party, and could also do a little in the shooting line ourselves, yet up to this time only one Deer and three or four Grouse had been killed; tracks of Bears had been observed several times but none seen (Brackenridge 1931).

As we will see later, early accounts of the Mount Rainier area by explorers and surveyors unanimously agreed that game was scarce. Many of these other early accounts were more reliable than Winthrop, but none were based on careful surveys beyond hurried trips across great stretches of country. For that reason we should not be too quick to assume that elk were practically nonexistent. It is easy enough to travel through good game country without seeing game; it would be even easier to do so when traveling through mediocre game country.

The greater question of the amount of open country suitable for elk range north of the park was addressed by some of Winthrop's contemporaries. The exploring party sent out from Yelm in 1853 (to look over the route of the road from there up the White River to Greenwater and down to the Bumping River) were optimistic:

The whole of the proposed route is well watered and affords good grass. The valley of the White River contains many most beautiful and rich prairies—and the summit of the mountain being almost a continual chain of prairies (Edgar, et al. 1853).

It is safe to assume that these local citizens were not without boosterism in their attitudes; they desperately wanted the road put through, as did everyone in Puget Sound. But they were not in a position, as some commercial interests may have been, to simply lie in order to paint the brightest picture possible, considering that their report was prepared for their hometown newspaper and that their friends and neighbors would prosper or suffer depending on its accuracy. And, as early Washington historian Edmond Meany pointed out, for all the complaints made by Winthrop and others about how difficult the pass was, the first group of pioneers "hacked out a wagon road over the pass in three weeks of the month of October" (Meany 1912).

Concerning the country to the north and west of the present park, Bagley (1982), reminiscing about 1856, remarked that "at that time the prairies in Thurston and Pierce Counties were much larger than now. The forests have since taken over more than half their area, as the soil is so poor that after a few years of use they become worthless as farms." No doubt most of the prairies Bagley was referring to were in or near the Puget Sound trough, as were the lands discussed by Tolmie in 1833 when he set out for Mount Rainier. Shortly after starting his trip, he traveled about eight miles north of Fort Nisqually (which would have put him near the shore of Puget Sound somewhere near the later site of Fort Steilacoom), from which he could look south and "see the broad plain extending southwards to Nusqually" (Tolmie 1833). According to Haines (1962) this area became more or less solid forest in later years, as "moderation of climate since that time has assisted in the forestation of the once relatively open Nisqually plain." Another reason—besides climate—for the prairies being larger at that time is found in early reports that Puget Sound tribes burned forests either to chase elk into the open or to maintain open hunting grounds (Chittenden and Richardson 1904). The effects of this greater amount of open country in the Puget Sound trough on elk numbers can not be estimated at this point, but increased habitat in the lower country near the present park area would seem to lead to greater numbers of animals available to move into higher country in or near the park.

Early descriptions of available elk range and early estimates of animal abundance are difficult to interpret. Interpretation is made more difficult by variations that occur over time in any natural setting. But the early accounts are useful as cautionary guideposts when we attempt to generalize about ecological conditions on the basis of informal travel accounts. Winthrop and others of his time disagree on basic elements of the ecological story, yet they are our only firsthand evidence. Their general agreement in the matter of game being scarce may not be absolute proof that there was little game in the mountains, but it does lead to some intriguing conjectures on the causes of game scarcity, which is the subject we will turn to now.

Possible Effects of Native Tribes on Elk Numbers Since the 1730s

The tribes of the Pacific Northwest were only lightly visited by whites before the 1830s. When, for commercial and scientific reasons, whites began assessing wildlife numbers in the area around Mount Rainier, they expressed surprise to find that these numbers were quite low. Moreover, they were inclined to attribute those low numbers to overhunting by tribes in the area. These early assessments seem also to imply that overhunting was a relatively recent phenomenon, though they did not elaborate on that implication or on its possible causes. Notable examples of these early assessments follow.

Johnson, who traveled across Naches Pass in 1841 as part of the Wilkes Expedition, described the Yakima groups as follows:

This tribe subsist chiefly upon salmonid and the camass-root: game is very scarce and the beaver have all disappeared (Johnson 1850).

Brackenridge, who accompanied Johnson, also commented on the shortage of game, not imagining how productive the Yakima Valley could become under cultivation:

Our route still lay close upon the Eyakema which flows through one of the most barren countrys it has ever been my lot to witness (Brackenridge 1931).

In 1844, Father M. Demers, writing generally on what he called "the Territory of the Columbia," was apparently discussing Washington and Vancouver when he said that "Wild animals have been more abundant than they are at present; elk, deer, caribou have become rare..." (Demers 1956).

Captain George B. McClellan of the Pacific Railroad Survey traveled up the Yakima Valley to Naches Pass in 1853. He and his group explored at least some of the tributaries of the Yakima and made a reasonable effort to examine the region. He reported his disappointment:

The country through which we passed to the east of the Cascade range may be described as generally barren and unfit for agriculture, and poor for grazing purposes.

And, later in the same report:

The Indians are harmless and peaceable; with the exceptions of the Tekamas they are very poor. Their food consists of salmon, berries, and potatoes; the entire absence of game renders it difficult for them to obtain good clothing; during the whole trip I did not see a single deer, elk, or bear - nothing larger than a wolf. Wolves, badgers, squirrels, and a few gray marmots, were the only quadrupeds. The blue and ruffed grouse, prairie chickens, and sage-fowl abounded (McClellan 1855).

This particular trip was made in late August and early September (Albright 1921), when the elk, if present in the area, might have been in higher country for the summer.

Gibbs, also a member of the survey, has been quoted previously on the conditions of wildlife. He observed that "deer and elk are almost exterminated throughout the country," and that the "Indians, with their usual improvidence, have slaughtered them without mercy." He seemed to be referring to the country of the Klickitat, who lived south and east of Mount Rainier. He elaborated on conditions in other areas in the same report, noting that "of game the Yakima country is as destitute as that of the Klickitats—so much so that ten deer-skins will purchase a horse" (Gibbs 1855). In another report evidently written about the same time but not published until 1877, Gibbs shifted his discussion to the tribes on the west side of the Cascades, of whom he said that "game furnishes to but few of them any considerable item... Elk and deer are hunted to a certain extent, chiefly by the bands nearest the mountains" (Gibbs 1877). In the same report he noted that their principal foods were "fish, roots, and berries."

J.G. Cooper, a naturalist on the Pacific Railroad Survey during the same period (1853-1855), was quoted earlier concerning elk migrations. He continued his remarks with a statement that seems to imply that elk were only recently reduced in numbers:

In some places the Indians formerly surrounded the herds, and by gradually narrowing their circle, succeeded in killing many (Cooper 1860).

Taking these accounts at face value it would appear that for some reason, presumably not long before the writers arrived in the region, native tribes greatly reduced the numbers of elk and other wildlife. Larsen (n.d.) and Mitchell and Lauckhart (1948), mentioned earlier, espoused a similar viewpoint for elk in the Yakima Valley, where they believed the animals to have disappeared before the first whites arrived.

Were these early accounts based only on the personal observations of the writers they might have less credence than they do in this case because they were also based on perceived shortages of wildlife products among native groups.

None of the accounts appear to be directly based on information given the writers by the natives; no report quotes a native as saying that game was more common in the recent past. This leaves open the possibility that game had been uncommon for many years or for centuries. After all, we know that some tribes were dramatically reduced by disease late in the 1700s, thus making it even less likely that in the course of their regular activities they would have wiped out much of the wildlife in the area. Yet there remains the possibility that the observations of these early writers were to some extent true; furthermore, the circumstances of the eighteenth and nineteenth centuries do admit the possibility of long-established balances between native people and wildlife having been disturbed. Three events could have influenced the balances; the development of the fur trade, the introduction of firearms, and the introduction of domestic livestock. These will be discussed next.

The Fur Trade

The fur trade began to have measurable effects on the tribes on both sides of the Cascades around 1800. The Puget Sound region was frequented occasionally by coastal traders in the 1790s, but "the dense forests east and south of Puget Sound were not productive of many furs" (Phillips 1961) and so the trade was never very heavy in that area. As the various parties interested in controlling the fur trade in the northwest struggled for control, trade was uneven, competitive, and often likely to take advantage of the

Indians (Morris 1937; Rich 1959), but it does not seem to have been intense enough in the Puget Sound area to have had much effect on the Mount Rainier area (there was often a "ripple effect" of trade, so that regions farther and farther from trading centers gradually became depleted of game as the demand increased; a hide might change hands several times, from the native trapper, through intermediary native traders, and finally to the white trader).

Fort Nisqually was established in 1833 on Puget Sound near the mouth of the Nisqually River by the Hudson's Bay Company (Troxel 1950; Johansen and Gates 1957). The company encouraged the tribes in the area to bring furs in for trade; in the tradition of most trading posts, the actual trapping was left largely to the natives (Saum 1965; Chittenden 1902). Tracing the effects of the fur trade on elk populations in the vicinity of Mount Rainier is simplified by the apparent preference of most of the involved tribes, even the Yakima and Klickitat east of the divide (Glauert and Kunz 1976), for trading at Fort Nisqually. If white-encouraged hunting of elk reduced elk populations, the evidence should have turned up in the form of hides or meat at the fort. By providing the natives with commercial incentives and possibly firearms, the Hudson's Bay Company could conceivably have reduced elk numbers substantially in a relatively short time.

Elk hunting on a scale sufficient to effect such a reduction cannot be proven by the records of Fort Nisqually. The "Journal of Occurrences at Nisqually House" was kept religiously, tallying fur trade activity, but the surviving copies (Bagley 1915; Fort Nisqually 1835-1839) suggest that trade in both meat and hides of elk was slight. The figures are difficult to determine exactly, but it is safe to say that fewer than 100 elk hides were recorded for the period 1833-1839. As well, very few purchases of elk meat (100 pounds is the largest) were made in the same period. One of the reasons for the difficulty of establishing exact numbers of hides is that some tallies were listed monthly and others were greater accumulations that were being prepared for shipment. The monthly tallies do not always add up to the larger tallies. This may be in part because, in the words of Johnson (1850), who observed the operation in 1841,

It appears to be the practice of the Company to buy all the skins that are brought in, in order to encourage the Indians to procure them. At Nisqually, Mr. Anderson informed me that many were brought in that were afterward destroyed as they were not worth transportation (Johnson 1850).

The differences in the tallies could be a reflection of the destruction of bad skins, but even if twice as many were brought in as were finally shipped the number would still be too small to represent a major reduction of elk numbers in the region.

By the 1840s the fur trade was in sharp decline. Wilkes, writing in 1841, observed that trade was well past its peak:

All the profits of the Company depend upon economical management, for the quality of peltry in this section of the country, and indeed it may be said for the fur-trade on this side of the mountains, has fallen off fifty percent within the last few years. It is indeed reported, that this business at present is hardly worth pursuing (Wilkes 1850).

Fort Nisqually was in fact within a few years of its establishment far more important as an agricultural station, where crops and domestic stock not only proved more commercially viable than fur trading but also quickly removed the need for trade in wild meat. So common was domestic meat at the fort that by the time James Longmire arrived with other settlers in 1853 Dr. Tolmie (by then Chief Factor for Fort Nisqually) simply gave the settlers an ox-cart load of beef, refusing payment (Longmire 1932).

Firearms

The arrival of firearms, separate from the incentive to kill game for the fur trade, could also have affected elk population levels in the early years of the 1800s, but available evidence does not indicate it did so. As noted previously, the tribes most involved with hunting near Mount Rainier were primarily fish-oriented in their food habits and remained so even after white settlement (until agricultural habits were forced upon them). Firearms were also of greatest use to tribes in the habit of warring frequently with neighbors, which the tribes we are concerned with did not do. It has been noted that many tribes regarded firearms as objects of status and weapons of war much more than as tools for hunting (Ewer 1972). In many circumstances primitive trade guns were not as effective, and certainly not as rapidly fired, as were native bows.

Lewis and Clark encountered armed, unfriendly Indians at the "Lower Dalles" of the Columbia, evidence that trading was well underway on the river by the beginning of the nineteenth century. It continued and increased in the next twenty years, and firearms were a point of contention among the competing white traders. The British regularly complained that the Americans were recklessly trading both guns and liquor to the Indians, a practice that allowed the Americans to outbargain their British counterparts while arming potentially hostile natives (the British and Russians signed a treaty in 1825 that "forbade both nations to sell spirits, fire-arms, gunpowder, or other warlike stores")(Rich 1959). Once into the trade network, however, a gun could travel great distances, just as horses, tools, and smallpox moved along similar routes. Most tribes in the Mount Rainier area certainly had access to a few firearms after 1810, though it was reported (Ruby and Brown, 1981) that the Cowlitz had no guns as late as 1814, and as late as 1824 "the Puget Sound peoples had changed little since their initial contact with white men. They had bows, arrows, spears, and bludgeons, but few guns" (Ruby and Brown 1981).

One reason for the shortage of firearms in this area may have been the need for greater security. After Fort Nisqually was established and through the 1830s there was great concern among Hudson's Bay Company men that warlike tribes from the north might attack (Ruby and Brown 1981). Guns were occasionally sold at Fort Nisqually, but appear not to have been a major trade item. Pace (pers. comm.) believes that Yakima groups acquired most of the guns they had through trade with coastal tribes and at Fort Nisqually, and probably did not use such guns enough for hunting to seriously affect wildlife populations.

The extent to which tribes of the foothills and uplands near Mount Rainier may have used firearms is unknown. As mentioned earlier, both Cowlitz and Snoqualmie were known to be excellent hunters and to trade in meat. These two tribes would have been in the best geographical position to take elk from winter range near the present park, and it is possible that they could have hunted these areas (the Snoqualmie in the White River Valley and the Cowlitz on the upper Cowlitz and Ohanapecosh) with firearms for more than a decade before the arrival of the traders at Fort Nisqually, and in that time could have done considerable damage. Considering their location on trade routes between tribes to the east and the tribes of the Puget Sound—tribes that did not have many firearms—it seems more probable that not many guns were available to these foothill tribes.

The historical record does not offer persuasive evidence that the fur trade or the arrival of firearms seriously altered the population levels of elk in the vicinity of Mount Rainier. Increased ease of hunting under some circumstances and increased incentive for obtaining skins (either by hunting or by trade with other tribes) almost certainly caused some individuals to kill more game than they otherwise would have. Unfortunately, so little is known of the degree to which Indians may have suppressed elk population levels *prior* to the coming of white influences that we have no basis for comparison. As far as the effects

of the fur trade on elk populations, we may assume that it increased hunting at least slightly and may therefore have had a minor effect on elk numbers. Perhaps in concert with other effects, to be discussed later, the fur trade played a role in causing the paucity of game reported by the early white explorers and surveyors.

Domestic Stock in the Mount Rainier Area

European influence on many native American cultures began with the horse. Though horses were not an important part of life for Puget Sound Cultures (Ray 1939), the tribes of the Columbia obtained their first horses from tribes to the south early in the eighteenth century. Groups in the Yakima Valley had horses by 1730 (Roe 1955; Haines 1938; Pace pers. comm.). Some tribes along the lower Columbia reportedly had thousands of horses (Fuller 1928) and the Yakima were known to be rich in horses as well (Haines 1938; Jermann and Mason 1976).

The presence of horses in the Yakima Valley could have affected elk in any of several ways. As the native people became more mobile they may have had convenient access to previously unused hunting grounds, or to more regular trade with skin-working groups elsewhere. With greater mobility might have come a greater need for portable shelters constructed of skins. And the horses themselves might have competed directly with elk for food.

The horse does not seem to have led to major changes in the territory hunted by the Yakima; though mobility was increased they still faced traditional constraints of tribal boundaries. They may have traveled more frequently or more quickly to their established hunting grounds. They were, after all, traders before the arrival of the horse, accustomed to crossing the Cascades regularly.

The grazing competition between horses and elk is difficult to evaluate, in part because we know so little about the distribution or numbers of elk in the Yakima Valley. According to Daubenmire (1970), grazing pressure by Indian horse herds in eastern Washington was typically restricted to "the vegetation adjacent to the villages that were strung out along rivers." Presumably a similar situation would have occurred in the Yakima Valley. Horses were closely tended to prevent theft, which would occur often if the animals were allowed to roam. If elk were present near those same sites they would undoubtedly be competing with horses, but elk would probably not occur in numbers so near well-established villages because of hunting pressure. If, as Daubenmire has suggested for eastern Washington (Daubenmire 1970), ungulate numbers were low for reasons of climate, the horses may have had little competition for grazing in any case.

It does not seem, then, that domestic livestock had a significant effect on elk numbers, especially west of the Cascade crest, before white men arrived. Far greater influence was had by introductions of domestic stock by whites during the settlement of the Oregon Territory.

Oliphant (1968) has reviewed the development of the cattle and sheep trade in the territory from the first unsuccessful attempts by Spaniards to establish a herd of Cattle at Neah Bay in 1792. When George Simpson became Governor of the Department of the Columbia for Hudson's Bay Company in 1824 he introduced stern, far-reaching reforms in the rather relaxed management of the fur trade there. Probably no reform was as far-reaching as his commitment to making the posts not only as agriculturally self-sufficient as possible but also commercially profitable by the marketing of their produce and livestock. The growth of livestock herds in the vicinity of Fort Nisqually was surprisingly rapid considering the small human population of the area. By 1841 there were "more than 600 cows and more than three-

thousand ewes" being grazed near the fort and on the Nisqually plains (Oliphant 1968). The amount of cultivation at Fort Nisqually was not large—only about 100 acres in 1845 (Oliphant 1968)—but the herds continued to grow. In 1844 "nearly seven thousand pounds" of wool was shipped from the fort, and in 1854 the total was over thirteen thousand pounds (Bagley 1982). At the same time, by 1854 Dr. Tolmie reported that sheep were occupying all available pasturage on the Nisqually plains, and so he took 3,600 south to near Eugene, Oregon (Bagley 1982). The Indian Wars of 1854-1855 did not slow this growth for long, and in the 1860s the Puget Sound Agricultural Company (the organization that ran the farm operations) held "from 5,000 to 8,000 head of cattle and from 6,000 to 10,000 sheep, also 300 head of horses," most being grazed on the Nisqually plain (Bagley 1982).

The destruction of the grazing lands of the Nisqually plain has been discussed by Bagley (1982), who maintained that the damage was not done by the Puget Sound Agricultural Company but by later settlers:

Much has been written of the cattle and sheep of the Company destroying the indigenous and highly nutritious bunch grass of the Nisqually Plains. I do not think this indictment will lie. If there ever were a set of men who did things on a methodical and prudent scale, it was these early Hudson's Bay people, so long as they were in control of affairs there. It was their custom to keep their sheep in bands of about five hundred, each band under the charge of two men, which were under the supervision of a white shepherd, who resided at an out-station. Each of these had from two to four of these bands to care for. The sheep were carefully parked every night, and the parks or corrals moved every two or three nights, thus keeping the ground enriched, and at the same time from being overpastured to the injury of the grass... After the white settlers secured most of these lands this intelligent care of the grazing ended. In the 'seventies there were probably not less than thirty thousand sheep scattered over the prairies, as well as thousands of other stock, and as they were there during the spring and summer the grass had no chance to seed and was soon eaten down to the roots so that the hot summer sun and drying winds killed it out completely in a few years, and a growth of worthless grass and weeds has taken its place (Bagley 1982).

Of course these damages being described were primarily in the Puget Sound trough, many miles from Mount Rainier. However Blankenship (1914) and Bagley (1982) reported that one result of this heavy grazing was the occurrence of wild cattle herds that ranged the woods, some becoming so wild that it took a skilled hunter to track them down. These may have ranged farther east, and had some unmeasured effect on elk grazing closer to the mountain, just as the great herds described above surely did in the trough itself.

After 1860 the pace of settlement increases the difficulty of distinguishing causes and effects related to elk numbers and their possible reductions. By 1870, the period during which Bagley (1982) claimed the Nisqually plains were being overgrazed, there were 24,000 whites in Washington Territory, most west of the Cascades (Bagley 1924).

Settlement of any significance did not approach the present park boundaries until the 1880s. In 1884 James Longmire, long familiar with the upper Nisqually region, built his first cabin in the present park at Longmire (Thompson 1981). He engaged in minimal cultivation, had little livestock, and hunted regularly. To the north, the White River Valley remained largely undeveloped. As late as 1884 Smalley (1885) saw only "a few settlers" established in the upper White River Valley. To the south the transplanted Appalachians who settled the upper Cowlitz region in the 1880s found little ground suitable for cultivation (Clevenger 1938; Tompkins 1933) and left no record of finding elk though they frequently hunted deer and bear with their dogs. It seems unlikely that these small settlements near the present park engaged in enough livestock raising to significantly reduce available elk forage.

To the east the Yakima groups were known to have large numbers of cattle by the 1850s (Oliphant 1968), though many were lost in the wars from 1854 to 1858. The famous chief Kamiakin lost "thousands of horses and a large number of cattle" (Splawn 1917) in these wars. Again, we can assume that this livestock had some influence on vegetation, and if elk were still present in the Yakima Valley in the 1860s they were probably finding themselves crowded out of much of their range. By the 1880s, population pressures were increasing here as well as in the Puget Sound trough, so that by 1886 a promotional article on "Ellensburg and the Kittitas Valley" could report a wholesale conquest of the foothills by domestic livestock:

Mount Tacoma, the monarch of the Cascade Mountains, just shows its white crest above the nearest wooded ranges. All the lower slopes of the mountains are covered with bunch grass and the cattle and horses of the valley farmers have free range and pasturage upon them. Thus the two hundred and fifty square miles of the valley are by no means all the land the settlers can make use of, the unfenced mountain ranges being of almost equal value (*Northwest Illustrated* 1886).

This brief summary of livestock development in the region around Mount Rainier illustrates the growing complexity of the incursions on wildlife habitat that were occurring because of cultivation, herding, and, ultimately, population growth. After 1870 it becomes increasingly difficult to separate out any one cause from another as the above land uses, coupled with timber harvest, mining activity, hunting, and recreational activities of various sorts, made life more and more difficult for the remaining elk of the Cascades.

But setting aside the developments after the arrival of the first surveyors and exploring parties for the moment, we have seen that little evidence exists to support the beliefs of those first writers that Indians had recently wiped out the game. At least none of the white-introduced influences should have been responsible. No evidence has been found that elk were present around Mount Rainier in great numbers immediately prior to the arrival of the horse on the Columbia Plateau or the arrival of firearms in the Puget Sound trough. If, as historical accounts suggest, elk were scarce around Mount Rainier in the early 1800s, we must look for other reasons besides sudden increases in Indian hunting activity shortly before the arrival of white men to account for that scarcity.

Demise of the Elk in the Cascades after 1860

Among the common species of big game, the elk is quite often the first to disappear from an area being settled. Elk conveniently gather themselves in open places every autumn, then advertise their presence by bugling:

It was easier to kill Elk than Deer because they were less shy. They betrayed their whereabouts by whistling. They were easier to hit, and, in much of the range, could be pursued on horseback. They were more easily killed than Buffalo because, when alarmed, they ran not far; and one shot, well placed, would down the elk. Thus, of the three, the Elk was the first to disappear in a given locality (Seton 1929).

So it seemed to be in Washington, where elk disappeared quickly from the vicinity of any settlement. The last elk reported killed near Seattle died in 1869 (Denny 1901), by which time settlers rarely noted elk in their journals of life in the Puget Sound trough, and virtually never recalled them in later reminiscences of that area (for example Blankenship 1914; Bagley 1905; Hunt 1916; Loutzenhiser 1949; Longmire 1917;

Prosch 1894; Prosch 1910; Tanis 1952; Trotter, Loutzenhiser, and Loutzenhiser 1937; Washington Pioneer Association 1904).

Accounts of pioneer life say little about elk, but most say little more about deer or other wildlife. It is clear, in any case, that some elk survived in various parts of the Cascades until well after the turn of the century. Perhaps one reason so little attention was paid these remaining animals was the far greater—and more easily hunted—population of elk on the Olympic Peninsula, the hunting of which frequently became a public issue in the 1890s (*Washington Standard* 1891; Jenkins and Starkey 1980).

Even quite late in the century some popular authors maintained that elk occurred generally in the Cascades (Victor 1891; Shields 1899), and some specific reports supported that contention. Coleman (1869) reported elk hunting by Indians "at the foot of Mt. Baker" in 1869, and Edson (1916) reported that the elk was apparently only recently gone from that mountain in 1916. In 1898 the State Fish Commissioner reported on the status of elk in the Cascades and the Olympics:

The section within the limits of the Cascade mountains and contiguous territory contains great numbers of several varieties of deer and a limited number of elks, mountain goats, and mountain sheep. The western part of the state, within the section embraced by the Olympic mountains and its spurs, contains a great many elks and deer of several varieties. In years past the elks ruthlessly have been killed during the deep snows, and if the hunter is allowed to employ the same methods in the future, this, the noblest species of game found within our border will become extinct or nearly so (Little 1898).

At that time it was legal to kill two elk per season.

Two years later the Commissioner complained that the laws did not permit him to gather sufficient information on game harvest to determine the status of game animals (Little 1900); records were kept only intermittently for some years after that, varying with the county (Washington Historical Records Survey Project 1940).

The milestone document in this period of elk history in Washington is probably C. Hart Merriam's description of "Roosevelt's Wapiti," published in 1897. In it Merriam discussed the range of the elk, particularly referring to the Cascades:

But the southern limit of its range is of far less consequence than the eastern limit, for the important question is, Do or do not the ranges of the Rocky Mountain and Pacific coast wapiti come together. Apparently they do not. Some of the old reports state that the Pacific elk formerly inhabited the Cascade range in Washington and Oregon. But even in this case the Cascades are separated, except at the north, by the full breadth of the Great Basin and Plains of the Columbia (Merriam 1897).

Merriam, then believed that elk were entirely gone from the Cascades by 1897. The collections of elk material made by the U.S. Biological Survey in Washington state in the late 1890s—at least those that found their way to the National Museum—contain specimens only from the Olympic Peninsula. It was presumably this collecting work upon which Merriam based his belief (U.S. Fish and Wildlife Service 1983). Merriam had, in the summer of 1897, led a survey and collecting party from the Yakima Valley into Mount Rainier (Taylor and Shaw 1927). This party collected no elk or elk specimens on either side of the Cascades (A.K. Fisher 1897a; 1897b; 1897c; 1897d; W.K. Fisher 1897; V. Bailey 1897a; 1897b). In a 1900 map, "Range of Elk in 1900," Merriam included only the Olympic Peninsula and the extreme southeastern corner of the state within the known elk range at that date (Roosevelt, et al. 1902). Writing in

the same volume with the map, T.S. Van Dyke observed of the elk that "on the great plains and lower slopes of California, as well as in the more open woods of the Coast Range and the beautiful upper slopes of the Cascades, he is probably gone forever" (Roosevelt et al. 1902).

In response to the reported slaughter of elk on the Olympic Peninsula, the Washington state legislature closed all elk hunting in 1905 and kept it closed until the 1920s (Thomas and Toweill 1982; May 1965). As early as 1916 the state's Chief Game Warden reported that the Olympic Peninsula was the only place "where the Roosevelt variety is to be found," noting that "So great in number have they become that it has been reported to me by agents of the United States Government as far back as a year and a half ago that they were dying of starvation" (Darwin 1916).

Despite the convictions of these authorities, there were continuing reports—or at least continuing suspicions—of native elk in the Cascades from the time of the first introductions of Rocky Mountain elk all the way up to the present. As we will see momentarily, some of these reports have involved Mount Rainier National Park itself.

Graf believed that as late as the 1950s the elk "in the Mt. St. Helens District of Skamania and Cowlitz Counties" may have been native elk:

I think Leo Couch reported that they were from introduced Montana stock, but as a result of my investigations I am of the opinion they are a remnant of the native Roosevelt variety that remained in this portion of the Cascade Mountains (Graf 1955).

Twight reported that some native elk may have occurred south of Mount Rainier National Park, and therefore in the park, in the 1960s:

Some of the elk in the Ohanapecosh Valley and the Backbone Ridge-Nickel Creek area may be the Roosevelt subspecies rather than the Rocky Mountain Elk. This was the opinion of Mr. Burton Louckhart of the State Game Department in a personal comment to me last summer. He seemed to feel that some Roosevelt Elk from the Green River-St. Helens area herds have worked their way up the Cowlitz River. This may account for some of the large heavy antlered animals seen here in the park and in the Packwood area. Mr. Louckhart seemed to think that these two subspecies might be inter-bred in this area also (Twight 1965).

Weisbrod (1971) made a similar suggestion, and Scharpf (pers. comm.) believes that native elk have persisted to the present in the Packwood area. It has also been suggested that populations of elk using the western side of the park "may be crossbred with the Roosevelt elk (*Cervus elaphus roosevelti*), which was probably native to that portion of the park" (U.S.N.P.S., n.d.).

The consequences of this proposed survival of pockets of native elk may be unimportant for current practical management of the elk population, but the possibility that native and introduced elk have interbred to some extent presents interesting philosophical challenges to managers concerned about use of the park by animals that some judge to be "non-native," and equally interesting technical challenges to biologists attempting to resolve the classification of the native elk.

Historical accounts of elk numbers in the Cascades near Mount Rainier are in general agreement that the animals were not numerous; no reliable accounts speak of large herds, or of evidence of heavy elk use of

the country near the present park. If anything, elk numbers were even lower by the time regular visitation to the park area by whites began. We can now turn to the park itself, and records of elk there.

CHAPTER TWO: NATIVE ELK IN MOUNT RAINIER

Indians and Elk in Mount Rainier

The prehistory and history of Indian use of Mount Rainier has been thoroughly presented by Smith (1964), Daugherty (1963), McIntyre (1952), and Thompson (1981). Tribes from all directions made occasional use of the park, some frequenting the same areas in great numbers every year. Most use was concentrated around "hunter-gathering camps near important huckleberry fields at an altitude between 3,000 and 5,500 feet" (Thompson 1981). Though we can assume that use of this intensity must have had some effect on the numbers of whatever wildlife was being hunted, there is virtually no evidence that these Indians were hunting elk specifically. The record is vague and inconclusive on the point, though both deer and goats are mentioned specifically in some accounts. For that reason I will mention only one specific elk reference, one of some consequence because it occurred at the very beginning of white involvement with Mount Rainier itself.

In 1833 Dr. William Fraser Tolmie received permission to leave Fort Nisqually for ten days to make "a botanizing excursion to Mount Rainier" (Tolmie 1833). As has already been pointed out, along the way he visited Indians whose dwellings contained much elk meat. More important, his guides accompanied him to the vicinity of the mountain because they wished to hunt for elk:

We were 6 in number—I have engaged Lachalet for a blanket & his nephew Lashima for ammunition to accompany me & Nuckalkut a Poyallip (whom I took for a native of Mt. Rainier) with two horses to be guide on the mountain & after leaving the horse track & Quilniash his relative, a very active strong fellow has volunteered to accompany us—The Indians are in great hopes of killing Elk, Chevreuil & Lachalet has already been selling & promising the grease he is to get—It is in great measure the expectation of finding game that urges them to undertake the journey (Tolmie 1833).

Though this statement is by no means incontrovertible proof of elk presence on the slopes of Mount Rainier in 1833, it is suggestive of the presence of elk near the mountain at that time. The party followed a route up the Puyallup and the Mowich to the present park boundary and beyond. They found no elk (or at least Tolmie reported none, and as a scientist we could expect him to have done so), and we are left to wonder where along the way the Indians actually expected to encounter them. When they were still some miles from the present park boundary Lachalet—perhaps because of bad weather, perhaps because of poor hunting—attempted to persuade Tolmie to turn back, but later, when Tolmie was considering turning back, the Indians encouraged him to continue (Haines 1962). Their failure to find elk on this trip is no proof that elk were not there; judging from the reported enthusiasm of the Indians, they were accustomed to finding elk somewhere near the mountain. The effort they were willing to expend would suggest the strength of their confidence; one must wonder that even at that early date they would travel so far and be willing to carry elk meat back so far.

Ultimately, Tolmie's account leaves us uncertain. The elk they sought could have been known by the Indians to occur only halfway to the mountain, rather than on the slopes of the mountain itself. The Indians did not seem to go out of their way, once near the mountain, to hunt. The Tolmie reference is significant for putting elk near the mountain at this early period, but it is not conclusive proof of elk presence within the park.

Indian Elk Legends Involving Mount Rainier

There is one persistent legend relating elk to the slopes of Mount Rainier, a legend that has been used to support contentions that elk were present within present park boundaries during some time remembered by native tribes (Smith 1964). The legend involves a great hunter who sought "hiaqua" (a type of shell money) high on the slopes—perhaps at the peak—of Mount Rainier. He was guided at the beginning of his quest by a spirit, in some accounts an "elk deity," and was, according to some accounts, accustomed to hunting elk on the mountain slopes. While on the mountain top he encountered an elk-head-shaped stone monument, near which he was able to discover a great quantity of hiaqua. When he attempted to return to the low country with this treasure, storms (and sometimes earthquakes) held him motionless until he threw the hiaqua away (Winthrop 1862; Lyman 1905; Williams 1911; Ballard 1929).

Smith (1964), referring to the earliest version of this legend, suggested that the ultimate value of it as evidence of elk presence is in its obvious implications: that a Nisqually (Winthrop's 1862 account called him a "frowzy ancient of the Squallyamish") named Hamitchou would not have told a story so intimately involving elk with the mountain itself—not only an elk deity but the regular hunting of elk "on the flanks of Tacoma"—were there not some basis in fact for these elements of the story. As I have suggested earlier, Winthrop is not the most reliable of sources. This legend must be examined in greater detail.

The transcription, or creation, or publication of native American legends has been conducted quite as often by popular writers as it has by trained historians. The results have ranged from good to terrible, but one need only examine modern children's literature to see how often "Indian legends" are merely convenient literary devices for fiction writers. None of the four versions of this legend that I have located seem altogether trustworthy, since it is possible all four are derived from Winthrop to some extent.

Winthrop's "Hamitchou's Legend" ran twenty-three pages in his book *Canoe and Saddle* (1862) and is a remarkably elaborate retelling of what was supposedly translated for him by Dr. William Tolmie (at Fort Nisqually) from the original statement by Hamitchou. As with his description of the hardships he faced during his trip over Naches Pass, Winthrop's original journal is revealing. His journal entry for the encounter with Hamitchou is worth quoting in its entirety:

Dr. Tolmie told the Indians at Squally that I wanted to go up Mt. Rainier to see Tamanous (as Moses and other seers did). There was a peculiar kind of shell money which they say (Cook or) Vancouver brought to the country. A wise old man, who killed many elk, made a sort of pick of their horns and went to the top of a high mountain to find some of this money, which Tamanous gave him to understand was there. He arrived at the top and found a great lake with much otter, but giving no thought to these he set himself to digging this wampum or hiaqua. He dug twenty strings of it and started down the mountain a rich man. (But riches take to themselves wings, etc.) On his way down he was overtaken by a violent snow-storm, and was in danger of death. To propitiate the tamanous, angry, he threw away one string after the other (the Indian described this with action), but the storm did not abate until he had cast away the very last. He

then returned sadder and wiser, sure that the tamanous of the mountain did not wish his hoards to be taken. Work up artistically (Winthrop 1913).

From the parenthetical remarks and his final sentence it is clear that Winthrop intended to develop these notes into a chapter in his book. We are left, however, with some uncertainties. We cannot tell, for one thing, how much of what he added to this basic outline was merely "artistic" and how much was part of his greater memories of what he actually heard from Hamitchou (even his name is not mentioned in the notes). This brief summary of the legend contained no references to elk on the flanks of the mountain; it only describes the hero as a good elk hunter. Furthermore, though Winthrop initiated the conversation by telling Hamitchou that he wished to go to the top of Mount Rainier, he gives his story only as relating to a "high mountain." We cannot be certain, though it does seem probable, that Hamitchou was actually speaking of Mount Rainier.

Lyman (1909) retold this legend, adding a number of new names for deities and portraying its hero as living on the Cowlitz River. Williams (1911) also placed his home on the Cowlitz. According to Ballard (1929) the story was told by a Puyallup.

From these sources we get an unreliable tradition—hardly even a good solid legend. It would seem unwise, however, to totally discount the legend as historical evidence. Winthrop may indeed have been told by Hamitchou that elk were hunted on the flanks of the mountain. We cannot establish his exact words from the available evidence (any more than we can establish his reliability as a knowledgeable source of information about the mountain), so we must at least entertain the possibility that the original story supported Winthrop's final "artistic" version on that key point. Hamitchou's legend provides no quantitative proof of the presence of elk in the present park area, but it must be taken into account, however cautiously, in the final assessment of elk presence there. In company with corroborative evidence from other sources, such as Tolmie's rather less problematic account of Puyallup elk hunting near the mountain, the legend may have some usefulness after all.

Elk Presence Since the Beginning of White Exploration of the Mountain

The exploration and development of Mount Rainier before 1900 has been studied by Haines (1962), Thompson (1981), Nadeau (1983), Molenaar (1979), and McIntyre (1952). The surviving records of the exploration, settlement, and recreational use of the mountain have some limitations as ecological evidence, especially regarding the possible presence of elk in the eastern half of the park.

Most early visitors, at least those who left a record of their visits, traveled to the park by one route: up the Nisqually River to Longmire's Springs and on by trail to Paradise. Smaller numbers entered the park at other points on the east side, particularly by way of the Carbon and Puyallup Rivers. Of the twenty-eight known ascents or near-ascents of the mountain that occurred before 1894, twenty-five approached the mountain from the southwest corner of the park, most camping at Paradise or in Indian Henry's Hunting Ground. It may be significant, as we will see momentarily, that three of the very few pre-1890 accounts of the north side of the mountain have given us our only mentions of elk during this period. It must be assumed that, if elk were present in the Nisqually Valley during this period they would have been shot at rather frequently, especially after settlement began. Though there was confidence a good road would soon exist to Longmire's as early as 1893 (*Tacoma Ledger* 1893), the following year a travel writer concluded that "to behold the park's beauties one must undertake a genuine 'roughing it' expedition" (Snyder 1894).

This latter remark remained true for the park itself for many years, but in 1893 the locally famous climber P.B. Van Trump pointed out that the route to the mountain was by no means isolated any more:

The tourist to the mountain can now find entertainment for man, if not for beast, nearly all the way along the route from Mishell to the Longmire Springs. The settlers in the district of the Mishell River and along the Mishell mountain and throughout the Succotash Valley now number about 300. Ranches in various stages of development and numerous timber claimants' cabins are seen all along the route from Eatonville to the Rainier Fork of the Nisqually, a distance of twenty-seven miles. When the writer made his first journey to the mountain, in 1870, the whole country was a vast uninhabited wilderness (Van Trump 1893).

These were not the best of circumstances for elk, of course; hunting, cattle grazing, and human population pressures may all have contributed to the disappearance of any elk in the immediate area of the travel route. We must also not forget that only short-term travelers, rather than residents, were in the habit of recording their reminiscences. Furthermore, many travelers had a sort of tunnel vision for the mountain, and seemed in a hurry to get to Longmire's, or Paradise, before settling in to enjoy themselves. Still, they did occasionally mention other large animals in their accounts, and elk are suspiciously absent from those same accounts. They are also absent from the reminiscences of early settlers in the area, as mentioned earlier. On the other hand, only one visitor account came to light from the period before 1900 (Twitmeyer 1891) that said that elk were not present, and even that account suggested that they once were. Appendix III presents early sightings of other large animals taken from many visitor accounts; by comparison, virtually no one reported elk.

One issue here, and to an even greater extent in the lesser traveled and therefore lesser reported eastern parts of the park, is what has been called "negative proof." Historian D.H. Fischer 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). By this line of thinking, we are hard pressed to prove that elk did not exist in Mount Rainier before 1890, because virtually all the evidence we have is negative. Of course as Fischer points out this does not permit us to assume that elk did occur; we have only negative evidence that the mountain supported a relict population of woolly mammoths at the same time, but no one is assuming it did.

A search of accounts of the park before the introduction of Rocky Mountain elk provided little positive evidence of elk there. We will turn to that evidence soon, but first we must evaluate the quality of the negative evidence.

Of greatest interest to modern managers of the park is the status of native elk on the eastern side of the park. Here the evidence prior to the introductions is extremely sketchy. Hunting parties and climbers who left records traveled various parts of the eastern half of the park infrequently before 1912 (for example McWhorter 1917, Brown 1920, and McIntyre 1952). Of the known early accounts the one most impressive as evidence against elk presence was the one produced by Brown, who came from the Yakima Reservation in 1886 with a small band of Indians and, during a break in their hunting, climbed to the main dome by way of Summer Land and Ingraham Glacier. The trip occurred in "the fall," possibly at a time when elk, if present, should have made their presence known along the route traveled, either by sight, sound, or sign. The failure of this party to find game has been used as evidence that elk were not present

in the area (Bradley 1982). Again we must deal with negative evidence, but Brown's account is perhaps more revealing than it at first appears:

We crossed the Cascades through what was then known as Packwood Pass, going north up the Ohanapecosh Valley to the Cowlitz Divide country, a region which the Indians considered one of their best hunting grounds. Finding no game here, we were forced to hunt near the snow line (Brown 1920).

We learn more from this than that elk were not seen. We learn that this was a prime hunting ground for the Indians, who had every expectation, based on previous experience, of finding game of some sort. Not unlike the best hunters anywhere, the Indians sometimes did not find game. It just happened that on this unsuccessful occasion there was a recording witness. It is not clear from the account what kinds of game they expected.

A persuasive reason for not totally trusting negative evidence in this case was provided by the National Park Service in 1962. The present concern over elk numbers in Mount Rainier National Park may be said to date most certainly from census flights conducted by Forest Service Biologist John Larsen in September of 1962. After his flights he notified the Chief Park Naturalist that he counted 466 elk along the eastern boundary of the park, a number all out of keeping with the park administration's ideas of the size of the park elk population (Bender 1962a). The park's response was one of almost total disbelief. The Chief Naturalist remarked that "the Park could not possibly support that many animals" (Bender 1962b). To support their disbelief, park service personnel flew over the same general area on October 16, 1962 and counted "between 25-30 animals" (Bender 1962b). Of course the passage of several weeks in that season was sufficient time for the elk to have moved out, and Larsen's count was eventually substantiated (Twight 1965). The point is that in 1962, when Mount Rainier National Park received over 1.9 million visitors and had a full-time year-round staff of considerable size, many elk were present without people noticing it. Even when the park was presented with evidence, disbelief ruled the day for quite a while. How reliable then, can a few early hunting or climbing accounts—the most accidental sort of historical record—be for this same region?

Unfortunately, we have little more to go on even into the early 1900s for the eastern part of the park. The U.S. Biological Survey team that studied the park in 1897 confined its work to the southern and southwestern portions of the park (A.K. Fisher 1897a; 1897b; 1897c; 1897d; V. Bailey 1897a; 1897b; W.K. Fisher 1897), where they saw no elk. The various surveys conducted shortly after the turn of the century were simple statistical recitations of landmarks, with no regard for wildlife (Zug 1905; Thorn 1908).

By the late 1890s climbing the mountain became more popular, with large groups being organized (Ross 1898; Montgomery 1898; Wilbur 1898; Brown 1898; Fay 1905; Colby 1905; Brooks 1905; Glascock 1905; Rodman 1906; Curtis 1909; Ingraham 1909; Sensenig 1909). Their numbers were far greater than in earlier days, but most stuck to the established routes, and much of the east side stayed relatively unvisited until well after the introductions of elk from the Rocky Mountains. As numerous as these later parties were, they left much country unexplored and could easily have missed elk in many portions of the eastern half of the park.

The known references to elk within Mount Rainier National Park must, then, be viewed in light of the uncertain historical context that has been outlined above.

Historical references to elk within the boundaries of Mount Rainier National Park are rare enough that they can be reviewed here in their entirety. The first was the result of visits to the mountain in 1881 and 1882 by Bailey Willis, a geologist with the Northern Transcontinental Survey. Willis gave the following account of the country above 4,000 feet in the vicinity of Crescent Mountain (near Crescent Lake in the Carbon River drainage):

The lower slopes are heavily timbered, but at an elevation of 4,000 feet juniper and dwarf pine are dotted over the grassy hillside. Elk, deer and white mountain goats find here grassy pasture; their trails look like well trodden sheep paths on a New England hill (Willis 1883).

The next account occurred two years later, resulting from a trip made in 1884. A party of three men on their way to an eventually successful climb of the mountain camped briefly in Spray Park. One of the three, J. Warner Fobes, made these remarks at that point in his published story about the trip:

These mountain-tops are by no means an uninhabited desert. The hundreds of park-like valleys furnish pasturage for elk and deer, and the mountain-goat follows the melting snow to crop the freshest herbage (Fobes 1885).

The third account is found in a manuscript left by Judge Everett Smith of Seattle, who made an unsuccessful attempt on the mountain in August of 1886 by way of the Carbon River and Carbon Glacier. His discussion of wildlife was not related particularly to any one spot on the mountain, though it is clear from the context that he meant to include elevations at least as high as the meadows referred to by Willis, above:

Game is plenty on the mountain, although we have not seen many animals because of our numbers and noise. Tracks of goat, sheep, bear, deer, elk, badger and cougars are often seen fresh (Smith 1886).

In these few years in the 1880s, the first decade when the mountain attracted visitors and climbers with any frequency at all, are grouped the only visitor-produced mentions of elk on the mountain that have been located. They are imperfect evidence for several reasons. First, it is difficult to tell if any of the three actually observed elk; the references are very general. Second, their reliability at identifying tracks is unknown. All three were writing for popular audience, or with an informal tone, and were probably not terribly worried about details; they could have mentioned elk solely on the basis of personal assumption that it looked like a nice place for elk to live. Also, in light of their limited knowledge of the region's wildlife (Smith apparently was confusing badgers and marmots, as many early visitors did, and also made the questionable observation that sheep were present; Willis, elsewhere in his article, was also unfamiliar with marmots), we might wonder how good they were at judging any evidence—track, trail, or dropping—they saw.

We cannot discount them out of hand, though. They constitute a consistent conviction among some early visitors that elk were indeed living on the northern flanks of the mountain. If we cannot establish the trustworthiness of the writers, neither do we have any reason to doubt their integrity or their desire to report accurately; one was a scientist and one was a judge. All three accounts involved a relatively localized part of the park, which may be additional reason to believe them, as they seem to reinforce each other.

After these early mentions of elk, no record has been found of additional discussion of them until the beginning of the formal administration of the park (established in 1899). It is regrettable that the park's

first administrator was a forest supervisor stationed at Orting until about 1907, because the park was rarely under the scrutiny of its managers. Not until 1906 were rangers (two in summer, one in winter) assigned to duty in the park. They spent most of their time on or near the west side of the park, patrolling Spray Park, Carbon River, Paradise, and Indian Henry's Hunting Ground (Allen 1907).

As with the earlier references, these administrative references do not often include first-hand reports of observed elk or elk sign. The reports are numerous and responsible enough, however, to leave little doubt of the presence of at least a few elk.

The Report of the Secretary of the Interior for 1903 gave the following information:

A small band of elk, driven from the forests at the head of the Skookumchuck River, are now in and about the park, apparently with their young, and an effort should be made to protect them (U.S.D.I. Secretary of the Interior 1903).

No explanation was given for the elk being "driven" a distance of twenty or more miles into the park, nor is a source given for the information on their movements. As Driver (1973) has noted, the park's wildlife observation cards give essentially the same information on this group, stating that "elk and young, a small band, have come into the park from head of the Skookumchuck River." This reference does not say they were "driven."

The park observation cards also parallel a 1905 report from the Secretary, noting that "there are a few elk in the park about the headwaters of the Puyallup..." (U.S.D.I. Secretary of the Interior 1905).

Reports from this period reflect a great concern over illegal killing of game in the park and excessive killing of game in winter near the park. Any elk using the park in the early 1900s was obviously in serious jeopardy. Forest Supervisor Allen strongly recommended establishing a no-hunting zone along the west boundary, specifically to protect the animals (he mentioned only deer and bear) when they left the park (Allen 1907). Stronger words came from Eugene Ricksecker, the Engineer assigned to work on the road up the Nisqually to the park:

Owing, in great measure, to the high altitude of the Park generally, the first fall of snow and approach of cold weather drives the large game out of the Park to the lower lands in the surrounding Forest Reserve where, under inadequate protection of State laws it is, all too frequently, slaughtered. I am advised of one case where an Indian killed 16 deer in one day, less than a mile outside the Park boundary.

The presence of game in the Yellowstone National Park, becoming more and more noticeable under the protection afforded by the United States, is a feature of that Park and a source of much enjoyment to tourists. The noticeable scarcity of game in the Rainier Park is a subject of comment. I have made some forty trips into this Park during the last five years and have seen but one lynx, one deer, and two or three ptarmigan. A small herd of elk are said to frequent some portions of the Park; deer and bear signs are visible here and there and several bands of mountain goat, fast disappearing, have been seen. Quite recently a goat weighing 300 lbs. was killed by a person in the Park who is said to have shot it just outside the boundary.

It is, I think, important that game be further protected and encouraged to show itself, and two suggestions are made with that end in view (Ricksecker 1907).

Ricksecker then proposed that the park be enlarged in all directions to take in some winter range, and further proposed that the game laws of the park apply to the new area, eliminating all hunting (Ricksecker 1907).

Proposals similar to this one appeared in the Superintendent's Reports for several years, as did occasional mentions of suspected killing of game in the park and excessive deer harvests near the park.

In 1908 Alden Sampson reported his understanding of the status of elk in the park for the *Sierra Club Bulletin*:

There are no elk on the flanks of Mt. Rainier. We were told of the presence of a few still to be found in the Tatoosh Range to the south, and on Goat Mountain, both close to the southern limits of the park. The question of winter range for these animals, in case they were established here, is one that would have to be carefully studied. No tract obviously suited to that purpose was noted by us. Should such exist, elk could be brought from the Olympic Forest Reserve to form the nucleus of a herd here. There are now in the Olympics 2,500 or 3,000 elk of the *Cervus occidentalis*, or *Roosevelti*, almost the sole survivors of the vast bands which once ranged the Pacific Coast. Were an attempt made to bring to Mt. Rainier individuals of the Olympic herd, it would probably be necessary, in order to accomplish their transfer without injury and to retain control of them afterwards, to hold them first segregated for several months under constant supervision and care, and thus partially domesticate them, before attempting to accomplish such removal to their new home. It is not, however, believed that the conditions are favorable for their presence here (Sampson 1908).

The confidence of Sampson's assertion that there were no elk on the flanks of the mountain does not seem justified considering how lightly traveled some of the park was in those days, but it does reflect the general opinion that elk were scarce at best.

In 1909 the Superintendent added to the customary expression of concern over illegal hunting the suggestion that "cougars and wild cats" might be hunted in the park to reduce their predation on deer. No mention was made of elk in a Superintendent's Report until 1911, when Edward Hall first suggested a transplant of Yellowstone elk:

It is believed that elk would thrive in the park, and I wish to recommend that some of these animals be transferred to this park from the Yellowstone National Park. Elk are protected by State laws in Washington (Hall 1911).

1912 is of course the year of the first transplant of elk to near Mount Rainier. After this date and subsequent early plantings it quickly becomes difficult to determine whether elk being seen were native or introduced animals. In 1912 Hall repeated his transplant proposal in identical words (Hall 1912). His successor, Ethan Allen, continued to suggest an expansion of park boundaries in 1913 and 1914 (Allen 1913; 1914), reporting in 1914 that "a small herd of elk have recently been observed in the central east portion of the park."

Driver (1973) summarized some sightings of elk in the park between 1915 and 1919. In all cases it seems possible that the animals were introduced individuals that found their way into the park.

During his 1919 season with the U.S. Biological Survey, Walter P. Taylor worked in Mount Rainier. He compiled extensive notes on the park mammals, submitted as a handwritten "Special Report." The

following are his remarks on elk in or near the park. It is apparent that these notes were made over the course of the season and then simply reorganized species by species, with no especial regard for revising the earliest notations even when later information contradicted them.

Mt. Rainier Park, 1919—A few, introduced, may occur on White River; but G.F. Allen says these have for the most part been killed off.

White River district, Mt. Rainier, July 25—John Anderson saw tracks of a cow and calf near Glacier Basin, and believes a good many elk still in this section.

Rainier Park, 1919—Sherman Combs, Park Ranger, reports elk tracks seen last year between Owyhigh Lakes and Ohanapecosh Hot Springs. They are said to occur still in White River.

Fairfax Wa. Aug. 27, 1919: Park Ranger O.W. Curtis believes a few still remain in the White River district. He saw tracks of 3 last March below the White River Ranger Station in 2 ft. of snow. Indians and others have shot a good many.

Paradise Sept. 26 Superintendent Toll should be asked to submit details concerning elk track seen by him near Wauhaukaupauken Falls last week.

Ashford Sept. 30 C.A. Stoner says that the track Toll saw was undoubtedly an elk track, as a few elk still range on the east side of the Park.

The St. Helens band of native elk, he says, is spreading, its range now extending as far as Lewis, Wa. Three, I think he said, were seen not far below Hot Springs, on the Lewis trail.

Ashford, Sept. 30 Stoner He complained that the Snoqualmie and Enumclaw introductions of elk were wrongly handled. The elk, it seems, were kept under fence in ranches near the settlements for some time instead of being liberated immediately in the woods far from the settlements. He reports that the bull elk mount the cattle; bothering considerably about stock ranches in this way (Taylor 1919b).

These notes are significant for several reasons. Toll's mention of the elk at Wauhaukaupauken Falls, or at least the track of an elk, is a possible cause for Toll's 1919 Report reference, as follows:

Elk have been reported from the park. Their horns have been picked up in several different localities. No authentic report has been made on elk in recent years (Toll 1919).

Though in this case and in some of the others mentioned by Taylor it is difficult to distinguish native from non-native elk, his notes provide accounts of elk in several parts of the park. The intent of the individuals who were discussing the White River area is unclear; they may have meant natives were still present or non-natives had not been wiped out by poachers yet. Of course Stoner's meaning is clear; he believed native elk occurred in 1919 on the south and east sides of the park as well as in it, as described. Stoner was also quoted by another member of the Survey that same summer, elaborating on his beliefs:

The possibility of elk being found in the park at the present rests on the statement of C.A. Stoner of Ashford, Wn., who says, "I have occasionally noted in summer, elk tracks along the southern borders of the park, and think small bands of half a dozen or so stray into the park at times from the Mt. St. Helens elk range" (Cantwell 1919).

Stoner, in this case, was not suggesting a continual presence of native elk in the park so much as a restocking of the park by native elk from elsewhere.

In the decades immediately following the transplants of elk from the Rocky Mountains a few other writers expressed their opinion that native elk had used the park before the transplants began. Some of these are worth reviewing because they have figured prominently in current discussions of elk presence in the park.

Taylor and Shaw's *Mammals and Birds of Mount Rainier National Park* was published in 1927. It contained a number of reports of elk in or near the park, reports that are illuminated by Taylor's 1919 "Special Report," from which excerpts were just quoted. In the 1927 book there were several references to information given the authors by individuals, references that precisely parallel statements recorded by Taylor in 1919. This is important because statements quoted in the 1927 book appear to be current when, considering their appearance in the 1919 report, they may actually be nearly a decade old. Comments by Curtis, Combs, Toll, Allen, and Stoner all appear to be from the earlier report. There may have been a great time lag between preparation of the manuscript and final publication, a problem not unknown with the Government Printing Office (known in some circles as "Limbo Press"), or the authors may have simply failed to put the quotations in proper context. In any event, here is the 1927 review of elk sightings and information, deleting only a discussion of transplants:

G.F. Allen, of Tacoma, Wash., supervisor of the Rainier National Forest, asserts that a short while ago a number of elk were found in the park in the White River section, but, in his opinion, they have all, or nearly all, been killed off, for they drift back and forth over the park boundary and have been subjected to illegal shooting by Indians and whites as well. R. M. Daugherty saw three in Grand Park in 1915. Former Park Ranger O.W. Curtis saw tracks of three elk in 2 feet of snow below White River Ranger Station in March, 1919. Sherman Combs, also a former park ranger, reports elk tracks seen last year between Owyhigh Lakes and Ohanapecosh Hot Springs. Supt. Roger Toll saw a track, much too large for a deer, near Wauhaukaupauken Falls about the middle of September. C.A. Stoner, of Ashford, whose experience in the Rainier region is extensive, is of the opinion that a few elk still range on the east side of the park.

William Sethe, of Lewis, Wash., reports the persistence of a limited number of elk west of the Cascade summit in the headwaters of the Cispus and Cowlitz Rivers, in Skamania and Lewis Counties. C.A. Stoner thinks elk observed southerly within and near the park belong to this group, which he believes to be increasing in numbers. Alden Sampson was told in 1906 of the presence of a few elk in the Tatoosh Range and on Goat Mountain (Mount Wow), but neither he nor any members of the Mazama or Sierra Clubs actually saw any of the animals (*Sierra Club Bulletin*, Vol. 6, 1908, p. 32).

It is hoped that the elk may become a permanent feature among the wild living resources of Mount Rainier. If further introductions are provided for, however, the Roosevelt elk of the Olympic Mountains rather than the elk of the Yellowstone region should be utilized, for the Roosevelt elk is probably the species which formerly occurred throughout the Cascade Mountains (Taylor and Shaw, 1927).

Any time following the first introductions it becomes difficult to establish the origin of elk sighted or reported. By the 1920s it may also be difficult to determine which elk, even if native, were using the park as they would have before the arrival of white men. Elk may have been in the park because of pressures elsewhere; witness the elk said to have been "driven" up from the Skookumchuck. The reports gathered by Taylor (1919b) were made only a few years after the first introductions, however, and were gathered from trustworthy observers. If Toll did see an elk track near Wauhaukaupauken Falls in 1919, it would have been made by a native or by a Rocky Mountain elk from the group introduced many miles to the

east, near Yakima, in 1913. An elk ecologist could better judge the likelihood of the Yakima elk moving that far that quickly. If Sethe and Stoner are to be trusted, native elk were present along the south boundary, well within range of the Falls. If Stoner is to be further trusted, native elk were using the eastern portion of the park regularly. It is less clear if Curtis, as quoted in Taylor (1919b), believed the elk inhabiting the White River were native or from the introductions made north of the park starting in 1912. Bradley (1982) has assumed that the elk seen by Curtis in 1919 (he says "Coombes," but the description he gives, of elk tracks near the White River Ranger Station, matches a sighting reported by Curtis) were animals from the Grass Mountain introduction in 1912. Bradley (1982) also assumed that the animals reported by Daugherty in Grand Park in 1915 (as reported by Taylor and Shaw in 1927) were from the Grass Mountain introduction. He attributed these and other appearances of elk in the park in the first few years following the introductions to the "very rapid dispersal" of elk from the sites of the introductions. Considering the opinions of Sethe and Stoner, caution may be in order in judging these sightings to be introduced elk.

Whatever the origins of the animals involved in these reports, in no case were elk thought to occur in the park in great numbers. Sightings in the park would remain limited to small groups and individuals for many years. It would appear, however, that these reports to the U.S. Biological Survey, made by apparently reliable observers, are good evidence that there were some native elk inhabiting Mount Rainier National Park at the time of the first introductions of Rocky Mountain elk near the park. The reports indicate a high likelihood of native elk occurring along the south and perhaps the east boundaries, and a lower likelihood of them also occurring in the White River drainage. Earlier reports (Ricksecker 1907; U.S.D.I. Secretary of the Interior 1905) indicate a few elk on the western side of the park as well. The evidence for the presence of elk in these various parts of the park is not so absolute that a skeptic could not deny it, but it is persuasive, coming as it does from several sources of the most trustworthy kind.

Perhaps the best known of later comments on native elk were made by Park Naturalist Floyd Schmoe in the 1920s. Schmoe wrote widely, including newspaper columns, books, and regular production of the park's in-house newsletter. The first of his recorded comments appeared in the *Mount Rainier National Park Notes* for March 1 1924:

The lower slopes of the mountain were formerly within the range of the western or Olympic elk. Only a few years ago shed antlers were found within the park. These bands of elk were practically wiped out some years ago by persistent hunting except in the Olympic mountains where the ruggedness of the country protected them (Schmoe 1924a).

The next appeared in the same publication later that year. While discussing attempts by the State Game Commission to reintroduce elk to the area around the park, Schmoe observed that "with the generous support of the State Game Commission these splendid animals are being reestablished on their former range" (Schmoe 1924b).

The next appeared in his book *Our Greatest Mountain*:

At one time elk ranged through the forests and parklands of the reservation in large numbers. Before the park was established they were almost exterminated by hunting but recently they are reappearing in small bands (Schmoe 1925).

The final reference appeared in the *Mount Rainier Nature News Notes* for February 1, 1926. It appeared in a discussion of Indian uses of the park:

To the east beyond the low crest of the Cascades were the Yakimas and Klickitats, a breed of lithe, upstanding, handsome men, great horsemen and famous runners, but who were, perhaps, too busy trying to eke out a living from a semi-arid country, to develop any remarkable crafts. These came into the high valleys each summer, the women to gather berries, and the men to hunt the goat, deer, elk, and bear that abounded, but never to make homes (Schmoe 1926a).

These comments about the presence of native elk in Mount Rainier National Park were, according to the author, based on the widespread belief that elk were in fact native to the area, rather than on any personal observations or research (Schmoe pers. comm.). They have perhaps been given more weight than the author originally intended. As evidence they are no better or worse than the local traditions upon which they are based, and Schmoe was not alone in his acceptance of the traditions. Macy (1934) reported that "local game enthusiasts declare that elk abounded in this section twenty-five or thirty years ago and that some evidence remained to show that they were still present, however none have been seen for years." This is supposed to be a reference to the park proper, but it is similar to a comment reportedly made by W.L. Parsons about the Eatonville area in 1933: "W.L. Parsons, local game enthusiast declared that elk abounded in this section 25 or 30 years ago, but had since been exterminated" (Engel and Halvin 1954). In 1935 E.A. Kitchin made two comments on native elk in Mount Rainier:

There is no doubt in referring to early history of the region now comprising the Rainier National Park, that the Roosevelt Elk (*Cervus canadensis occidentalis*) was a native of this region. It is very doubtful, however, that there are any of these native elk left in the park. There may have been a few when the Yellowstone elks were introduced. If so, the two now form one strain (Kitchin 1935a).

Elk - no recent records in the area: Formerly common. Yellowstone elk are in the forests north of the park and might occasionally wander over the boundary (Kitchin 1935b).

The second comment was part of a report on a proposed primitive area in the north central part of the park, and the report referred specifically to that part of the park rather than to the whole park.

CHAPTER THREE: SOME COMMENTS ON THE HISTORY OF ELK SINCE 1920

Though the primary emphasis of this report has been on the native elk prior to the introduction of elk to the area of Mount Rainier from the Rocky Mountains, the historical record provides some useful perspectives on events since the increase in populations of introduced elk. Some specific considerations follow.

The first involves levels of elk presence in the park between 1920 and 1950. According to Bradley and Driver (1981), in the 1950s "changing patterns of land use" near the park "created the winter range necessary to sustain large populations." From this line of thinking we might cautiously consider the possibility that levels of elk use of the park *prior* to these changes in land use in some way approximated levels of *native* elk use of the park area in prehistoric times. The variables are numerous, of course,

including changes in land use patterns between 1800 and 1950, hunting pressures near the park, possible behavioral differences between the native and introduced elk, changing levels of predation, and so on. Despite the unknowns, the presence of introduced elk in the park (if indeed all the elk in the park from 1920 to 1950 were from introduced stock) is in itself strong circumstantial evidence that the park could just as well have hosted similar numbers of native elk.

As noted earlier, Driver has reviewed elk sightings since the turn of the century, revealing an uneven but more or less constant use of the park by elk since 1920. The Superintendent's Reports (see Appendix I) often commented on elk numbers between 1920 and 1950. Even a quick examination of Driver (1973) and the Superintendent's reports will show that the park's knowledge of elk use of the park in that period was slight. As was the case in other national parks (Schullery 1980, examines wildlife recording procedures for Yellowstone), population estimates were quite often nothing more than rough totals of animals seen and reported, with no attempt made to extrapolate from visible animals for greater purposes, or to interpret the meaning of sightings when they offered seeming surprises. It was this sort of inattention, as excusable as it may have seemed at the time, that allowed park administrators to be so shocked in 1962 when John Larsen informed them that they were host to hundreds of elk.

For example, in his Annual Report for 1936 (covering the fiscal year July 1, 1935 to June 30, 1936), Superintendent Tomlinson estimated "20 to 30" elk in the park (Tomlinson, 1936). As Driver (1973) has shown, elk were reported the following year (1937) in four locations in the eastern half of the park; the elk involved in these four reports almost certainly totaled more than Tomlinson's estimate for the entire park. The road from Cayuse Pass to Ohanapecosh Hot Springs was not opened until 1940, and the road from Paradise to the Stevens Canyon Entrance not until 1957 (though work on it began more than twenty years earlier) (Thompson 1981). Visitation was light over much of the region now most heavily used by elk. Irregular travel by hikers and park personnel could not have provided sufficient coverage to permit even a rough estimate of true elk numbers. It therefore seems certain that we do not have a reasonable estimate of the numbers of elk using the park before the land use changes that reportedly increased that use; we do not, in other words, know from what base population level the later increases started.

It may be possible, through examination of the reports compiled by Driver (1973) and those presented in Appendix I and Appendix II in this report, that some general suppositions could be made about elk presence before 1950. Perhaps the great amounts of information on elk movements presented by Bradley (1982) could be used for comparison, applying known current travel routes and habits to the pieces of information that survive from the period 1920-1950. May (1964) made a preliminary stab at such suppositions with only slight information at hand. His observations on the nature of the incidental sighting are especially interesting. As he pointed out, sometimes an increase in elk numbers can result in a decrease in sightings reported, just because the animals become less surprising and therefore seemingly of less interest to authorities. I notice that in the 1950s, when field personnel began to notice and occasionally report elk on the east side of the park in greater numbers than before (Newman 1956; Monthly Reports of the Chief Naturalists 1950-1960; Bradley pers. comm.), the Superintendent's Reports for the years 1950-1960 said less about elk than during any previous decade since the establishment of the National Park Service (excepting the W.W.II years).

A more subtle consideration than gross population estimates involves the impact of other park mammals on park vegetation. Again we lack sufficient base information from which to measure current levels of use. Discussions of "damage" to park meadows by elk often involve only a consideration of effects had by increasing elk numbers; there is the risk of assuming these meadows were totally unaffected by mammals prior to the recent increases in elk numbers. As has been reported here, writers as early as Willis (1883)

commented on some regions of the park where the animal "trails looked like well trodden sheep paths on a New England hill." In this context it is immaterial whether or not Willis was right in assuming these trails were caused by elk, deer, and goats together. The important point is that they existed. Sarvant (1894) used a "well defined game trail" at Ipsut Pass in 1894. Schmoe, on a trip around the peak in 1924, reported that in the vicinity of Cowlitz Chimneys "everywhere there were well defined goat trails and fresh tracks were numerous" (Schmoe 1924c).

Historic levels of impact on the meadows of the park by these other large animals may be determined more clearly by future research, such as the goat study currently underway. The information may be of considerable use in evaluating current levels of elk impact on areas that have been used in common by elk and other animals.

CONCLUSION

The following conclusions may be drawn from the evidence that has been gathered.

- 1) There is considerable circumstantial evidence, in the form of anthropological and archeological information, that elk were native to the region very near and presumably in the present park area.
- 2) There is some evidence that influences of white men on native tribes in the earliest period of cultural contact—about 1730 to 1830—may have contributed to a reduction of elk numbers in the area around Mount Rainier, but the evidence does not suggest that a wholesale reduction of elk numbers occurred at that time.
- 3) Accounts of the mountain and nearby lands by early white visitors, explorers, and climbers (before 1900) almost never mentioned elk, and when they did it was only vaguely, so that it is difficult to tell if any of the writers actually *saw* an elk within the present park boundaries.
- 4) Elk were considered low in numbers throughout the Cascades by many observers by the 1890s; the limited available evidence indicates that elk numbers were also low in the Cascades when the first white settlers arrived.
- 5) Competent observers reported very small numbers of elk on the western, southern, and eastern sides of the park shortly after 1900. It would appear from these reports that elk were native to the park at the time of its establishment, and that these reports buttress the earlier accounts of elk mentioned in 3 above.
- 6) Use of the park area by introduced Rocky Mountain elk in the decades immediately following 1912 may be seen as additional evidence that the area was similarly used by native elk in earlier times.
- 7) Reports by competent observers suggest that native elk never entirely disappeared from the eastern and southern parts of the park, thus "blending" with introduced animals in the years after 1912.
- 8) Levels of impact now being measured due to elk use of the park cannot be totally regarded as departures from some "pristine" condition because accounts from all historical periods since the beginning of serious exploration indicate animal impact on park vegetation.

Leopold et al. (1963) proposed 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. A national park should represent a vignette of primitive America." Mount Rainier National Park provides a stimulating example of how difficult this proposal can be to fulfill; furthermore it reveals a potential weakness in the proposal, because the park area as seen by the first white men to enter it was not necessarily the park area as it was before it felt the *influence* of white men. Horses arrived in the Yakima Valley a full century before Dr. Tolmie crossed the present park boundary on his botanizing excursion, and firearms preceded him by more than a decade. What influences these had on animal populations within the park can hardly even be estimated, but they could only have reduced them if they had any influence at all.

In summary, then, it appears that elk were native to Mount Rainier, and may have been so in all major drainages, the White River drainage being the most doubtfully represented in the historical record. From the time of the first visits by whites to the present park area in the early 1800s on, elk numbers were apparently low; they were so uncommon as to be virtually never seen by the occasional traveler in their range.

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APPENDIXES

Because all known references to elk or evidence of elk in Mount Rainier National Park were quoted in full in the text, it seemed unnecessary to repeat them as an appendix.

The four appendixes that appear here are essentially by-products of the research done on the main subject. They may be of use to future students, or may supplement already existing files of information.

Among the interesting sidelights provided by Appendix III is the lack of mention of grizzly bears, which apparently were known to exist—but which were also apparently quite rare—in the Cascades in the nineteenth century.

Appendix I: Elk-related Comments in the Superintendent's Reports, 1924-1938

Appendix II: Elk-related Comments in the Monthly Reports of the Park Naturalist, 1947-1963

Appendix III: Observations on Other Large Mammals in Mount Rainier, 1852-1896

Appendix IV: Bighorn Sheep in Mount Rainier: A Summary of Historical Records

APPENDIX I: ELK-RELATED COMMENTS IN THE SUPERINTENDENT'S REPORTS, 1924-1938

O.A. Tomlinson, Superintendent

1924

Bear, deer, elk and goat are seen much more frequently now in the park than in former years. Deer and elk are often seen around Paradise Valley and Goat in the little visited sections of the park.

1926

(population estimate as part of listing of "approximate numbers of the larger species" of wildlife in the park)

Elk 20

1927

20-30 Elk

1933

Some Elk have been noted ranging into the park near Cowlitz Divide.

Elk 50 to 75

1934

Elk 60 to 75

The Yellowstone elk released outside the park boundary two years ago have been seen in the park by the fire lookouts this year. This transfer of non-native elk into the park is the chief wildlife problem at present and it is planned to eliminate these animals if possible.

1935

A herd of 25 Yellowstone Elk was seen in the west side of the park by a fire lookout last July. These animals planted outside the park are frequently seen within the park.

1936

Elk 20 to 30

1937

An interesting report was that of Elk tracks seen in the vicinity of Indian Bar. This animal is not common in the park.

1938

(in discussing a wolf seen near Three Lakes Cabin)

Also noted in this area were several elk.

APPENDIX II: ELK-RELATED COMMENTS IN THE MONTHLY REPORTS OF THE PARK NATURALIST, 1947-1963

August, 1947, Russell Grater

Elk were responsible for three breaks in the Shriner Peak Lookout telephone line.

September, 1947, Russell Grater

Elk tracks have been observed around Snow Lake, Bench Lake, and Lake Louise, an extension of the known range to the westward up Stevens Canyon.

September, 1951, Merlin Potts

A herd of approximately 30-35 elk was observed in the Shriner Peak area throughout the greater part of September. On September 17, a party of rangers released a bull elk trapped in the old telephone line to the Shriner Peak Lookout. Ranger Del Armstrong's account of the incident is interesting:

On the evening of the sixteenth, Bob Albrecht, the lookout on Shriner Peak, spotted a large bull elk that had entangled his antlers in the old telephone line and had then wrapped it around some small cedars in such a way that he was completely secured with little freedom of movement. It was too late to do anything that night, but the next day District Ranger Bill Heckman, Albrecht, and myself were able to reach the animal and cut the wire right at the antlers. Although there was still a short piece of wire running from one antler to the other, the animal was freed unharmed and in good condition. Animal was a five-pointer approximately 4-5 years old.

January, 1952, Merlin Potts

District Ranger Patterson's January report states that three elk, a bull, a cow, and a calf, are wintering in the White River District. This is the first known observation of elk wintering in this

section of the park. However, Mr. Patterson's further comments are interesting:

The Joker in this story is that the Elk's cousins may have carried the news. For years the State Road Crew has been feeding the deer at the Snow Camp at Crystal Creek. This winter the deer are seen regularly at the Camp. Well, the State Crew are now feeding the elk at a site 1/4 mile below the old Fountain on U.S. # 410 and up the slope about 200 feet from the highway.

July, 1952, Merlin Potts

Elk were observed on the East Side Highway, cows and calves are feeding on the cedar flat near the Ohanapecosh Ranger Station, and a herd of 25 individuals was observed near the Shriner Peak Lookout.

November, 1952, Merlin Potts

Ten elk were observed in Cedar Flat on November 19, and tracks were abundant in the Nickel Creek area.

January, 1954, Merlin Potts

District Ranger Patterson reports several elk wintering along the Mather Memorial Parkway, both inside and outside the northern park boundary.

On January 30, Supervisory Park Ranger Butler observed five bull elk along the highway between the Ohanapecosh boundary and the White Pass road.

June, 1954, Merlin Potts

District Ranger William Heckman reported disposing of a cow elk with broken back on the roadway near Cayuse Pass. The animal had apparently been injured in jumping from the twelve-foot snowbank bordering the road.

August, 1954, Merlin Potts

District Park Ranger Heckman reports 37 elk observed near the Shriner Peak Lookout, and that deer are unusually abundant in the Stevens Canyon area.

January, 1955, Merlin Potts

On January 3, school bus passengers observed a band of five elk just outside the park boundary in the Cowlitz Valley.

March, 1955, Merlin Potts

(at Ohanapecosh Hot Springs Lodge)

Tracks of a single elk are frequently seen in the area.

May, 1955

Biologist Coleman Newman visited the park from May 16-19, inclusive, for the purpose of investigating conditions of deer and elk, as well as observing the extent of browsing in areas of

population concentration.

November, 1955, Merlin Potts

Ranger Rogers also reports numerous observations of elk along the road both inside and outside the park boundary near Ohanapecosh, as well as "numerous tracks" north of the entrance.

April, 1956, Merlin Potts

Mr. Coleman Newman, Biologist assigned to Olympic National Park, visited the park from April 16 to 19, for the purpose of studying utilization of browse by deer and elk in the vicinities of Nisqually and Ohanapecosh Entrances.

July, 1957, Vernon Bender

Elk activity in Summerland and on Goat Island Mountain. Ranger Naturalist John Lamb reported seeing a cow with calf on Goat Island Mountain.

October, 1957, Vernon Bender

On October 15, Messrs. Newman and Doudna investigated the southern area of the park for possible elk populations. The following day Messrs. Bender and Newman investigated the eastern portion of the park for elk population. Some very old tracks and droppings were discovered but nothing indicative of increased use in the areas investigated. Outside the park in the Cowlitz River Drainage, tracks representing a herd of about 12 animals were discovered.

March, 1958, Vernon Bender

Ten elk were reported above the Stevens Canyon-East Side Road junction by John Didio.

June, 1958, Vernon Bender

Twelve elk were observed in the upper Valley of the Cowlitz by Messrs. Fiske and Hopson.

July, 1958, Vernon Bender

An elk herd of seven cows and five calves were seen 1/2 mile southeast of Seymour Peak in the 17th of July by Geologist Dick Fiske.

September, 1958, John Tyers

A bull elk with two cows and a yearling calf were seen on September 11 by Park Naturalists Bender and Tyers and Supervisory Park Ranger Jones on the Rainier Fork of the American River below Chinook Pass. The bull bugled several times.

October, 1958, Vernon Bender

Several elk tracks were observed at the Box Canyon October 29 crossing over the top of the tunnel.

June, 1959, Vernon Bender

. . . a cow elk was observed on the road shoulder at the Stevens Canyon Entrance.

Several elk were observed on the slopes of Stevens Peak by Ranger-naturalist O'Brien, June 30.

Heavy elk activity was observed along the East Side Trail where the red elder foliage has been stripped of food. Several wallows were observed on the shores of beaver dams recently used by this animal.

July, 1959, Vernon Bender

On the island in the Ohanapecosh area containing the Big Trees, heavy elk feeding activity was observed. Several elk wallows were also discovered.

August, 1959, Vernon Bender

Ranger-naturalist Lemon reported two herds of elk of twelve to fourteen animals in the Cowlitz Chimney area.

September, 1959, Vernon Bender

Elk were bugling all of September along the east side of the park. Geologist Dick Fiske reported several groups in the Shriner Peak area. He observed one old bull polishing his antlers on a tree about four inches in diameter, which he said was whipping like a small twig in the wind. Several elk were seen around Seymour Peak by Mr. Fiske.

January, 1960, Vernon Bender

Several elk have been reported wintering in the north park boundary and Ohanapecosh areas. One four-point bull frequents the Ohanapecosh campground area and has been seen from the dining room of the Ohanapecosh Hot Springs Lodge several times.

March, 1960, Vernon Bender

Three bull elk with antlers in velvet were seen along Backbone Ridge. Numerous tracks were seen crisscrossing the roadway on both sides of the ridge.

August, 1960, Vernon Bender

August 7 a cow elk was observed feeding in Indian Henry's at Mirror Lake by Cecil A. Perkins, Jr.

November, 1960, John Tyers

A spike elk was observed in Ipsut Creek Campground on November 20 by District Ranger Bright. Many elk tracks were seen in this area as well as on the Mowich Lake Road.

February, 1961, Vernon Bender

Elk were reported by Park Ranger Jones along the East Side Road near the Shriner lookout trail February 18. Three cows and one calf were seen.

March, 1961, Vernon Bender

Elk were observed bedded down beside the road in the flat area below Shriners burn by Ranger Jones on March 2.

June, 1961, Vernon Bender

6/7 cow elk with "vivid" red calf, Bob Ensworth, one mile west of Ohanapecosh entrance station.

6/19, Elk, East Side Road, Alto Albright.

September, 1961, Vernon Bender

9/12 Fresh tracks observed on Cowlitz Divide-Kotsuck area.

November, 1961, Vernon Bender

11/7 Four elk (1 bull, 3 cows, and 1 calf) seen on west side of river at Ohanapecosh Campground.

(that adds up to five, not four)

January, 1962, Vernon Bender

1/19 Elk tracks were seen in the lower drainage of Olallie Creek, probably only several animals.

April, 1962, Vernon Bender

A small herd of about a dozen elk are reported by District Ranger, White River, which have wintered near the Ranger Creek airstrip.

September, 1962, Earl Estes

9/24 Elk were heard to bugle, on the trail Tipsoo to Three Lakes.

October, 1962, Vernon Bender

Mr. John Larsen, Wildlife Biologist, United States Forestry Service was in the Park October 22 to discuss the elk survey he conducted September 18, 1962, with Mr. Bender. A special report was made of this discussion. A cooperative project will be outlined at a later date in an attempt to get a better population study underway. Mr. Larsen indicated he would supply us with material concerning the use of various drugs on the immobilization of larger mammals.

An aerial flight along the east boundary of the Park was made October 16 by Messrs. Bender, Estes and Parsegan to observe elk numbers. Between 25-30 animals were seen on the southeast slope of Shriners Peak. A special report was prepared on this flight for the files.

10/15/62 A bull elk and coyote were reported by Ashly, seen at Stevens Creek during a night patrol.

10/24/62 Estes observed a cow and calf elk at Shriners Peak trail-road junction.

10/30/62 Peters reported a bull elk near Backbone Ridge during a night patrol.

November, 1962, Vernon Bender

Mr. John Larsen, Wildlife Biologist, Forest Service, suggested that track and pellet counts for elk studies in the Ohanapecosh area be made this winter. These will reveal population trends and a possible beginning to obtaining information on elk wintering in the Park. He also suggested vegetation exclosures to show the impact of elk on vegetation. Materials have been ordered for an exclosure but it is doubtful if it can be erected at this late date because the vegetation is presently snow covered. For exclosure studies, it is necessary to identify and record the vegetation within the exclosure.

It is proposed to erect three of these exclosures next year; one each on Cedar Flats, Shriners Burn, and White River Valley near the north Park boundary.

April 1963, Vernon Bender

Seven reports of elk were received from Messrs. Burns and Towsley during April. The largest number observed at any one time was four along the Cedar Flat area. Most observations were of single animals or two adults.

May, 1963, Vernon Bender

Two areas were selected in the Ohanapecosh Valley for the elk study plots, May 9. The elk exclosures were erected before the end of the month with materials that were purchased last fall and on hand.

Elk were seen several times in the Ohanapecosh and White River Valleys throughout May. Two animals being the largest number seen at any one time.

June, 1963, Vernon Bender

The first spotted elk calf ever reported in Mount Rainier National Park was observed June 25 by Chief Park Naturalist Bender, Ranger-Naturalist Donald Dickinson, Steve Bender and three trainees from WODC. This elk calf, about two days old, was seen on the trail to the Big Trees, where the foot-log crosses the Ohanapecosh River. Heavy elk activity was also noticed in this area, grazing primarily on devil's club, elderberry, vine maple and the flowering nettle.

July, 1963, Vernon Bender

A plant inventory of the elk exclosures in the Ohanapecosh Valley was completed.

August, 1963, William Bullard

The elk study was continued.

Elk continue to be observed on the east side of the park.

November, 1963, William Bullard

A small band of elk were observed passing through the Longmire area.

APPENDIX III: OBSERVATIONS ON OTHER LARGE MAMMALS IN MOUNT RAINIER, 1852-1896

Many of the earliest approaches to the mountain were written about more than once, quite often several times, including in reminiscences made many years later. In order to keep the following presentation as brief and yet complete as possible, I have tried to choose in each case the single account of each episode that is most revealing. The most exhaustive published listing of accounts of climbers in this period appears in Haines (1962).

1852, *The Columbian*

(climb occurred about the middle of August, the route being up the Nisqually River and up the south side of the mountain)

They fared sumptuously on the game afforded by the mountain, which they found very numerous, in the shape of brown bear, mountain goat, deer, etc., with an endless variety of the feathered game.

1854 or 1855, McWhorter, 1917

(a climb by two still-unidentified white men in the company of Yakima Indian named Sluskin; approach was from the east, with a camp at Mystic Lake. The account is by the Indian, told to McWhorter)

(first, near the terminus of Emmons Glacier, the following reference tells of the killing of a fawn)

The tall man killed a young *yamas*.

(next, discussing a "*Sum-sum*," or sharp ridge of unknown location but presumably near Winthrop and Emmons Glaciers, he tells of *wou*, or goats)

The *Sum-sum* runs down from the mountain. It was covered with *wou*.

The men asked me if I could catch sheep for them. I tell them no; only when have young ones. They said: "If you catch one, we will buy it, big one." I never try to catch that sheep; to wild.

(An interesting variation of this account appeared in the *Tacoma Daily News* on November 30, 1915, "Sluskin Tells True Story of Mountain." A brief excerpt follows. It is noteworthy that the clipping of this account in the McWhorter Papers at Pullman has been annotated by McWhorter; where the original clipping says "We see no goats, McWhorter has changed it to "We see plenty goats." This suggests that both goats and sheep were seen.)

There were no white people living here when I guided to the mountain... We saw lots of deer, lots of sheep, We see no goats (*Tacoma Daily News*, 1915).

1855, Suckley

(he is discussing three goats)

Obtained in the Cascade mountains north of Mount Rainier, by Lieutenant Nugen, United States Army; another from the Upper Nisqually.

1857, Kautz

(from his original journal of the trip taken in July, the first entry is from a few miles downstream from the terminus of Nisqually Glacier, on July 12)

We have seen no game so far; we saw a large red wolf yesterday but he got out of the way as soon as possible. We see plenty of signs of deer and Bear, but met with only one or two grouse. The Indian and the men get along very well so far. The Dr. does not bear the fatigue well.

13th M. We were all much gratified that the Indian killed a deer this morning which he brought in and of which we eat plentifully. We spend the morning in drying the remainder of it...

(Later on the trip, while on or near the Nisqually Glacier, Kautz saw some marmots and mistakenly associated them with the footprints of goats. This account is not in his journal, appearing in a popular article published years later.)

The only living things to be seen were some animals, with regard to which we still labor under an error. These little creatures would make their appearance on the side of the mountain in sight of our camp, and feed upon herbage that grew on the soil where the snow left it bare. The moment anyone stirred from camp, a sound between a whistle and scream would break unexpectedly and from some unknown quarter, and immediately all the animals that were in sight would vanish in the earth. Upon visiting the spot where they disappeared, we would find a burrow which was evidently the creatures' home. Everywhere around the entrance we found great numbers of tracks, such as a lamb or kid would make . . . We are still at a loss to understand the habits of the creatures, and to reconcile the split hoofs which the tracks indicated with their burrow in the earth (Kautz, 1876).

1870, Stevens

(The party crossed the Tatoosh Range and ascended by the Gibraltar route. Their guide was a Yakima named Sluskin, a different person than the "Sluskin" of the 1854 or 1855 ascent, whose name has also been spelled "Saluskin." The party made their climb in August)

Sluskin had frequently hunted mountain sheep upon the snowfields of Tacoma.

The broad snow-fields, over which he had so often hunted the mountain-goat . . .

We found many fresh tracks and signs of the mountain-sheep upon the snowfields, and hair and wool rubbed off upon rocks, and places where they had lain at night. The mountain-sheep of Tahoma is much larger than the common goat, and is found only upon the loftiest and most secluded peaks of the Cascade Range. Even Sluskin, as skillful hunter and accustomed to the pursuit of this animal for years, failed to kill one, notwithstanding he hunted assiduously during

our entire stay upon the mountain.

(P.B. Van Trump, 1870, who accompanied Stevens on this climb, reported that Sluiskin had a "fruitless search for mountain goats," so we cannot be sure if the party knew sheep from goats.)

Emmons, 1870

(The party climbed the mountain from the Nisqually Valley, up to near Little Tahoma, and across Cowlitz Glacier and then up by Gibraltar. The first reference is to a group of Cowlitz Indians.)

. . . two of their number were induced to guide us to the foot of Mount Rainier by a path known to them in their hunting excursions.

(The following occurred during an outing taken from their base camp along Cowlitz Glacier.)

Here we came suddenly upon a little band of mountain goats, who, when aware of our presence, fled with most remarkable rapidity up the icy slopes, crossing crevasses and ascending impossible steepes with the greatest ease. We watched them with wonder as they grew smaller and smaller in the distance, and finally disappeared among the ice-cascades of the steep mountain-side. This rare animal, the *Azama montana* of science, which is found only on the slopes of these snowy peaks, and there in limited numbers, is a very distinct animal from the big-horn or Rocky Mountain sheep. It is a low, heavy-built animal, rather larger than a good-sized ram, snow-white in color, having a thick fur of mixed hair and wool, a long white beard, and two little, black, curved horns like those of the chamois. It passes its day among the snows, only coming down at early dawn to browse upon the fresh green grass along their lower edge. Our Indians, taking advantage of this habit, after concealing themselves for two nights near one of their favorite grazing grounds, succeeded in killing one, which they sold to us, and which was a most timely addition to our scanty larder, saving us, as it proved in the end, from possible starvation.

1881-1882, Willis

(This is the Willis article quoted in the discussion of elk sightings in the park; his visit to the area around Crescent Mountain prompted these remarks.)

The lower slopes are heavily timbered, but at an elevation of 4,000 feet juniper and dwarf pine are dotted over the grassy hillside. Elk, deer and white mountain goats find here grassy pasture; their trails look like well trodden sheep paths on a New England Hill.

1883, Stampfer

(Joseph Stampfer reported the 1883 climb by Bayley, Van Trump, and Longmire; below is his account of how Longmire and Indian Henry discovered Longmire Springs)

The two men ran across a deer trail which led off of Rampart Mountain into the swamp . . . The deer trail led to the springs now known the world over as Longmire's. The first discovered was the one that is now known as "gas well," in the Longmire Ranch Yard. It was there the deer had been drinking.

1884, Fobes

(This climb took place in late August. The first report is from near a camp in Spray Park.)

. . . there came trotting over the snowdrift toward me what at first seemed a huge collie dog, but which I was soon satisfied was a wolf. He was a great gray fellow, twice as large as a Newfoundland, long and lank. As he came up within about fifty feet he grinned savagely, showing his long white teeth.

(Fobes shot the wolf, but it escaped. Later, speaking of one of his companions in the same general area, Fobes commented as follows.)

. . . he saw an immense bear down five hundred feet in a valley, and, as he had the rifle with him, he concluded to give Bruin a shot. He started down, but after descending about half-way came to the conclusion that the bear ought not to be so rudely disturbed and struck out for camp.

(Later, near Carbon Glacier,)

. . . we surprised a large mountain goat feeding . . . considerably over three hundred pounds.

(They shot the goat. Fobes general comment on the game in the mountains was quoted in the discussion of elk sightings in the park, but is included again now.)

These mountain-tops are by no means an uninhabited desert. The hundreds of park-like valleys furnish pasturage for elk and deer, and the mountain-goat follows the melting snow to crop the freshest herbage.

1886, Brown

(Brown's account was referred to in the discussion of evidence for elk presence or absence on the east side of the park. He and his party of Yakima Indians approached the peak via Summer Land and Ingraham Glacier.)

Continuing on foot, we followed up the west slope of what is now known as Cathedral Rocks on the Ingraham Glacier, making use of the well-defined goat trails.

1886, Smith

(Smith was one of the three authors cited earlier as saying elk used the park; his visit was to the northern side of the mountain. This first reference is near Crater Lake.)

At 7-50 we pass a second smaller meadow. Altitude 4075 feet. At 7-55 a third smaller meadow, alt. 4125 feet. At 8-10 a fourth smaller meadow, containing about 2 acres, alt. 4425 ft. temp. 68 degrees. High above this are grassy knolls, fully 1500 feet above the meadow. There must be the home of the mountain sheep and goats. Between the third and fourth meadows are picturesque water falls, one a duplicate of a fall in Derby, Conn. called Indian Well. At 8-30 an altitude of 4800 feet is reached. At 8-50 we cross broken skid bridge, alt. 5000 ft. At this altitude is a clearing and we seen the first goat tracks, fresh in the earth.

(The second statement involves a camp made somewhere near Carbon Glacier; it concludes with

the previously quoted material about elk.)

At 5 as most of us were awake but dozing, we hear a peculiar sound like the moan of a person in troubled sleep. It emanates from the direction of Sharpe who is sleeping by me. Some fellow is unkind enough to say that Sharpe is making too much noise in snoring, and bids me to poke him. I poke and he responds with forcible language about others minding their own business, but as that is a familiar repartee of Sharpe it has little effect as a squelcher. We are now all awake, but the sound is repeated. On closer notice we see on the bluff some hundreds of yards away the crouching form of a large animal. As we move about it is alarmed and runs away, joined by a companion. We had a good view of the animal and conclude that it was a cougar. Game is plenty on the mountain, although we have not seen many animals because of our numbers and noise. Tracks of goat, sheep, bear, deer, elk, badger and cougars are often seen fresh.

1887, Alston

(Archibald Alston spent six months in 1887 in a cabin near the west boundary of the park; the following passage is from a letter he wrote to Frank Brockman in 1957.)

In the early winter we saw lots of California lyons' tracks when we had a little snow . . .

1890, Tacoma *Ledger*

(In 1890 two parties reached the summit on consecutive days in the middle of August. This passage is from an article about the Knight-Hitchcock party that approached the mountain from Paradise Park and Gibraltar.)

. . . they . . . saw mountain goat at a distance.

1891, Rogers

(this party reached the peak on July 2; the following reference is from the time when they were at or near Longmire Springs.)

. . . far up on the bluffs we saw a band of wild goats away out of reach of the hardest climber. On our trip each of the party is confident of killing at least a dozen of them.

(The last sentence was tongue in cheek.)

1891, Tacoma *Ledger*

(A party of eight, including three Longmires, reached the peak at the end of July.)

. . . the party saw a great many goats and as they brought several skins home it is safe to conclude that during their trip they somewhat lost sight of the state goat law.

(A report filed about this trip in the Seattle *Post Intelligencer* on August 4 attempted to be humorous about what was apparently a flagrant violation of game laws, as follows.)

Eleven pairs of mountain goat horns were secured. The goats were allowed to go, of course, after parting with their horns, as the game law had hardly expired.

1891, Olympia *Tribune*

(The Riley party reached the peak in early August, by way of Indian Henry's Hunting Ground and the Tahoma Glacier.)

Several herds of beautiful mountain goats were seen feeding at the 13,000 ft. level. What they were feeding upon at this altitude was peculiarly interesting. The only vegetation was an almost invisible green moss adhering closely to the rocks, and this the goats appeared to lick with a relish.

1891, Twitmeyer

(Twitmeyer was a visitor to the parks on the south side of the mountain in late July and early August.)

Our own Nimrods and those of a neighboring camp kept us supplied with an abundance of game. We feasted royally on mountain goat, dusky grouse, and gray ptarmigan. A word or two in regard to the denizens of the forest and lofty mountain regions of the Cascade range may not be without interest. The mountain goat, an admirable Alpine rover, still roams in comparative security, though during our brief stay of two week eleven of these brave, sturdy, shaggy cliff dwellers, to our personal knowledge, were killed, and rather wantonly too, for in most instances only their horns were taken. They feed in the rich mountain gardens and meadows, venturing sometimes well down to the openings near the timber line, but holding themselves ever alert, ready to flee to their highland castles at the faintest alarm.

The black bear, the black-tailed deer, and the puma confined themselves to the heavily timbered regions, where they are very abundant. The elk is no longer an inhabitant of the Cascades. He makes his home in the Olympics, and he is destined, sooner or later, with the American bison, to be numbered among the extinct larger, grander animals peculiar to our continent.

(The eleven goats that were killed were presumably those taken by the Longmire party, as listed above.)

1891, Van Trump

(Van Trump accompanied the Riley party, whose sightings were listed above. Van Trump added information about hunting and goat behavior when near humans.)

The two hunters, Dr. Riley and Mr. Drewry, killed four mountain goat... and Dr. Riley wounded a black bear, but not in a sufficient vital part to insure her capture.

Thirteen thousand feet is the highest limit to which the goat will climb when pursued. Parallel with our line of ascent, and nearly half a mile distant, a high precipitous ridge of rocks extends from the timberline nearly up to the north peak. When we began our ascent of the glacier in the morning, at a point on this ridge opposite us, was a flock of mountain goats. Thinking we were in pursuit of them they began to ascend the ridge toward the summit of the mountain. Hour after hour as we toiled slowly up the glacier we could see the goats climbing higher and higher, and could hear the faint bleating of the little kids in protest against their forced march. At last the goats reached an altitude of 13,000 feet and the extremity of their ridge. It is said that when the

mountain goat has reached such a point as this, and there is no way of escape except by the way he climbed, the rams of the flock will make a decided stand, and attack an advancing foe, be it man or beast, and their peculiar, sharp pointed horns make a formidable weapon of defense. When we came up opposite to the goats they stood looking down at us as much as to say they had made their last retreat and were waiting our attack. As we passed by them and climbed higher and yet higher, they finally turned about and retraced their steps to their feeding grounds.

1891, Orting *Oracle*

(The Taggart-Lowe party made an ascent in late August. This is from the story of their ascent at a point above the terminus of Tahoma Glacier.)

We left camp next day and started up the mountain to an altitude of 12,000 feet, far above the clouds, which we could see floating majestically below us. After leaving our guns, of course we saw many goats. On the side of the mountain towards the north peak at about 4 o'clock we came upon a flock of goats, five in number. They allowed us to come very near them and I thought I would catch one of the little ones. I picked up a rock and threw it at one of the old ones. The old fellow got mad and commenced to pawing the ground and shaking his head, but finally turned and walked off. We threw more rocks at him; but he quickly turned the tables on us and we had to run for the big rocks where we were kept prisoners until they went down the hill. Again we started upward over the last hill between us and the north peak, only to encounter another flock of 32 goats. They did not run as we did not crowd them. We started back to camp at half-past five, after reaching the place where we left our guns, we had great difficulty in finding our way owing to the thick cloud which enveloped us.

1892, Tacoma *Ledger*

(The Dickson party reached the peak from Paradise up to Gibraltar in early August.)

Goats had been very plentiful in the foothills to the eastward of the mountain, but the party did not catch sight of any.

1892, Gordon

(Cora Gordon was a Tacoma tourist.)

We camp for the night on the banks of Goat Creek a beautiful little stream having its source in mountain of same name where goats abound.

1892, Oakland *Enquirer*

(Bayley's 1892 ascent, with Van Trump, took place in late August.)

It is a hunters paradise, for there, says Mr. Bayley, can be found in abundance such game as deer, bear and mountain sheep while grouse are to be found at every turn.

1894, Sarvant

(Sarvant was member of a party that reached the summit by the Gibraltar route in early August. They also traveled in the north part of the park.)

In the afternoon we broke camp, passed through Ipsut Pass, a mere cleft in the ridge with a well defined game trail leading through it, and followed a stream leading down into the Carbon Canyon.

1896, Russell

(Russell's account of the Glacier's from which these comments are taken, was published in 1897, but it is based on a visit to the mountain in 1896.)

The deer, the bear, the panther, are seldom met; they see and hear first and silently slip away, leaving only their tracks to prove their numbers.

(Near the "border of Winthrop Glacier" he made the following observation.)

Fresh trail of mountain goats and their but recently abandoned bed showed that this is a favorite resort for those hardy animals.

APPENDIX IV: BIGHORN SHEEP IN MOUNT RAINIER: A SUMMARY OF HISTORICAL RECORDS

Appendix III includes several references by nineteenth century writers to bighorn sheep being present in the park. As has been pointed out, many of these early observers were not familiar with wildlife and made mistakes of identification. McWhorter (1917) did take pains to quote Sluiskin on the presence of sheep in the park area in the 1854-1855 period; that reference is probably the most reliable of these early mentions of sheep.

Johnson (1983) has reviewed the past history of bighorn sheep in Washington, pointing out that "disease is probably the biggest cause of bighorn declines." Uebelocker (pers. comm.) has evidence of bighorn populations in the Pacific Northwest that were apparently wiped out by their early contacts with domestic sheep and the diseases contracted thereby. Domestic sheep were introduced to the Puget Sound trough in numbers soon after the establishment of Fort Nisqually, and by the 1860s were common on both sides of the Cascade crest. These could have brought with them diseases to which native bighorns had no resistance.

The only wildlife student of the park who seems to have devoted much attention to the possibility of sheep having occurred in the park was Floyd Schmoie. In 1926 he wrote two short articles for *Mount Rainier Nature News Notes*. They follow:

For some time there has been a question in the mind of the naturalist as to whether or not mountain sheep were ever found on Mount Rainier.

I have talked with Yakima Indians who have hunted in what is now the park and they told me that some thirty or forty years ago, there were a few sheep to be found on the mountain. I have found however that the Indians designated both the sheep and the goat by the same name so I am not certain that it was not the white mountain goat they referred to. Goat have always been, and still are, quite abundant on the mountain.

Len Longmire was telling me recently that "Old Indian Jim" killed a sheep about 1890 over on the Cowlitz. Mr. Longmire saw the animal but he was not sure exactly where it had been killed.

The only definite record that I have been able to secure was of a sheep (*Ovis canadensis californiana*) taken in Yakima County "Near Mount Adams" and now in the National Museum. The record bears the date of 1912. Mount Adams is about fifty miles to the southeast of Mount Rainier and the country is very similar in type, so it is very likely that sheep found about Mount Adams would also be found on Rainier.

However none of the old settlers remember seeing sheep on the mountain so far as I have been able to learn (Schmoe 1926b).

During the summer a park employee reported seeing a small band of sheep on the east side. He is a most reliable man and was quite definite in his identification. Sheep range over long distances and it is entirely possible that some may have entered the park (Schmoe 1926c).

Many years later, when he wrote *A Year in Paradise*, Schmoe also recalled that Ben Longmire told him of finding "a set of big ram's horns while building trail at the foot of the Tatoosh." Schmoe called this "the only fair authentic story I have of bighorn sheep ever inhabiting the central Cascades" (Schmoe 1959).

Gustafson (pers. comm.) has reported that the mammal bones found at the Frying Pan Rockshelter in the park are those of bighorn sheep. Perhaps when more extensive archeological work takes place more will be learned about the past presence of bighorns on Mount Rainier.