Literature Review of the Historic Distribution of the Rocky Mountain Goat (*Oreamnos americanus*) in Colorado

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Abstract

A number of historical documents suggest that the pre-1900 distribution of the Rocky Mountain goat (*Oreamnos americanus*) extends further south than the presently accepted native range. This literature review is to survey and evaluate credible historical sources to determine whether the historical distribution of the Rocky Mountain goat should include Colorado. This research is to be used as a foundation to provide input to the various land management agencies that will encourage the development of policies insuring the continued existence of viable populations of *Oreamnos americanus* in Colorado. The historical documents were used based on the authors' ability to describe the Rocky Mountain goat and or its characteristics. This compiled body of historical literature strongly indicates that the Rocky Mountain goat lived in the Colorado Rocky Mountains until it was locally eradicated during the Gold Rush commencing in 1858.

Introduction

The presently accepted southernmost range of non-introduced Rocky Mountain goats is the Sawtooth Range in the state of Idaho north of 43°N latitude, near 114°W longitude (Chadwick 1983, Rideout 1975) as shown in Figure 1and 2 in Appendix. A significant number of credible historical accounts written during the 1800s places the mountain goat south of 40°N latitude in the Colorado Rocky Mountains.

A lack of careful and scientific study of the species prior to 1900 leaves open the question regarding its original range. Much of the confusion surrounding the issue of distribution may be attributed to terminology errors used when referring to mountain goats, bighorn sheep, and pronghorns. Lewis and Clark, and members of their expedition party, called the Rocky Mountain goat a "mountain sheep" and used the same term when referring to bighorn sheep (*Ovis canadensis*) (DeVoto 1953). To compound the issue, Lewis and Clarke originally called the pronghorns (*Antilocapra americana*) 'goats' or 'buck goats' prior to discovering the bighorn

and the mountain goat. For three decades this terminology was used in classes taken by West Point cadets who referred to the pronghorn as a 'goat' or a 'buck goat'.

This type of terminology error then became a reproduction error in many Natural History books. For example, in a book by Gail Stewart, The Cabinet of Natural History and Rural American Sports, (1833 original copy) *Oreamnos americanus* is called a mountain sheep. While the accompanying illustration depicts a mountain goat, the text is almost exactly the same as the text printed on the next page for *Ovis canadensis*. Meanwhile, the name for *Ovis canadensis* is American argali (and is accompanied by an illustration of a bighorn sheep). The book never describes the distribution for these animals. Interestingly, the illustration of the mountain goat is the same picture as that which appears in Cuvier's book cited later (Smith 1827). When the second edition was issued in 1835, the publisher eliminated approximately 700 pages and combined the three volumes into one. In the second edition, the names mountain sheep and American argali are printed together in the same text but, the picture of the mountain goat has been discarded. The drawing of the bighorn sheep remains the same. Publications like this blurred the distinction between the two animals. Such literary errors were indicative of, and contributed to, the public confusion regarding the distinction between these two species. This research recognizes the misidentification error and cites credible historical sightings contingent upon the author's demonstrated ability to distinguish between the bighorn sheep (*Ovis canadensis*), pronghorn (*Antilocapra americana*), and the mountain goat (*Oreamnos americanus*). These distinctions were made based on the author's narration of the behavior and habits of the animal, and most importantly, by the physical description of live or killed specimens that clearly sets them apart.

Mountain men testified to having seen the white goat in what are now called the Colorado Rocky Mountains, having arrived in the 1820s and 1830s to trap beaver and trade with Native Americans for pelts. Beavers were plentiful at lower elevations, not in the alpine zone where introduced herds of mountain goats thrive today. Many mountain men probably travelled above the tree line on occasion and may have seen mountain goats, but their general lack of

literacy and familiarity with descriptive zoological methods prevented them from conveying this information in a form useful to modern research. The mountain men were also notorious for exaggeration. After the beaver market crashed in 1839, those who stayed in the region hired out as guides to sport hunters, most of who were disappointed with the results in their pursuit of the rare white mountain goat (Baille-Grohman 1900). As a result, the testimonials of the mountain men were later discounted when subsequent hunting expeditions and later arrivals failed to find such animals in the region.

Rocky Mountain goat reports show up in the literature printed prior to and during the era of the Colorado gold rush which began in 1858. As of the summer of 1859 as many as 50,000 gold miners had arrived along the front range. Perhaps as many as 25,000 stayed on after the first grueling weeks and months of prospecting. This influx continued throughout the 1860s despite the Civil War which broke out in April, 1861. Mining camps were hastily erected in the mountains before roads were built. The few toll roads that had been built in the 1860s were so expensive and poor that the prices of necessary goods were extremely high and there were frequent shortages. Local currency inflation in the mountain mining towns raised the price of goods to nearly ten times that found in Denver and other U.S. cities. Many of the prospectors turned to the lucrative business of market hunting, killing as much game as fast as they could to earn a fortune in gold and cash from hungry miners and the companies that employed them (Ubbelonde, Benson, and Smith 1988). Like the prairie and mountain bison, all traces of Rocky Mountain goats in Colorado could well have been eliminated by market hunting.

Angora goats (*Capra spp.*) had been imported to Colorado as of 1872. These animals were covered with long white hair and had horns extending horizontally from the head in a T-shaped pattern. Some modern scholars insist that these domestic goats are the cause of all "white goat" sightings in nineteenth century Colorado. However, Angora goats and Rocky Mountain goats are still distinguishable, not only by their appearance, but by their behavioral characteristics. This literature review cites only documents that could clearly illustrate, and or

describe the features, natural history, or behaviors of *Oreamnos americanus*. Furthermore, most reports of mountain goats preceded the date of the importation of Angora goats.

The habitat of the Rocky Mountain goat is an environment that makes the chance finding of century old specimens highly unlikely. The alpine zone is blanketed with snow in winter and repeatedly blasted with dry winds year round. A carcass left exposed to the elements at these high elevations quickly disintegrates leaving no trace of the animal that had died. The geographic features of the land are constantly in motion, grinding up any subsurface remains with ground movement resulting from freeze and thaw cycles. As glaciers round off boulders before depositing them in moraines, they grind up any trapped animal and plant remains into tiny bits of debris. Only carcasses left in immobile pockets of glacier ice or caves might remain intact and none of these have been found to date in Colorado.

However, fossil evidence has been located in the Bell and Horned Owl Caves both located in Albany County, 32 km NE of Laramie, Wyoming 105° 31' W longitude, 41° 34' N latitude (the Colorado-Wyoming state line is at 41° 00' N latitude) and in Little Box Elder Cave in Converse County, 30 km west of Douglas. These specimens date to the Wisconsinian period which spans 30,000 to 120,000 years ago. The remains of *Oreamnos americanus* have been found along with other animals of alpine affinity (Kurtén & Anderson 1980).

This literary survey presents all the references that cite the Rocky Mountain goat's presence in Colorado prior to 1900.

Objectives

The purpose of this research is to clarify the legal status of the Rocky Mountain goat for management purposes by the Colorado Division of Wildlife. The project title is: Literature Review of the Historic Distribution of the Rocky Mountain Goats in Colorado.

The historical distribution project was initiated by a reference to 5 white goats being shot in the vicinity of Cañon City around the turn of the century by Theodore Roosevelt in his Ranch Life and the Hunting Trail published in 1888. From this citation the Colorado Division of Wildlife with the help of the International Order of Rocky Mountain Goats wished to continue the search of literature documenting observations of *Oreamnos americanus* in Colorado. Currently, the Rocky Mountain goat is considered an exotic or introduced species by Rocky Mountain National Park, the United States Forest Service, and the Bureau of Land Management. The Colorado Division of Wildlife classifies the mountain goat as 'native' under the twenty year resident rule for introduced animals. It currently does not consider them 'indigenous'.

The objectives of this project are: 1) to question the current status and historical distribution of the Rocky Mountain goat; 2) to report all available documentation listing *Oreamnos americanus* occurring in Colorado; 3) to use this research as a foundation to provide input to the various land management agencies which will encourage the development of management policies insuring the continued existence of viable populations of *Oreamnos americanus* in Colorado; and 4) to attempt to influence the philosophies of the National Park Service and the U.S. Forest Service toward a more balanced approach concerning management of this species.

The underlying reason why this project is of importance stems from the expressed intent of Rocky Mountain National Park to prevent *Oreamnos americanus* from pioneering into the Park and occupying habitats that could potentially compete with the bighorn sheep *Ovis canadensis*. Unless the idea of the Rocky Mountain goat's exotic status can be refuted, Rocky Mountain National Park's management approach could be adopted by the U.S. Forest Service for

Wilderness Areas where most of the current *Oreamnos americanus* populations reside, and where the most suitable habitat for this species exists.

This project was initiated by contracting a University of Northern Colorado graduate student to review archives and manuscripts, which are not well known or readily available, and report on these findings. From this research, a bibliography was developed to list all materials reviewed. Information relating to the presence of *Oreamnos americanus* in the early history of Colorado will be mapped.

The project proposal and description were created by Alex Chappell of the Colorado Division of Wildlife.

Methods

The method of research to accomplish the literary review of the historical distribution of the Rocky Mountain goat was derived from the outline of faunal-survey investigations of the U.S. Department of Interior printed in 1932. Shortly after the birth of the National Park System in 1916, formal procedures were established on how to reconstruct the picture of the fauna prior to the arrival of the first white settlers. This is in Fauna of the National Parks of the United States: A Preliminary Survey of Faunal Relations in National Parks chapter title "Method Adapted To Faunal Investigations in National Parks" faunal series no. 1, May 1932 by George Wright, Joseph Dixon, and Ben Thompson. From the four step survey procedures, the outline was adapted and modified for the Distribution Project. The following is a modified version of the National Park Survey Outline:

I. Determine original status of the Rocky Mountain goat in Colorado.
   Object---
      A. Research historical documentation of the Rocky Mountain goat's occurrence in Colorado.
      B. Determine why or how the previous existence of Rocky Mountain goats became "lost" in the minds of the public by the early 1900's.
      C. Summarize Colorado's history so that the General Discussion text of the research has a background for reference.
   Method---
      A. Interview early residents (one resident was interviewed but this method is no longer applicable for most of the time period covered).
      B. Search written records.
         1. Journals and diaries.
         2. Printed sources, inclusive of periodical, books, scientific reports, etc.
         3. Paintings, drawings, and photographs by indigenous cultures and early settlers.

II. Determine the history of the fauna of Colorado under white settler influence.
   Method (in general, the same methods as outlined under I. above, are applicable)---
      A. Study economic history of Colorado.
         1. Direct influences.
            a. Trapping.
            b. Hunting for sport.
            c. Market hunting
         2. Indirect influences.
            a. Explorations.
            b. Mining.
            c. Lumbering.
            d. Railroad development.
            c. Wagon road surveys.

Steps III and IV (in Wright et al, 1932) are not outlined here because they were not applicable as the focus of this project is entirely on literary sources.

A source selection criterion was necessary in order to separate documented accounts that are clearly inaccurate, fanciful, or poorly researched. An author and account is deemed credible only if he demonstrates the ability to distinguish between the species that are commonly confused with the mountain goat as mentioned in the introduction above. The selection criterion is reiterated as a method because it is an inherent part of the process of compiling evidence. Each source has to be critically evaluated based on the accuracy of its content. While this sounds easy at first glance, the reader should consider the fact that the Rocky Mountain goat (*Oreamnos americanus*) has been given at least 33 different scientific, and 18 different common names since literate persons became aware of its existence. See the chapter on Historical Names for a complete list.

An example of literature that was rejected for inclusion in this survey is provided by an 1874 translation from the French by W.H. Davenport Adams of a book titled The Hunter and The Trapper: or Romantic Adventures in Field and Forest by Benedict Révoil. In chapter 12 he wrote,

> "By ascending the course of the river Arkansas, which has given its name to one of the largest states in the North American Republic, incorporated some forty years ago, the traveler soon arrives at the foot of the Masserne Mountains, --a range of precipitous peaks in the great chain of the Cordilleras. This vast desert, whose soil is chiefly trodden by a few nomadic Indian tribes and a legion of wild animals, the only beings which relieve with in aspect of life its wide and awful solitudes, is covered for eight months of the year with a spotless carpet of thick snow..."

Anyone familiar with the region which Révoil is attempting to describe will immediately find several defects. The trip up the Arkansas River to the Rocky Mountains is not brief; rather, any voyageur starting upstream from the Mississippi in the nineteenth century would have found a long and challenging journey lay ahead. With his description of the trip, it is very likely that he journeyed no further than the Ozark mountains of northwestern Arkansas or eastern Oklahoma.

In addition, Révoil claims to have heard General Stephen Watts Kearney relate,

> "On another occasion, Colonel Kearney fell in with a flock of wild goats, whom the heat and the drought had driven to the banks of the Missouri to quench their thirst. A tribe of five hundred Indians had surrounded them, and forced them right into the river. There these quadrupeds, who dread the water nearly as much as the rifle, nearly all fell victims to their imprudence."

However, in the 1961 biography by Dwight L. Clarke, Stephen Watts Kearney: Soldier of the West there is no mention of Kearney ever hunting mountain goats, rather he was an avid hunter of pronghorn. Also, Kearney never visited the alpine zone of the Rocky Mountains.

Révoil epitomizes the kinds of errors that were found in the literature rejected by this survey. His descriptions of fauna are nonsensical, to quote,

> "The racoons [sic], the cougars, and the cayeutes [sic] dispute with each other for countless prey; the geese, the turkeys, the *quails*, the cranes, and even the ostriches--for there *are* ostriches in the United States...The American ostrich averages five feet in height, and four feet and a half in length, from the stomach to the extremity of the tail. Their beak measures five inches, and is very pointed."

His descriptions of mountain goats are equally inaccurate. These kinds of errors in prospective source material disqualify it from any practical use within the context of this survey. Authors such as Révoil show clearly that they have misidentified the Rocky mountain goat, and probably concocted the entire story. The use of such fictitious material has been avoided in this survey as these would in no way serve its purpose.

Results and Discussion

Fossil Remains

This section will first review the evolutionary history of the Rocky Mountain goat then report on the current known discoveries of mountain goat fossils. The following "Dispersal History of *Oreamnos*" was taken from A Pleistocene Mountain Goat from British Columbia and Comments on the Dispersal History of *Oreamnos* by C.R. Harington in the *Canadian Journal of Earth Sciences* vol. 8, 1971.

> "The mountain goat (*Oreamnos*) and its closest living relative the chamois (*Rupicapra*) probably evolved from a common ancestral stock with affinities to *Pachygazella grangeri* of the Chinese Lower Pliocene (Thenius and Hofer 1960, p.249). Although the mountain goat and chamois are now confined to North America and Europe respectively, there is no evidence that they evolved in either continent. Rather, they seem to have evolved in and dispersed from Asia during the early to middle Pleistocene...."
>
> "I prefer to view *Oreamnos* as a later immigrant to North America- one that crossed the Bering Isthmus after reopening of the Bering Strait near the end of the Pliocene."
>
> "Flerow (1967, p.273) has suggested that the ancestors of the mountain goat were adaptable to life on the plains of the Bering Isthmus, and that *Oreamnos* itself adapted to a true alpine environment only at the beginning of the Pleistocene. However, the similar level of morphological and behavioral specialization among the living mountain antelopes of Europe, Asia, and North America suggests to me that their basic adaptation to alpine life had taken place earlier, during the Pliocene. Mountain goats may have spread from the uplands of the Chukotka Peninsula to those of the Seward Peninsula via the twin rises of what are now the Diomede Islands during the Illinoian or an earlier glacial phase of the Pleistocene. The Diomede Islands and St. Lawrence Island (which rose some 2000 ft (~610m) above the surrounding plains) could have provided favorable core areas for the species, allowing it to spread across relatively short, intervening tracts of grassland to the northwestern Cordillera. It is also worth considering that the species may have been forced to some extent to survive on the lower grasslands of the Bering Isthmus by expansion of ice in its former alpine habitat during a glacial phase. Perhaps an analogy between winter-summer and glacial -interglacial mountain goat habitat is relevant. In many areas mountain goats migrated beyond easy reach of cliffs and broken rock to spend winters on sunny exposures in lower canyons and valleys where storms are less severe and preferred shrub and grass forage is more readily available. In the Coast Range deep snows may force them to sea-level during the winter (Brandborg 1970, p. 188; Cowan and Guiget 1965, p.389)."
>
> "Expansion and retreat of Cordilleran ice sheets accompanying successive Pleistocene glacials and interglacials undoubtedly had a great influence on the dispersal of *Oreamnos* in North America. During glacial phases ice would have spread over the Cordillera between about 48°N and 64°N (see Prest's 1969 map), excluding mountain goats and other alpine mammals from this region. Cowan and McCrory (1970, p.61) have speculated that the mountain goat may have experienced separation into northern (Beringian) and southern stocks for periods of time, permitting substantial changes in form to occur. They add that as the last (Wisconsin) glacial ice

receded from the northern Cordillera reexposing suitable habitat, a Beringian stock could have extended its range southward to a major barrier to alpine mammals- the broad valleys of Skeena and Peace Rivers. (This is not a complete topographic barrier and it should be noted that mountain goats sometimes move down into valleys in winter. They can also swim well when it is necessary (Cahalane 958, p.102). The southern population could have spread north to the same barrier. But as Cowan and McCrory have noted, this model cannot at present be verified because their taxonomic evidence shows that there are no valid reasons for recognizing subspecies of *Oreamnos americanus*, and definite evidence for the presence of *Oreamnos* is the Beringian refugium is lacking."

"There is abundant evidence for the presence of mountain goats in the southern refugium. *Oreamnos* fossils have been reported previously from the North American Cordillera south of the Canadian border (Washington, California, Nevada, Arizona, Mexico; Table 1 and Fig. 1). Most appear to be of late Pleistocene age. It is interesting to note that the most southerly specimens (from Nevada, Arizona, and Mexico) evidently represent *Oreamnos harringtoni*- the only species other than the living one (*O. americanus*) which has been described from the North American Pleistocene. It was about two-thirds the size of *O. americanus* and had slightly longer horn-cores with greater backward curvature (Stock 1936, p.149)."

"How did *O. harringtoni* become differentiated from *O. americanus*? Stock (1936, p.151) remarked: "One may wonder whether the differences that separate *Oreamnos harringtoni* from the living species are due to an isolation of the former species on the Snake Range". Wilson (1942, p. 175) argued cogently that *O. harringtoni* was probably not different in habitat from living mountain goats because of its presence in Pleistocene deposits at Smith Creek Cave at an elevation of 6200 ft (1889 m), where it is associated with a fauna including cold-adapted species like the pika and marmot. As *O. harringtoni* evidently occurs only in the three most southerly fossil localities I suspect that its ancestor (presumably *O. americanus*) moved into that region during a glacial period, became isolated in the higher cooler areas as climate grew warmer, and managed to survive there until Wisconsin time. This view essentially coincides with that of Wilson (1942, p.174)."

The oldest fossilized remains of the Rocky Mountain goat (*Oreamnos americanus*) were found in the Sangamonian deposits near Quesnel Forks, British Columbia. The Sangamonian interglacial period began 0.3 million years before present (m.y.B.P.). Following the Sangamonian, the Wisconsinan interglacial period started 0.12 m.y.B.P. and ended 0.01m.y. B.P.. The fauna for this time frame is termed: Rancholabrean. The index or key species of the Rancholabrean is *Bison*. Like *Bison*, many of the mammals of this era are Palearctic immigrants from Eurasia. Some of these include: *Oreamnos, Rangifer, Ovis, Alces*, and *Ovibos* (Kurtén 1980). After their arrival, these animals migrated southward while being displaced by the Cordilleran ice sheets. The southernmost fossil remains of *Oreamnos americanus* have been found in southern Wyoming, specifically: Bell, Horned Owl, and Little Box Elder Caves. See

Figure 3 in Appendix for Wisconsinan Glaciation map. These specimens were found after C.R. Harington's 1971 paper was published.

The Bell and Horned Owl Caves are both located in Albany County, 32 km NE of Laramie WY. Bell cave (elevation 2,379 m) is located directly across Wall Rock Canyon from the Horned Owl Cave. The faunas of both Bell and Horned Owl caves are similar and date from the Late Middle Wisconsinan Period to the very late Prehistoric. The Little Box Elder Cave (elevation 1,677 m) is in Converse County, 30 km west of Douglas and in the foothills of the Laramie Mountains. .

The report of Animal Remains from Horned Owl Cave, Albany County, Wyoming (1969) by Guilday, Hamilton, and Adam states:

> "Mountain goats (*Oreamnos*) at one time ranged further south than they do today. An extinct species, *O. harringtoni* (Stock) , smaller than the living *O. americanus* is known from fragmentary remains of post-Pleistocene age from Smith Creek Cave, Nevada (Stock, 1936) and Rampart Cave, Arizona (Wilson, 1942). The Horned Owl Cave specimen appears to be too large for *O. harringtonii* (as that species is now understood) and is referred to the modern *O. americanus*. *O. americanus* is also known from Stanton's Cave, Marble Canyon, 31 miles downstream from Lee's Ferry, Coconino County, Arizona (collected by deSaussure, July 13, 1955; 1 phalanx, no. D-731, Catalogue of the Museum of Northern Arizona). The Horned Owl Cave specimen is an unassigned proximal phalanx, measures 48.5 mm in total length; height and width of proximal end equals 19 mm x 23 mm, height and width of the distal end equals 16 mm x 22 mm."
>
> "... Of the twenty-five species of mammals recovered in Horned Owl Cave, and unidentified species of *Equus* and *Camelops* are now extinct. Unfortunately the original provenience of much of the collection, including the horse, camel, and mountain goat, is unknown. The cave appeared to have been considerably disturbed, before any scientific excavations were made and many bone fragments were picked up on the surface. The provenience data is definitely known for only one species that may have climatic significance-- the pika. One upper incisor of *Ochotona princeps* was recovered from the five foot level of the deposit. *Ochotona* no longer occurs in the Laramie Mountains (Long 1965), but does occur 50 miles to the west, across the Laramie Basin, in the higher portions of the Medicine Bows. Presence of *Ochotona* and *Oreamnos* would seem to indicate a cool episode at some time in the past."
>
> "Remains of such northern mammals as *Microsorex*, *Dicrostonyx*, *Gulo*, *Ovibos*, *Oreamnos*, and *Ochotona* occurred in the Laramie Mountains during the late Pleistocene times and have been reported from Little Box Elder Cave, Wyoming (Anderson, in press) about 60 miles north of Horned Owl Cave. Unfortunately neither site is dated."

In Pleistocene Mammals of North America (1980) by Björn Kurtén and Elaine Anderson, additional locations for mountain goat fossils are listed. To quote:

> "Mountain goats are rare as fossils partly because their habitat is not conducive to fossil preservation. The earliest record is from Sangamonian interglacial deposits near Quesnel Forks, British Columbia. Wisconsinan occurrences include Bell, Horned Owl, Little Box Elder, Samwel, and Potter Creek caves. *Oreamnos* was reported from Washtuckna Lake (now known as the Delight fauna), but later studies have shown the specimen to be the root of a mastodon tooth (Fry and Glustafson, 11974). Mountain goats are found on rocky slopes above the timberline in the Rocky Mountain and Coast ranges from southern Alaska and eastern Yukon Territory south to western Montana, central Idaho, and northern Oregon. They were introduced into the Black Hills, South Dakota, in 1924 and are thriving there."

With the presence of a southerly distribution for the mountain goat having been confirmed for this most recent ice age, the question is: Could relict populations have survived in the Colorado Rocky Mountains long after the continental ice sheets withdrew to the north?

Ute Hunters to 1806

Paleolithic hunters of the Colorado Rocky Mountain region began with the Fremont Culture who lived on the western slope some 10,000 years ago. The remains of their permanent dwellings are being studied today. When Europeans arrived in the area they encountered a people who called themselves Yuutaah. English speakers refer to them as the Utes. They have inhabited the region for well over 1000 years. Their language is in the Uto-Azteceaen language family, so the Aztecs of Mexico are known to be their distant cousins along with the Shoshone of northern Wyoming, and the Comanche of the plains. Although no census of Utes was taken prior to their confinement on reservations, their numbers have been estimated between four and ten thousand persons (Marsh 1982) . Spanish expeditions into the Rocky Mountains were extremely limited in scope. Contacts made between the two cultures were primarily for trade and occasionally made by missionaries for the purpose of gaining religious converts. There were no studies of their original culture and hunting habits by the Spanish known to this day. Information on the Utes of that period does not to tell us much about the fauna of the mountains.

The 1804 Expedition of Lewis and Clark

The misnaming of big game in the Rocky Mountains began with the Louis and Clark expedition. The first name given to the pronghorn was 'goat' or 'buck goat'. Eventually this

animal was renamed 'wild goat', 'antelope', or 'spronghorn' and finally twenty five years later, 'pronghorn'. Bighorn sheep were called 'bighorn' or 'mountain sheep'. They spotted their first mountain goat in 1805 and called it variously a 'mountain goat' or 'mountain sheep'. Military officers trained at West Point were required to study the papers of Louis and Clark, thus beginning a tradition of misnaming big game throughout the mountain west. Owen Wister (1904) best sums up the scenario:

> "Well, at this sick camp, while they're making ready to float to Astoria, enter the white goat. It is his first recorded appearance. Says Gass: "There appears to be a kind of sheep in this country, besides the ibex or mountain sheep, and which have wool on. I saw some of the skins, which the natives had, with wool four inches long, and as fine, white, and soft as any I had ever seen." Here, you perceive, is the error, appearing simultaneously with the goat. These sheep "live," says the text in another place, "in greater numbers on that chain of mountains which forms the commencement of the woody country on the coast and passes the Columbia between the falls and rapids." Accurate in everything save the name."
>
> "Next comes the observation (William Dunbar and Dr. Hunter) written on the Columbia River near the Dalles: "We here saw the skin of a mountain sheep, which they say lives among the rocks in the mountains; the skin was covered with white hair; the wool was long, thick, and coarse, with long, coarse hair on the top of the neck and on the back, resembling somewhat the bristles of a goat." This time, you see, they are on the very edge of getting the thing straight. But no; they recede again, after the following which seems to promise complete clearing up:-- "A Canadian, who had been much with the Indians to the westward, speaks of a wool-bearing animal larger than the sheep, the wool much mixed with hair, which he had seen in large flocks." April ten, 1806, the party is on its return journey. It has successfully wintered on the coast, and has now come up the Columbia again, fifty miles above Vancouver. "While we were at breakfast one of the Indians offered us two sheepskins for sale;... the second was smaller....with the horns remaining.... The horns of the animal were black, smooth, and erect; they rise from the middle of the forehead, a little above the eyes, in a cylindrical form, to the height of four inches, where they are pointed."
>
> "Here there is no mistake about the mistake; he describes a goat and calls it a sheep. Why he should do this when he had seen bighorn constantly during his journey up the Missouri may possibly be thus explained: He says that he did not think the bighorn much like a sheep, and so, perhaps, the goat did not strike him as much like a goat; we know it happens to be an antelope."
>
> "Such is the story of the confusion begun- we can only guess why- by Lewis and Clark, and not cleared up until our own day."

The 1806 Expedition of Lt. Zebulon Pike

The first official American exploration into Colorado was lead by Lt. Zebulon Pike. Pike's journal lists some fauna and flora of the region but this was not the primary aim of his mission. He was sent to find the headwaters of the Arkansas and Red rivers, and to assess their

navigability. Despite the lack of any records regarding mountain goats, there is a interesting but otherwise inconclusive account of an "unknown species" when Pike's expedition was somewhere near present day Cotopaxi west of Bernard Creek. He wrote the following passage in his diary on December 29, 1806:

> "Marched; but owing to the extreme ruggedness of the road, made but five miles. Saw one of a new species of animal on the mountains; ascended to kill him, but did not succeed."

This animal was not likely to have been bighorn sheep because, he already knew what they were and referred to them as such. Implicit in Pike's comments are that the "unknown species" could be seen at a distance and it was cautious enough to get out of sight before Pike could shoot it. Unfortunately, Pike did not give us a more detailed description or it may have been edited out by Elliot Coues who compiled Pike's journals long after his untimely death in the battle at York (Toronto) in 1813.

The Political Boundaries as of 1803

In his travels Pike travelled into the territory of New Spain, later renamed Mexico, which in 1803 encompassed all of Texas and reached north to the Arkansas River. New Spain's boundary followed the Arkansas upstream to the continental divide where it headed north along the divide to the present day southern boundary of Wyoming. New Spain also claimed the western slope all the way to California. See figure 4 in Appendix.

Spanish political and military ambitions far exceeded their capacity for governing, holding, and populating these claims with loyal citizens. Although he was an invader in the eyes of the Spanish, for the most part, Pike was able to travel at will throughout their territorial claim in the Rocky Mountains. Toward the later part of their explorations, the Spanish became aware of Pike's intrusions and sent a platoon to find and capture him. Instead of tracking Pike, the Spanish themselves were tracked by Pike who, to avoid a confrontation, approached the Spanish forces to talk. He was promptly invited to visit the governor at Santa Fe where he and his men were bound over to higher authories in Chihuahua.

Land east of the Rocky Mountains, north of the Arkansas River, and west of the Mississippi River was called Lousiana Territory. As of 1800 it had been claimed by the French, who were even less capable of defending it as a territorial claim than the Spanish were of their own. As such, the French were pleased to sell the territory to the United States in an 1803 transaction known as the Louisiana Purchase. With the stroke of a pen, the territory of the United States had been doubled. The purchase added land of which the government and citizens of the new nation had virtually no knowledge until Lt. Pike was repatriated in July of 1807, four months after his capture by the Spanish.

The 1820 Expedition of Major Long to the Pike's Peak Region

Major Stephen Long led an expedition across the plains along the Platte River. As they approached the Rocky Mountains from the northeastern part of present day Colorado, the most prominent peak to emerge on the horizon was named for Major Long. An excerpt from Long's record of travels illustrates the terminology used by military men in describing the fauna of the prairie,

> "The whole of this region seems peculiarly adapted as a range for buffalos, wild goats, and other wild game; incalculable multitudes of which find ample pasturage and subsistence upon it."

Hence, Long incorrectly referred to the pronghorn as a "wild goat" which was an established practice in his day. Oddly, even after making observations such as this, Long called the high plains and prairies "The Great American Desert", a label which stuck for several decades. The whole region to which Long was referring is now know as the Great Plains.

Long entered the Rocky Mountains near present day Chatfield Reservoir south of Denver and headed south along the Rampart Range. A member of his party, Edwin James, was the first man on record to scale Pike's Peak. On their way up they noted signs and tracks of bighorn sheep, but no Rocky mountain goats. In spite of the summer season of Long's expedition, as compared to the winter time travels of Pike, they did not travel far into the Rocky Mountains and left well before the onset of fall in 1820.

The Political Boundaries as of 1822

Two years after the conclusion of Major Long' expedition, Texas gained independence from New Spain and claimed lands north and east of the Rio Grande River all the way up to the Rocky Mountains including a stretch of land nearly 100 miles wide running along the continental divide. Kansas Territory came from the east north of the Arkansas River where it abutted Texas. The northern boundary of Kansas was parallel to its present day northern boundary all the way to the foothills. Kansas included the site of present day Denver, but not Fort Collins. The southern boundary of Nebraska Territory extended likewise to the foothills including the site of present day Fort Collins. New Spain still claimed present day New Mexico and most of the western slope of the Rocky Mountains as far north as Wyoming all the way to California. See figure 5 in Appendix.

Mountain Men

Mountain men came across the plains and entered the Rocky Mountains in the 1820s in search of beaver pelts. Their numbers increased markedly in the 1830s due to an expanding market for the pelts which were used to make hats in both Europe and America. The trappers and mountaineers came from several nationalities: French, American, British, and German. Place names along the front range still reflect these national influences such as the Cache la Poudre River in northern Colorado. Unfortunately, only a few of them had the skill and inclination to write about the things they had seen in the mountains.

Native Americans generally accepted their presence. The mountain men travelled and lived off the land in much the same way. Unlike later arrivals, the early mountaineers had no interest in aquiring land for agriculture, ranching, or mining. They traded with the Native Americans, learned their languages, and sometimes intermarried within local tribes.

The beaver market crashed in 1839 forcing many of the trappers to search for a new way to make a living. Many of them hired out as guides for aristocratic sporthunters. Although they often testified to the presence of Rocky mountain goats in Colorado, few were able to provide tangible proof in the form of kills for their clients. An excerpt from Baille-Grohman's Fifteen Years Sport and Life illustrates this problem:

> "...I had hunted on the breezy mountain ranges of Wyoming, Colorado, Idaho, and eastern Montana, but I had failed utterly to find my game elsewhere than in the imagination of romancing trappers and guides, a circumstance that created in my mind a decided tendency to look upon all "goat" stories with a good deal of suspicious reserve."

Their credibilty was increasingly discounted due to many guides' tendency to oversell the abundance of game to his prospective sporthunting clients. Mountain men were also not likely to have spent much time in the alpine zone. Beaver have always been found well below these high elevations in the montane zone.

Ute People in the 1800s

When gold seekers poured into Colorado in the 1850s and 1860s, the Ute people were rapidly displaced from their ancestral territory. Their population was well within the limit of persons who could subsist indefinately by hunting and gathering wild food in the mountain ecosystem. The gold discovery of the summer of 1858 was followed by an influx of around 50,000 prospectors and miners in a single year. Although an estimated 25,000 may have left after the first weeks and months, they still outnumbered the native population by a factor of two or three. This influx of newcomers to the Rocky Mountain region would continue and even increase in the years that followed.

High country mining camps were isolated due to a the absence of roads. When supplies finally arrived, price gouging was rampant forcing the cost of food and other necessities to levels ten times higher than prices paid in Denver. Many miners found it necessary to hunt for survival in competition with the Utes for a limited supply of game. As mining camps became more organized, market hunters started chasing game to sell meat for profit in the large, poorly

supplied camps and towns. The Utes, like the animals upon which they subsisted, were forced to retreat into higher and more remote elevations. As of this time no concerted scientific effort had been made to contact the Utes in order to study them or the environment in which they lived. Contacts were made only for the purposes of acquiring land for mining and transportation, or for "civilizing" the Utes by training them to be agriculturalists. Growing crops in the harsh soil and short growing season of the mountains was justifiably deemed an excessively laborious and ridiculous activity by a people who had spent millenia simply gathering and enjoying what nature had offered them.

The Meeker massacre of 1864 ultimately led to their expulsion from their mountain homeland. They were moved onto reservations in the southwestern corner of the state and in the Green River region of northeastern Utah. By 1880 when ethnologists had demonstrated the first interest in the original people of the Colorado Rocky Mountains, the exiled Utes had been reduced to poverty and dependence on the charity of the United States government. Much of the oral history of the Ute culture had been permanently lost (Marsh 1982).

Constantine Samuel Rafinesque names the genus *Oreamnos*

Rocky mountain goats were first given several names because of physical variations within what we now know is a single species. They were first classified in a genus called *Mazama* as *Mazama tema*, *Mazama pita*, *Mazama dorsata*, *Mazama puda*, and *Mazama sericea*. *Mazama tema* was reported to be in Mexico in 1817. *Mazama dorsata* was the name Rafinesque gave to Ord's *Ovis montana*. Blainville gave the name *Rupicapra americana* to the Rocky mountain goat (Blainville 1816), but Rafinesque identified Blainville's animal as *Mazama sericea*. The purpose of the paper was to reclassify *M. dorsata*, *M. sericea* and *M. puda* under the subgenus or genus of *Oreamnos* (1817):

> "The following new genera are extracted from my North American Mastodology, or Natural History of the Quadruped, and Cetaceous Animals of North America which contain about two hundred and twenty species, nearly one hundred of which are new, or undescribed in methodical works. The new species will be described in another essay."

Cuvier (Smith 1827) claimed that Rafinesque's *M. dorsata*, and *M. sericea* were the adult and young of his *Aplocerus* and that the term Mazama is applied to the genus *Cervus*.

Rafinesque's work was later unfairly discredited due to an incident while he was a guest in the residence of John James Audubon. During the night a bat flew into Rafinesque's room and woke him up. Audubon was awakened by the commotion of Rafinesque trying to catch the bat. When Audubon went to investigate the reason for the noise he found Rafinesque wieldng his battered Cremona violin as a weapon to kill what he thought was a new species of bat. While Audubon didn't make a fuss over the violin at the time, he was secretly infuriated at the impertinent behavior of his guest. Later he sent Rafinesque several fanciful illustrations of fishes claiming these to be portraits of real specimens. Rafinesque promptly classified the fishes only to be later embarrassed and discredited among his peers (Sterling 1978).

Baron Georges Cuvier: Originator of Comparative Anatomy

In 1822 Cuvier wrote The Class Mammalia Arranged by Baron Cuvier with Specific Descriptions. The Rocky mountain goat was classified as several species in his genus *Aplocerus*. Of the three designated species he had: woolbearing antelope, ovine antelope, and chichiltic. He notes on page 286 that:

> "Woolbearing Antelope. (*A. Lanigera*). This animal was first noticed by Spanish missionaries in 1697, and subsequently by Venegas, in his History of California. Captain Vancouver afterwards brought a mutilated skin to Europe, and the late Lieutenant-general Davies presented a complete specimen to the Linnæan Society of London. From this subject M. De Blainville published a notice under the name of Rupricapra Americana, in 1816. About this period Messr.s Lewis and Clark returned from their valuable travels, and brought another imperfect skin, from which Mr. Ord drew up his notice under the name Ovis Montana in May 1817, and in the same year a more detailed description was drawn up and afterwards published in the Transactions, vol. xiii. Some additional information relative to the species was derived from the Indians, and particularly from a memorandum drawn up by Donald M'Kenzi, Esq., chief factor of the Hudson's Bay Company, transmitted by Major Long to the government of the United States, and inserted by Dr. Harlan in his Fauna Americana of 1824."

Cuvier's book contained the first published drawing of the Rocky mountain goat between pages 286 and 287. Its color was variously described as ranging from pure white to light

chestnut, but other features of his Aplocerus 'species' such as horns, physique, and the texture of the fur were essentially the same differing mainly in size.

As for the range of the Rocky mountain goat, he wrote on pages 288 and 289,

> "It appears that Messr.s Lewis and Clark observed it as low as the forty-fifth degree of north latitude, but its chief residence is on the elevated regions of the Rocky Mountains, between the forty-eighth and sixthieth parallels of north latitude. It is found in great numbers near the head waters of the north fork of the Columbia River, where the flesh constitutes the principle food of the natives. The banks of the sources of the muddy rivers, Saskachawan and Athabasca rivers are also inhabited by these animals; but they are said to be less numerous on the eastern slope of the Rocky Mountains, than upon the western. They are seldom or never seen at a distance from the mountains, the climate and productions of which appear best adapted to their nature and mode of life. In summer they resort to the peaks and ridges in quest of pasture, but retire to the valleys in winter."

On page 289, Cuvier states,

> "M. Raffinesque's Mazama Dorsata, and M. Sericea, appear to be the young and adult of this species; the name Mazama was certainly understood in a generic by the natives of North America, and extended to animals of the present family, but the greater number were deer. For these reasons we applied it to a group of the genus *Cervus*, retaining only the specific application of it to the following species, which we find were designated as such by anterior writers."

The ovine antelope is described on page 289 and while he states that:

> "Ovine Antelope (*A. mazama*). There is in the *Linnæn Transactions*, vol. xiii., a notice of this species, which bears so great an affinity to the last mentioned in all the essential characters, that it may be only a variety of climate..."

he elsewhere states that range of this animal is "within the Tropics and Andes" which clearly separates it from the Rocky Mountain goat. Here we see some confusion between the brocket (the true *Mazama*) and the Rocky Mountain goat.

On page 291 Cuvier describes:

> "The Chichiltic. (*A. Temmamazama*). In the above mentioned paper, this supposed species is likewise noticed as derived from a drawing taken from a specimen shot near the sources of the Red River, or towards the base of the mountains of New Mexico [now southern Colorado]; but no additional information has been obtained on his head. Its form is light and slender; the nose small and ovine; the ears long, narrow, and rounded at the tip; the tail several inches long, and often carried erect. Its size equal to a kid; the horns about five inches and half long, black, slender, wrinkled at the base, lying straight along the the prolongation to the forehead, diverging, and bending back at a straight angle; the eyes dark and full, and the color that of a roebuck, with some white on the throat, belly, and inside of the limbs...he says [Harlan, Fauna Americana] in the above mentioned table xlii. figure 4, that 'the Macatl Chichiltec, or Temamazame, ranges in

> great numbers along the elevated mountains of New Spain, feeding on grasses and herbs, and that they are fleet and active in leaping; their horns are spirally annulated, ending in a point, increasing annually by an additional ring, which marks their age; they are dark colored the ears and eyes large; the teeth broad; the tail furnished with longish hair, that on the body shorter and wholly brown.' In the illuminated copy before mentioned, the figure is entirely pale chestnut brown, and the horns black."

Cuvier himself expressed doubts about making distinctions between the species in his genus *Aplocerus* based on the information available to him in 1827. He also states that he is at the mercy of the illustrator when classifying his many organisms. He states:

> "Considerable doubt is generally attached to characters [characteristics] derived from mere drawings, especially if they be without satisfactory notes, or by unknown hands. These objections attach, in part, to the last mentioned animal; and from the circumstances under which we saw the former, sufficiently explained in the original communication, some doubts will remain even respecting that species."

He did not doubt that the information was genuine, only that its accuracy might be questionable. He concludes,

> "Our own view on this subject differs from the arbitrary system which assumes upon its own authority the right to believe or discredit the recitals of others, who had intellect, eyes, and judgement, as well as ourselves; and we deem it more for the interest of science to admit, in their proper places, and with signs of uncertainty, such documents as are new, and not yet fully substantiated, than to reject them altogether as not worthy of notice."

Note that although Cuvier may not know the distinctions between the species of his genus *Aplocerus* he has been careful not to confuse this animal with the Bighorn sheep. On page 318 is a picture of a Bighorn ram entitled "American Argali *Ovis Pygargus*". The text that accompanies this picture both describes the males and females of the Bighorn sheep (and has provided a more precise and clearer account of this species). He has also treated the pronghorn "Prong-horned Antelope (*Antilocapra furcifer*) and brocket groups "Subulonine Group (*Cervus rufus, C. simplicicornis,* and *C. nemorivagus*)" in his book.

John Stanton W. Burrington: Sporthunting Aristocrat 1838 - 1842

Burrington hunted along the headwaters of the Arkansas River upstream from Bent's Fort during which time the Rocky Mountains were mapped as adjacent territories of northern Texas and New Spain. He spent the years from 1838 to1842 in the region from the Mississippi

across Kansas into Colorado and around the Powder River country in Wyoming. His writings only sporatically tell of hunting adventures, he devotes a large portion of his diary to continuing essays such as one entitled "methods of punishment for servants and slaves", and others which denigrated the methods of the rough mountain guides in his hire. Burrington's writings are not studied nor held in wide esteem today due to his tone of racist superiority and his overall lack of attention to matters of historical or scientific interest.

Despite these general failings, he held a curiously idealistic fascination towards some Native Americans. On the advice of Jim Bridger, Burrington sought out a tribe of Indians "in their primitive state". Burrington found the tribe about which Jim Bridger had spoken, but they were not as "primitive" as he had hoped. Burrington refers to them as the "Kiquweetchee". The description that follows regarding greasy hair indicates that the tribe was probably a band of Utes who were known to coat their bodies with bear grease. The exact location where Burrington found them is not known, but they were probably in the vicinity of the Cañon City area along the Arkansas River. At first he was not well received but, through an offering of two mules and two guns, he was invited to hunt with several of the young warriors. Burrington had been hunting in the plains and foothills a year prior to his encounter with the "Kiquweetchee" and he describes a dance involving ceremonial horns that he had never seen before. He states:

> "At night fall, we witnessed a ceremonial dance so typical of the Indian race... Their ceremonial dress was ordinary though it involved a kind of horns I had not seen before. Being a fine judge of bison trophies, I know they are not bison. Removed of any animal hair the head dress had two shiny long black horns braided into the greesy [greasy] black hair of the savages."

Two days later he was able to persuade two hunters to accompany him on a trip to hunt "the animal that possesses the black horn." The hunt itself was not documented except to mention that it was not successful. Sadly, the disappearance of this band was probably due to an epidemic of mumps carried by one of Burrington's black servants (Messiter 1878).

George Frederick Ruxton: Sporthunting Aristocrat 1847

Ruxton's writings have been cited in most modern day history books and many natural history books. He is regarded by many historians as a reliable authority on game hunting and frontier life in the mid 1800's. He spent only seven months in 1847 in the U.S. Occupied Territories. Only three of these months were devoted to hunting in South Park, Colorado. Ruxton neither hunted nor saw any Rocky Mountain goats and he probably never knew of their existence. If Ruxton were used as a sole source of information regarding the distribution of Rocky Mountain goats, either one of two arguments could be made. The first is that there were no mountain goats where he hunted, or that Ruxton did not spend enough time in the alpine zone.

U.S. Army Hunting Party in the Southern Teton Mountains 1847-1848

Subreports written by A. R. Johnston and James W. Abert were compiled by Philip St. George Cooke. The reports describe hunting forays into the mountains to bring back meat for the camps. After considerable discussion of bighorn rams and bighorn ewes, on page 112 the document describes a hike to a new area where "the game was much more abundant than on the east side" and that he saw "one of Lewis and Clark's Rocky Mountain goats crossing a steep mountain face without missing a step." The author climbs higher to get within shooting range from where he recalls "I shot it square in the back, he fell 100 feet to his death."

Museum of the Royal College of Surgeons of England

In the Specimen Checklist of the Museum of the Royal College of Surgeons of England there is a section devoted to an inventory of Rocky Mountain goat specimens. The museum had a total of sixteen mountain goats labelled *Haplocerus montanus* listed in Checklist Paper #2, page 100. Twelve of the goats came from British Columbia and were shot by Sir Edmund Loder and one Mr. Smith. Two of the mountain goats were killed in northern Montana, north of Lewis and Clark's [sic] Pass, in 1854. The first mountain goat specimens given to the museum were the head and skin of a female and her kid shot "south of the 40th parallel" in 1849 by an unnamed

hunter (Garson 1871). The designation of latitude is the most exact that can be expected of the period in which the specimens were taken because the territory was not named "Colorado" until the legislature of the Territory of Jefferson, as it was then called, adopted the new name in 1859.

Political Boundaries as of 1850

Since 1822 Kansas and Nebraska territories were extended all the way to the continental divide. Texas had contracted into its present borders. New Mexico Territory held on to some land in the middle south of the state, part of the San Luis Valley as far north as the Arkansas River. The western slope of the Continental Divide was part of the Utah Territory. See figure 6 in Appendix.

Army Exploration in the American West, 1838-1861

The Great Pacific Railroad Surveys were set up to find "the most economical and practicable route to the Pacific coast (Office of Exploration and Surveys 1861)." Giant railroad conventions were held to spur on the Pacific Railroad Survey Bill of 1853. The explorations were carried out by the U.S. Army Corps of Topographical Engineers. Its total complement at any one time was thiry-six officers. Though it followed in the footsteps of the mountain men, no other group of comparable size contributed so much to the exploration and development of the American West. Geographical mapping was only one of its functions. The Engineers were concerned with recording all of the western phenomena as accurately as possible, whether along well traveled roads or in uncharted wilderness. One of the expeditions sent out west was under the command of Lieutenant John W. Gunnison which departed from Fort Leavenworth on June 23, 1853. Once in Colorado, they traveled along the Arkansas river, crossed into the San Luis Valley, and went straight up to the present day site of Gunnison. From there, they followed the Gunnison and Colorado rivers into Utah. While there are ample records locating the two main officers, John Gunnison and E.B. Beckwith, numerous dragoons were spread out and generally lagging behind the head company. The Gunnison expedition explored territories that had been

Mexican until the war of 1846-1848. The early surveys focused on topography, with the aim of identifying routes for travel between the settled Atlantic and Pacific coasts.

The National Archives Publications, Offfice of Exploration and Surveys Letterbooks, and Wagon Road Reports give insight to the logistical problems involved with moving survey parties through Colorado. In addition to land surveys, they mention problems with sickness and death, transport of equipment, and acquisition of food and water.

Of relevance to the documentation of Rocky Mountain goats, there are the three separate food grids written into the letterbook (Old Army Section document #21311) of Stephen Campbell (rank unknown, but other documents confirm his employment with the Pacific Railroad Survey). Many pages in his letterbook refer to Lieutenant E.B. Beckwith. Most pages are not dated. The letterbook contains notes on "food grids" that were used to describe the location and abundance of wild game in the Rocky Mountains. While these game surveys were designed for U.S. Army logistics to assist in provisioning troops on future expeditions, they provide the modern researcher with a glimpse of the fauna present in 1853. The information was gathered by direct observation of Mr. Campbell and testimony brought to him by the scouting parties of dragoons. On each page he drew a vertical margin wherein he scribbled short notes on harvested animals. One such note lists: "bighorn rams, ewes, other, [illegible], white hare, white goat, other,... mountain buffalo, red hare,...." He used a straight edge and pencil to draw these grid lines. On the horizontal axis following the listing of the animals, tally marks were placed in neat rows within the grid. The first grid on page 22 (pages were missing, this is my count) entitled "Hunted Game" has two marks beside "white goat, other". No marks accompany "white goat" on page 22. On pages 34 and 35 are two food grids entitled "Game Animals". The straight edge line is continuous through both pages. Both pages list, in the same order, the animals they hunted. The margin has inscribed: "bighorn she[e]p, ewes, other, white hare, red hare, mountain buffalo, other, goats, white grouse,...." Accompanying the square for "goat" on page 34 column III are five marks. On page 35, column III there are two marks. The exact times and locations for these tallies are not known, but we know approximately where the expedition was located. The range

of its hunting parties could not have been in excess of one hundred miles from the main route. "Game Animals" did not include domestic stock; they were listed on a separate grid titled: "Military Animals for the Use of Food". These grids list common livestock and from where several were purchased. These food grids were useful later on when reports to the Secretary of War were written up to describe food availability along the proposed railroad routes. Many of these reports describe land fertility and game sources that could be utilized by the railroad companies during construction.

Another document of importance in the Office of Exploration and Surveys Archives, is a letter from Sergeant Brye dated July 20, 1853 to one Dr. Morgan (rank unknown, possibly civilian). The letter begins with a tally of the sickness which had stricken several men in his camp. Then he describes some of the edible plants in the region and a personal experience of shooting some goats "on top of the mountains." He states: "From a distance of forty paces I shot all five and the young. The company at[e] the young, the female goats were of poor meat. As yo[u] request I am sending the cook's boy to your camp with the wool and horns". He was also sending over some bull elk hides and antlers he had recently shot as well. His description of "poor meat" coincides with fact that Rocky mountain goat flesh has a musky flavor which most people find unpalatable. He finished the paragraph with: "I have only seen these five there are no more." While Sergeant Brye was part of the Gunnison Railroad Survey, there are no rosters listing Dr. Morgan as part of the Survey. Since there was no rank printed next to his name it is possible he was independent of the military operation. His rank and position within the survey party were not dilineated by the available documentation. While the letter was dated July 20, 1853, there is no specific location as to where the mountain goats were taken, but they had to have been in the Colorado Rocky Mountains somewhere near the present day Gunnison River.

Misidentification is not likely on the part of Stephen Campbell because he makes a clear distinction between the bighorn sheep ("bighorn rams, ewes...") and the mountain goat ("white goat"). In the discussion of misidentifications that shall follow, imported Angora goats shall be mentioned as a source of confusion surrounding the authentication of Rocky mountain goat

sightings in Colorado. Campbell's sightings were prior to any possible time when Angora goats could have been imported and brought to the mountains. The earliest Angoras could only have come during the Colorado gold and silver rushes of the later 1850s and 1860s.

While Sergeant Brye made no distinction in his own writings, he was in the same expedition as Campbell; and, it is likely that the two men used the same terminology in describing the animals they saw to one another. His description of killing "goats" is typical of other hunts as described in literature of the late 1800s.

The Profligate Hunting of Sir Gore During the Summers of 1854 to 1857

Gore arrived in Colorado in 1854 and left in 1857 killing by his own estimation 2,000 bison, 1,600 elk and deer, and 100 bears. In Colorado he traveled extensively on the Western Slope, North Platte, Steamboat Springs area, Gore Pass, and as far south as Pike's Peak. His hunting was limited in the high mountains due to the lack of roads and logisitical problems involved with transporting his outfit of 80 men. He did not write about his adventures and surprisingly little is known about him. Merrit (1985) wrote that Sir Gore preferred to hunt in

> "mountain-rimmed upper valleys, or parks, with sagebrush plains and gentle slopes teeming with elk, deer, and other game. He snatched gleaming cutthrout trout from their broad clear streams and banged away at antelope and mountain sheep in the secluded reaches of North and Middle Parks. Gore preferred shooting from a standing position, his rifle resting in the fork of a stick and with a gunbearer at the ready to hand him a freshly loaded weapon."

With the Rocky Mountain region being advertised as a sportsman's paradise in the press, other hunters with similar inclinations are likely to have followed Gore and his practice of slaughtering wildlife (Ubbelonde et al. 1982).

Other Aristocratic and Literary Sporthunters

A commonly used source of information to describe the type and distribution of game animals has been from the articles, books, and diaries of wealthy European sportsmen. According to John Merritt (1985): "There is no way of knowing how many British sportsmen set

out across the plains from Independence, Omaha, and other jumping-off points in the nineteenth century, but their number was surely in the hundreds. Of these, little more than a dozen left book-length accounts". A critical review of these materials show that many of the hunters had their favorite hunting spots and primarily concentrated in these areas. Others, like Charles A. Messiter, were more interested in the acitivies of frontier life than hunting. This research surveyed information on many British sporthunters and found that most of their chronicles were unable to shed light on the historical distribution of Rocky Mountain goats. Some of these are listed as follows:

William Drummond Stewart- primarily hunted and traveled along the Oregon trail from 1833 to 1839. His stories center around hunting in Western Wyoming. He did make one excursion along the Santa Fe trail but did not travel in Colorado's alpine areas.

Charles Augustus Murray- never visited Colorado's mountains rather he stayed out on the plains with the Pawnee Indians from 1835 to 1836.

John Pallier- hunted in 1840 in North Dakota and eastern Montana.

George Frederick Ruxton, see above.

Joe "Bear" John Smith hunted in 1849 in Colorado but, did not travel into Colorado's Rocky Mountains. He seems to have made sport of hunting Indians for scalps.

Sir Edward Poore- hunted in 1849 but never came to present day Colorado.

George Charles G. F. Berkeley- spent three months in mid Kansas in 1859.

J.S. Campion- hunted in Colorado in 1860. He recorded some hunting on the Platte and Big Blue River area. His passion was buffalo hunting. He decided to stay in America and even joined the Colorado militia in 1864. His books cite occurrences of neither Rocky Mountain goats nor Bighorn sheep for that matter.

Charles A. Messiter- hunted in North America from 1862 to 1875. A brief stay in Julesburg is the only time he visited Colorado.

Topographical Corps Report of 1857

The Topographical Corps 1857, Reports of Explorations and Surveys to Ascertain the Most Practicle and Economical Route for a Railroad from the Mississippi River to the Pacific Ocean, 13 volume quarto set, contains the correspondence and field journals of the various railroad exploring parties of 1853-55. Volumes 7, 9, & 10 are devoted exclusively to scientific reports on botany and zoology. These volumes are considered to be among the most important American scientific productions of the nineteenth century. Volume 5 reports: "42 white goats killed for meat." This occured north of Meade and Wasatch canyon of southern Idaho. The scientific name and description of their white goat is listed in volume 9. This is the Rocky Mountain goat and the scientific name given is A*ploceros montanus.*

Market Hunting

Market hunters supplied meat for the burgeoning populations of the mining towns and camps throughout the Colorado Rocky Mountains. From 1858, and into the 1860s, tens of thousands of miners and settlers began streaming into the region every year. Gold discoveries led to the hasty establishment of towns before adequate highways and railroads could be constructed to supply them. The result was that the demand for essentials such as food far outstripped the supply. Inflation soared in the mountain towns, the price of goods often being sold for over ten times the amount as in the eastern states (Clark 1959).

Hunters moved in to the region to supply the miners with meat from the closest available source, large game animals inhabiting the mountains. They were eager to supply the towns owing to the tremendous profits to be made in doing so, but they were unconcerned or unaware of the impact overhunting would have on animal populations.

The Goat Hunt of W. A. Baille-Grohman, 1882-1885

Baille-Grohman developed a keen interest in mountain goats prior to his travels from Great Britain to the United States. He carried on an exhaustive research of the scant information available on the animals in his day. In describing their appearance and tenacity he wrote,

> "The old rams are of curiously grotesque proportions, a great hump and high withers give them more the appearance of a mountain buffalo with a goat's head and a long white coat, than anything one could liken them to. The females are very much smaller and their horns are also a trifle smaller and not quite as thick at the base. They are jet black and smooth, and, while they are much less crooked, they are as sharply pointed as those of the chamois, making them very formidible weapons. When wounded, they are decidely nasty foes to tackle. I have seen four or five large hounds either disabled or put to rout by a wounded female goat, while an old ram would, I should say, remain master against half a dozen dogs so long as he could not be tackled from the back."

Baille-Grohman was disappointed with his searches for mountain goats south of British Columbia as he wrote,

> "In the three preceding years I had hunted on the breezy mountain ranges of Wyoming, Colorado, Idaho, and eastern Montana, but I failed utterly to find my game elsewhere than in the imagination of romancing trappers and guides, a circumstance that created in my mind a decided tendency to look upon all 'goat' stories with a good deal of suspicious reserve. I heard a great number of such tales. Men told me that they had shot, knifed, lassoed, stalked, staked in pitfall, and otherwise 'gone for' the mysterious beast. And in their turn they had been gored, spitted, 'treed', butted, trampled on, and generally roughly handled by redoubtable old rams, and though the stranger in this land declined to be 'filled up boots and all,' with these hoary old myths of the ultra Western type, they yet generated in me an irrepressible desire to get to the bottom of these wonderful natural history revelations."

Baille-Grohman received a letter from a trusted friend which sent him to the Bitter Root Range of Montana in search of his prize. After hiring a guide, they went up to the mountains and saw the white goats on a sawtooth peak. In the following days, Baille-Grohman and his party made a series of strenuous ascents up to the ridge bagging a total of fifteen mountain goats.

His thoughts on the range of the goat are as follows,

> "Two writers, to whose judgement I lend much weight -- Mr. Grinnell and Mr. Warburton Pike -- entertain the belief that the animal has occasionally been seen in Colorado and Wyoming. The latter, writing in the 'Encyclopædia of Sport' (Vol. I, p. 456), says :--'In Colorado, Wyoming, and Nevada, authentic instances of their occurence have been noticed within the last twenty years.' On this point I cannot agree with either until a positive proof of such an occurance is furnished. It is quite true that one has heard of many such discoveries of the Haplocerus on the mountains of Wyoming, Eastern Montana (near the National Park), and in Colorado, but on following up the

> reports they have invariably simmered down to hearsay evidence, or to the equally frequent error made by men, who have never seen a mountain goat, mistaking a female bighorn for it. Of another cause of these mistakes an English sportsman, who is an old resident of Wyoming and Colorado, has lately given me an interesting account. According to him, some of the Angora goats imported years ago have run wild, and are to be found in one or two districts of Western Colorado and Northern Utah, he himself having seen their horns. As the exterior appearance of these animals resembles in certain respects the antelope-goat [mountain goat], it is easy to account for the mistake made by otherwise perfectly reliable men."

He further concludes:

> "If there is one region where they might dwell, if once their existence east of the Rocky Mountain divide be admitted, it is the Soshoné range south of the National Park. There I have looked for them fairly thoroughly without discovering a single sign of them, notwithstanding the positive assurance of hunters, and even men above the ordinary run of western 'tall-talkers,' that it was to be found there."

Because of his inability to find mountain goats south of the Bitter Root Range of Montana in his several years of hunting in the West, Baille-Grohman discounts the testimony of men whom even he considers are sincere and concludes that mountain goats extend no further south. Interestingly, Baille-Grohman considers the range of the mountain goat to be static because of the difficulty of hunting mountain goats as opposed to bison whose relative ease of killing allowed a steady decrease in their range. He wrote,

> "In the Badminton Library, Mr. Phillipps-Wolley devotes but a little over two pages to it and to its chase, declaring 'that it [mountain goats] appears to be the biggest fool that walks upon four legs,' and 'that there is no wild animal easier to stalk.' 'I felt thoroughly ashamed of myself,' he writes, when he put an end to a big ram with a bullet. I cannot at all agree with this writer in what he says of the 'goat.' Were what he says true about its chase being the easiest of any wild animal, it would surely have long ago shared the fate of the bison instead of being to-day in many places more numerous than it was a generation ago, when Coast Indians pursued it with zeal for the sake of its fleece...What makes it appear stupid is its ingrained curiousity that causes it to stand gazing at any unwonted sight such as man."

Baille-Grohman refused to believe that the mountain goat's range extended beyond the regions where he and his contemporaries made confirmed kills for two essential reasons. One was that he believes that sightings and reports of killings were either angora goats or bighorns. Secondly, he (like Hornaday below) finds that they are quite inaccessible and difficult to hunt; therefore, in his opinion, the range of the mountain goat does not fluctuate like that of other species which are easy to find and kill.

Session Laws of 1887 and 1889 Protecting Game

The Colorado Legislature met every odd numbered year until the 1960s. In 1887 and 1889 they passed two nearly identical laws protecting game in the state. The laws established moratoriums on hunting certain nearly extinct species, and created hunting seasons for other animals. The moratoriums covered species such as bison, bighorn sheep, and Rocky mountain goats. Hunting seasons were established for deer, elk, and pronghorn. Killing an animal for the sole purpose of obtaining skin and horns was prohibited. The verbatim text of the 1887 act follows on the next page:

GAME.

(H.B. 133)

AN ACT

TO AMEND SECTION THREE (3) OF CHAPTER FORTY-FIVE (45) OF THE GENERAL STATUTES OF THE STATE OF COLORADO, ENTITLED "GAME," AND REPEALING INCONSISTENT ACTS.

Be it enacted by the General Assembly of the State of Colorado:

SECTION I. Section three (3) of chapter forty-five (45) of the General Statutes, is hereby amended so that it shall read as follows: SEC. 3. No person shall kill, wound, ensnare or trap any bison or buffalo within the State for a period of ten (10) years, from and after the approval of this act. No person shall kill or wound, ensnare or trap any mountain sheep within this State for a period of eight (8) years, from and after the approval of this act. No person shall kill or wound, ensnare or trap any ibex or Rocky Mountain goat within this State for a period of ten (10) years, from and after the approval of this act. No person shall kill or wound, ensnare or trap any deer, elk, fawn or antelope within this State for any purpose whatever, except as povided in section 4, chapter XLV., General Statutes. No person shall kill or wound, ensnare or trap any deer, elk, fawn, or antelope between the first day of December and the first day of September of the succeeding year, except those which have horns. No person shall kill or wound, ensnare or trap and elk between the first day of January and the first day of October, except those which have horns. Nor shall it be lawful at any time for any person to kill, ensnare or trap any deer, elk, fawn, or antelope for the sole purpose of securing the skins or horns of any such animal. Nor shall it be lawful for any person or persons or corporation to have in possession any of the game herein mentioned, for any purpose whatever, except as provided in section four (4) of said chapter forty-five (45), General Statutes. Any person or persons offending against the provisions of this section shall be

deemed guilty of misdemeanor, and upon conviction thereof, as in proceedings of cases of assault and battery, before any justice of the peace, shall be fined in any sum not less than fifty ($50) dollars, nor more than two hundred ($200) dollars for the first offense, and for each subsequent offense shall be fined in any sum not less than fifty ($50) dollars nor more than ($200) dollars, and be imprisoned in the county jail not less than thirty (30) days, nor more than ninety (90) days. Any person arrested and brought before any justice of the peace for any violation of the provisions of this section, shall be entitled to a trial by a jury of six (6) unless he shall waive the same, and if the jury find him guilty the justice of the peace shall assess the fine and costs, and fix the term of imprisonment, as the case may be. The whole amount of said fine shall go to the school fund of the county where such fine is collected.

SEC. 2. All acts or parts of acts inconsistent with the provisions of this act are hereby repealed.

Approved March 22, 1887.

The session law of 1889 was nearly the same law with a few enhancements. The primary difference is that seasons for certain animals with horns were newly established. The second difference is that the new law was rewritten to make it easier to prosecute offenders who might otherwise exploit aspects of court process such as jurisdictional authority to prosecute, or whether certain materials are admissible as evidence. The text of the act follows:

172 GAME.

(H.B. 143)

AN ACT

TO AMEND SECTION THREE OF CHAPTER XLV OF THE GENERAL STATUTES OF THE STATE OF COLORADO, ENTITLED "GAME," BEING GENERAL SECTION FIFTEEN HUNDRED AND FORTY-FIVE.

Be it enacted by the General Assembly of the State of Colorado:

SECTION I. Section three of chapter XLV of the General Statutes, entitled "Game," being general section fifteen hundred and forty-five, is hereby amended so that it shall read as follows: SEC. 3. No person shall kill, wound, ensnare or trap any bison or buffalo within the State for a period of ten (10) years, from and after the approval of this act; no person shall kill or wound, ensnare or trap any mountain sheep within this State for a period of eight (8) years, from and after the approval of this act; no person shall kill or wound, ensnare or trap any ibex or Rocky Mountain goat within this State for a period of ten (10) years, from and after the approval of this act; no person shall kill or wound, ensnare or trap any deer, elk, fawn or antelope within this State for any purpose whatever, at any time, except those which have horns may be killed between

> July first and December first of the same year for food purposes, as provided in section four, chapter XLV. of the General Statutes of Colorado; nor shall it be lawful at any time for any person to kill, ensnare or trap any deer, elk, fawn, or antelope for the sole purpose of securing the skins or horns of any such animal, and the selling or offering for sale; or the shipping, or the having in possession for the purpose of transporting out of the State, any of the skins or horns of such animals shall be *prima facie* evidence that such animals were killed for such purpose; nor shall it be lawful for any person or persons, or corporation to have in possession any of the game herein mentioned, for any purpose whatever. Any person or persons offending against the provisions of this section shall be deemed guilty of misdemeanor, and upon conviction thereof, as in proceedings in cases of assault and battery, before any justice of the peace, shall be fined in any sum not less than fifty (50) dollars, nor more than two hundred (200) dollars for the first offense, and for each subsequent offense shall be fined in any sum not less than fifty (50) dollars nor more than (200) dollars, and be imprisoned in the county jail not less than thirty (30) days, nor more than ninety (90) days. Any person arrested and brought before any justice of the peace for any violation of the provisions of this section, shall be entitled to a trial by a jury of six (6) unless he shall waive the same, and if the jury find him guilty the justice of the peace shall assess the fine and costs, and fix the term of imprisonment, as the case may be. The whole amount of said fine shall go to the school fund of the county where such fine is collected; provided, That nothing in this section or act, or in the acts of which this is amendatory, shall be construed to give justices of the peace exclusive jurisdiction over such offenses; but such offenders may be prosecuted in other courts having jurisdiction over misdemeanors.
>
> SEC. 2. All acts or parts of acts inconsistent with the provisions of this act are hereby repealed.
>
> Approved March 26, 1889.

The legislators were specific in referring to Rocky mountain goats, but also included the word 'ibex' in alluding to the same. In that day the two terms were interchangeable much like the words 'bison' and 'buffalo'. The law attempted to cover all killings of Rocky mountain goats by not allowing offenders to plead innocence based upon popular misunderstandings and inappropriate labeling of animals. This was intended to prevent any poacher from claiming that he had only shot an 'ibex', when he had in fact killed a mountain goat. The use of the term 'ibex' was common enough, not only to find its way into law, but to grab the attention of mammalogists such as Hornaday who vigorously argued against the presence of ibex (*Capra ibex*) in Colorado based on what he knew the scientifically recognized ibex to be. He wrote (Hornaday, 1914):

> "Thus far without one exception all the rumors of 'ibex' that have come from Wyoming, Colorado, Montana and British Columbia have proven entirely without foundation. In one case a Colorado hunter discovered a small band of once-tame goats running wild and reported it to *Recreation* magazine, with a photograph of the mounted specimen. It is reasonably certain that

> no representative of the genus *Capra* inhabits North America or ever has done so during historic times, and all stories of 'ibexes' in America may be put down as chargeable to young mountain sheep rams or ewes with extra large horns."

The discussion below further illustrates Hornaday's thoughts on the Rocky Mountain goat.

William T. Hornaday, Sc.D, The American Natural History (1914)

On page 48, Hornaday writes of the Rocky Mountain goat,

> "Its flesh is so musky and dry that it is not palatable to white men save when they are exceedingly hungry, and its skin has no commercial value. Nevertheless, in the United States the White Goat has been much sought by sportsmen and others who like difficult hunting that it is found only in Washington, Idaho and northwestern Montana."

The reference to Montana clearly illustrates his differentiation between the 'ibex' discussed above and the Rocky Mountain goat because he certainly believes that the mountain goat lived in Montana. His map "Distribution Of The White Mountain Goat" subtitle: "The black dots represent actual ocurrences" (on page 47, Hornaday 1914), shows several dots locating goat populations along the Rocky and Canadian Pacific coast mountain chains. A single population dot has been placed in the Teton Mountains near Jackson Hole, Wyoming.

Hornaday is optimistic about the long term survival of the mountain goat as a species. On page 217 he wrote,

> "Unless the preferences of western sportsmen and gunners change very considerably, the coast mountains of the great northwestern wilderness will remain stocked with wild mountain goats until long after the last big-horn has been shot to death. Fortunately, the skin of the mountain goat has no commercial value. I think is was in 1887 that I purchased, in Denver, one hundred and fifty nicely tanned skins of our wild white goat at *fifty cents each!* They were needed for the first exhibit ever made to illustrate the extermination of Amercan large mammals, and they were shown at the Louisville Exposition. It must have cost the price of those skins to tan them; and I was pleased to know that some one lost money on the venture."

This recollection of Hornaday places him in Denver during the very year that the first Colorado session law establishing a moratorium on the hunting of Rocky mountain goats was passed. Note that if Hornaday had purchased and attempted to transport the same hides two

years later, he could have been found guilty of a misdemeanor under the Colorado session law cited above whose intent he clearly supported.

Literature Citations

The earliest published sporthunting book found to claim that Rocky Mountain goats reside in Colorado is the 1872, Encyclopædia of Sport Vol. 1 by Warburton T. Pike. He describes them to be plentiful in British Columbia, Washington, and Montana. He also stated:

"In Colorado, Wyoming, and Nevada, authentic instances of their occurrence have been noticed within the last twenty years."

In Natural History of Western Wild Animals and Guide For Hunters, Trappers, & Sportsmen, (1875) chapter 5: The Rocky Mountain Goat, David W. Cartwright describes the mountain goat:

> "Its fleece is a beautiful white. It feeds upon the mosses and grasses which grow upon the mountain sides. Its flesh is dry and hard: it has a musky odor. It has erect, pointed horns: they are small and smooth, and are jet black: the feet are black. Travelers, who more frequently see the big-horn sheep of the mountain regions, mistake it for the goat. The big-horn lives in the valleys; but the goat rarely descends to the valleys, and never makes its home there."

He goes on to assert that:

> "This goat was formerly classed with the goat family. It is now classed with the antelopes. It is sometimes called the sheep antelope, and the wool-bearing antelope. It inhabits the highest and most inaccessible peaks of the Rocky mountains, ranging from 40 deg. to 60 deg. north latitude. It is the most abundant on the western slope of the mountains, and the woody country near the coast. In some respects it resembles the nimble, fearless climber of the Alps, the chamois."

This agrees with Charles Hallock, who wrote The Sportsman's Gazetteer and General Guide: in 1879 where he says:

> "The White Goat is confined to the loftiest peaks of the Rocky Mountains; it is not known south of Colorado, and is probably rare south of Washington Territory, but is found to the northward as far as Alaska."

His description on page 40 and 41 is:

> "In size this species about equals the domestic sheep, which it somewhat resembles in shape, but the long spines of the dorsal vertebræ give it the appearance of having a slight hump just behind the shoulders, and it is thus not particularly graceful in form. The horns are from six to eight inches long, awl shaped, ringed at the base and bending slightly backward. In color they, with the hoofs, are shining black like polished ebony...Notwithstanding its common name, this animal is regarded by naturalists as an antelope, and not a goat at all."

The following pages, 42 through 45, are devoted to the Bighorn Sheep.

Archibald Roger edited the book, Hunting American Big Game (1897), containing a chapter 3 by George Bird Grinell who likewise asserted that the mountain goat could be found:

> "abundantly in northwestern Montana, Idaho, Oregon, and Washington, and all through the mountain ranges of the British possessions and Alaska, north toward the Arctic Ocean, where the mountains become lower and sink down to meet the seashore. Besides this territory over which the species is generally distributed, there are a number of out-lying localities, like Mount Whitney, a peak or two in Colorado, and a few other points where white goats have been found."

The rest of the chapter was devoted to the natural history of the Rocky Mountain goat and one of his hunting experiences (no location given).

Some authors claimed that the mountain goat ranged even further south. In his book Ranch Life and the Hunting Trail, (1888) Theodore Roosevelt wrote:

> "They are found here and there on the highest most inaccessible mountain peaks down even to Arizona and New Mexico; but being fitted for cold climates, they are extremely scarce everywhere south of Montana and northern Idaho and the great majority even of the most experienced hunters have hardly so much as heard of their existence."

He then continued with an account of their abundance:

> "In Washington Territory, northern Idaho, and north-western Montana they are not uncommon, and are plentiful in parts of the mountain ranges of British America and Alaska. Their preference for the highest peaks is due mainly to their dislike of warmth, and in the north-- even south of the Canadian line-they are found much lower down the mountains than is the case farther south."

Roosevelt did not hunt Rocky Mountain goats in Colorado. Though it is not known how he obtained his range for the Rocky Mountain goat, he does relate an experience his hunting guide had in Colorado:

> "The Missourian, during his career as a Rocky Mountain hunter, had killed five white goats. The first he had shot near Canyon City, Colorado, and never having heard of such animal before had concluded afterward that it was one of a flock of recently imported Angora goats, and accordingly, to avoid trouble, buried it where it lay; and it was not fourteen years later, when he came up to the Cœur d' Alêne and shot another, that he became aware of what he had killed."

Roosevelt restates the distribution of the Rocky Mountain goat again in his Wilderness Hunter (1900):

> "In the Rockies and the Coast ranges they abound from Alaska south to Montana, Idaho, and Washington; and here and there isolated colonies are found among the high mountains to the southward, in Wyoming, Colorado, even in New Mexico, and, strangest of all, in one or two spots among the barren coast mountains of southern California."

The Big Game of North America, Its Habits, Habitat, Haunts, and Characteristics (1890), by John Fannin and edited by C.A. Cooper, is less specific regarding the range of the mountain goat:

> "The Rocky Mountain Goat has been reported as far south as 36 degrees north latitude, and as far north as 62 degrees; but I am not aware that any definite information exists respecting the limit of its northern range. My opinion is that this animal will be found as far north as there are mountains. This Goat is extremely abundant in British Columbia, ranging from its southern boundary to the watershed of the Arctic, and from the coast-line to the Rockies, though probably most abudant along the rugged peaks of the Coast Range...Indeed, there are few animals on the North American Continent of which, having regard to its distribution and relative abundance, so little is known as of the Rocky Mountain Goat."

Where to Hunt American Game published by the United States Cartridge Company of Lowell, Massachusetts in 1898 delineates it's method of research where:

> "For about two years data were collected for this work. After collecting all available material, each state was fully described, and the sketches were forwarded to the governors of the respective states, accompanied by letter asking each governor to read carefully, or hand the matter to the person regarded as the best authority on the subject, to peruse and criticize. It was requested if the matter was incorrect, to point out the error, and if correct to so state. Most of the states responded promptly. Chapters that were approved as correct were filed ready for press; those that were incorrect were rewritten again sent out for approval. Most governors referred the matter to the game commissioners, and it has their approval. No more thorough method of securing accurate information could be thought of, and it is believed that the book will furnish the most trustworthy information of any yet published on the subject."

At the time this information was compiled, Gordon Land was serving as the State Fish Commissioner (later renamed to State Game and Fish Commissioner) from 1889-1893 and then from 1895 to 1897. This is verified by mention of his name on page 40 which states:

> "Gray or timber-wolf are abundant, and said to be increasing. They are very destructive to stock. It has been estimated by a trustworthy hunter that there are 500 in Routt and Rio Blanco counties, but ex-Commissioner Gordon Land thinks there are about half this number."

In the next paragraph bighorn sheep (*Ovis canadensis*) and mountain goats (*Oreamnos americanus*) are mentioned:

> "Mountain sheep are not abundant; perhaps there are 100 in Routt and Rio Blanco counties. They are protected by law. There are some Rocky Mountain goats in the state, but they are not abundant."

Another author, Dwight W.Huntington, openly claims to use information from George Bird Grinnell, Theodore Roosevelt and others for his book Our Big Game: A Book for Sportsmen and Nature Lovers (1904). In chapter 15 he wrote:

> "Some writers say we may find a few of these curious animals in isolated colonies in the high mountains in Wyoming, Colorado and New Mexico."

By contrast, in later years, D.M. Armstrong wrote Distribution of Mammals in Colorado, 1972. He cites that Coues and Yarrow (Coues & Yarrow 1875),

> "in an account of the mountain goat, reported 'one individual seen in Colorado by Lt. Marshall's party.' Trippe (1874:224) noted the mountain goat (as *Aplocerus montanus*) among the mammals of Clear Creek and Gilpin counties. There is no concrete evidence to indicate that the mountain goat has occurred in Colorado in recent times prior to its introduction by man. Perhaps early reports represent sightings of bighorn ewes."

Photography, a Scarce Medium in the 1800s

With the exception of the Civil War, photography was generally not used to record events and places until more advanced techniques came in the 1900s. The photographers of this period generally used the collodion or wet-plate process. Preparation of a negative involved coating a sheet of glass with collodion, a viscous solution of gun-cotton in ether and alcohol plus soluble iodine compounds. This sticky mixture, remained on the plate after the solvents evaported, becoming the vehicle for light-sensitive silver iodide that was precipitated onto the surface in a bath of silver nitrate. The plate had to be used while still wet, for fear that the emulsion lose its photosensitivity, so the photographer was obliged to work on top of a wagon

bed, with the entire apparatus including camera. The plate was exposed for ten to thirty seconds, and then rushed back to the darkened tent to be developed and fixed. The entire process was subject to the vagaries of weather and inadvertant movement. Due to the rigors of transporting equipment and developing images at high elevations, the Colorado Historical Society has only been able to locate and copy seven pre-1900 photographs of alpine Colorado and none of these photographs show animal life.

Rocky Mountain Goats and the Colorado Museum of Natural History

In 1892 Edwin Carter, the "log cabin naturalist" approached the millionaire mining magnate John F. Campion with a proposal to purchase the Carter museum with the intent of forming a museum located in Denver depicting the natural history of Colorado. The museum in Denver was first called the Colorado Museum and Library Association. In the same year, 1900, it was renamed to the Colorado Museum of Natural History and finally, renamed to the Denver Museum of Natural History.

One of the first four group exhibits created by the museum was comprised of (Hannington 1938): "antelope, goat, bighorn sheep, and bison." These "goats" were in fact Rocky Mountain goats (*Oreamnos americanus*) and were photographed and printed in the March 13, 1909 *Denver Municipal Facts*. See figure 7 in Appendix. Existing documents name Rudolph and Victor Borcherdt, father and son, as the first employees of the museum. They believed that the Rocky Mountain goat was indigenous to Colorado. A brief history of the museum best explains the circumstances surrounding the goat's display status among the Colorado fauna collection.

Edwin Carter immigrated to Colorado in 1859 and set up a placer claim in Leadville, then known as California Gulch. By 1868 his interests turned to natural history and taxidermy. With the aid of his partner William Wilkinson, they set up a museum in Breckenridge. Wilkinson hunted the "larger animals" while Carter prepared the specimens. In 1896, Carter bought out Wilkinson's share of the museum. Carter's collection consisted of an amazing number of

animals: "100 elk heads and 1 elk, 8 bison (of which 2 were the mountain subspecies), 55 deer heads, 161 ptarmigans, 3 wolverines, 4 grizzly bears, etc." (Fiester 1973). Prior to this project it was believed that Edwin Carter had no mountain goats as part of his collection. Recently obtained information now refutes this belief. In the past few years the Summit County Historical Society has been restoring the Edwin Carter Museum and one of their projects was the restoration of a collection of glass plates photographed in the late 1800s. From this collection, a photograph was discovered showing a full body mount of a Rocky Mountain goat standing in the north room of the Museum. This room is now used to seat small groups for audio-visual presentations. See figure 8 in Appendix for this photograph. Another photograph contains the unfocused image of a Rocky Mountain goat head mounted to the wall behind Edwin Carter displaying a wolf. While the wolf photograph merely suggests the presence of a mountain goat specimen in the fuzzy background, the first confirms that at least one Rocky mountain goat was displayed in Edwin Carter's museum of "Colorado fauna".

Other references to Rocky Mountain goats include the Probate Record (Summit County Court House- No. 18) on pages 384 and 385:

> "1 goat skull and horns....found in the loft... 1 goat skull and horns found in carpenter shop ."

The section that includes the goat skulls and horns is concluded with the statement:

> "The above is, to the best of our knowledge a complete inventory of the specimens of Colorado fauna, and taxidermists supplies of the museum belonging to the estate of the late Edwin Carter."

The lack of the word "white" or "mountain" is a dilemma when determining whether Carter's "goat skulls and horns" were that of the Rocky Mountain goat (*Oreamnos americanus*). Careful examination of this probate record showed that with the one exception of a "1mule colt" there are no specimens of domestic animals. The lack of non-wildlife specimens in his 3,300 item museum strongly suggests that "goat skull and horns" were not from a domestic goat (*Capra spp.)*. Furthermore, the probate appraisement of Carter's "2 goat skulls and horns at [$]1.50" is interesting to note because when the $1.50 value price is compared to the price of "1

skeletonized mount of bighorn sheep at [$]1.00" it is evident that these highly appraised goat skulls and horns are not the remains of a common domestic goat (*Capra spp.*).

In another section of the probate record there is:

"2 Mountain Goats = B.S. Revett.....1 white goat skin....1 bundle goat skin. Ben Revett."

The man listed in the probate recored is Ben Stanley Revett. He was a wealthy mining engineer famous for his gold dredging inventions. The *Rocky Mountain News* in1900 refered to him as the Father of Gold Dredging. Revett was neither a hunter, a member of the Colorado Museum of Library, Colorado Museum of Natural History, nor of the Colorado Historical Society. From his lack of involvement in these organizations it is perplexing as to why he was interested in the Carter collection. His only known involvement was in a letter he wrote to Edwin Carter (Fiester, 1973) where he expresses interest in the aquisition of the collection for a Denver based museum. According to a May 29, 1953 *Summit County Journal* he was: "one of the leaders in bringing Carter's Museum from its location in Breckenridge to the City Park at Denver." No other information surrounding his connection with the Carter collection or his mountain goats has been found.

Hall's History of Colorado and several other sources state that Carter would not sell his specimens because he was amassing them for a Colorado Museum of Natural History. This was not entirely accurate. Before his contact with John F. Campion, he often sold specimens to the American Museum of Natural History of New York, independent naturalists, and some "great museums of this and other countries" (Chicago Record 1900). In 1892 Carter proposed to sell to John F. Campion and the city of Denver his entire museum for a sum total of $20,000.00 provided that Carter retain a life-time curatorship of the specimens. However, interest diminished until a new negotiation price of $10,000.00 was offered in 1897. On January 4, 1889, several citizens interested in the Carter collection formed the Colorado Museum and Library. Many of the men who formed this society were active members of the Colorado Historical Society.

On Feb. 3, 1900 Edwin Carter died and the settlement for the specimens had not yet taken place. Elmer W. Merritt, secretary for the Colorado Museum and Library, began removing

specimens and private papers of the Carter museum shortly after the last rites had been given. This angered the citizens of Breckenridge who secured temporary restraining orders against Mr. Merritt. The *Summit County Journal* of February 10, 1900 stated that some of the exhibits found: "new homes among curio seekers" . Subsequently, the *Journal* made a public appeal to return the items. After an inventory was made by the probate recorder and the claims to the estate had been settled, the collection was boxed up for a second time, shipped to Denver, and stored in the State Capitol. Many of Carter's animals were never displayed in the Colorado Museum of Natural History. A letter (Hannington 1938) by Robert Rockwell, an early employee, sheds light on the reason:

> "Mr. Carter's preparation of bird skins was very good, but the quality of his mounted birds and animals left much to be desired. I have been told that the shoulder and hip bones of his mounted bison were huge rocks suspended from a rough wooden frame with bailing wire, and that the bodies of the animals were stuffed with *straw*."

Despite the lack of specific information concerning the whereabouts of the mounted specimens, skulls, and horns, it should be recognized that the first displays in the Colorado Museum of Natural History was of Rocky Mountain goats. While Edwin Carter had been making a name for himself in Breckenridge another naturalist and taxidermist, Rudolph Borcherdt, was gaining notoriety in Denver. The first mention of Borcherdt appears in the Rocky Mountain News, August 27, 1869 in an article announcing his trade:

> "Rudolph Borcherdt taxidermist and naturalist offers his service in mounting all kinds of animals and birds, reptiles, and fishes, also for putting them up in groups, and skeletonizing the same. He buys and sells all kinds of prepared skins, and those wishing his service will find him at Gore's Gun Store on Blake Street."

His name appears occasionally in the newspapers with accounts of stuffing an eighteen month old white buffalo (1873), winning the top prizes in shooting matches (1873), stuffing the first egret in Colorado (1880), and becoming the curator for the Historical Society in 1882. His father, Albert Borcherdt a German emigrant, is renowned for organizing the annual Great German Festival (the Denver Schuetzen Verein). Prior to his involvement with the festival starting in 1873 he was a German furrier. Ironically, Edwin Carter was taught by a German furrier whose identity is not known.

Rudolph Borcherdt, like many men who were members of the State Historical Society, later became involved with the Colorado Museum of Natural History. Some of these men included: Moses Hallet (another early curator of the Historical Society), Junius Brown, and William H. James. Prior to the formation of the museum they were members of the Colorado Museum and Library Association.

This association came into existence on January 4, 1898 and was then considering the purchasing of the Carter collection for $10,000 in addition to sites for the museum. Six months after the death of Edwin Carter, a party consisting of Victor Borcherdt (Rudolph's son), A.B. Daniels, Dr. David Mechlin, and Dr. E.C. Rivers travelled to Idaho. The hunting expedition was to obtain Rocky Mountain goat specimens for the purpose of displaying them " in the Museum association's collection (*Denver Times*, October 14, 1900)." The October 14, 1900 article stated:

> "The white goat of the mountains has passed almost completely as the brown bison of the plains. In Colorado it has become quite extinct, but farther north in the Rockies small bands are occasionally found."
>
> "Properly, the Rocky mountain goat is not a goat at all. It is really a species of antelope; but. having a whiskery bunch of long white hair under its chin, it bears resemblance to the "billy" of the alley and vacant lot, and therefore has been classed with the animal of tin-can appetite and poster procilivities. It makes its home among crags of the highest mountains in almost inaccessible places so that even when the hunter locates a bunch of white goats he finds it most difficult to get within rifle range of them. As the lamb gambols merrily on the soft, green turf, so does the mountain goat skip cheerfully over the rough, gray bowlders, jumping from rock to rock and agilely dropping from peak to declivity."
>
> "In a spur of the Bitter Root mountains, running westward into Idaho, is a rugged mass known as Goat mountain. Far above timber line, where vegetation is sparse and Alpine in character, still dwell a few remnants of the Rocky mountain species of goat- the last of their race to be found this side of the British American line. To scale the cliffs that rise in the snowy summits of the mountains is a hazardous feat in itself for man to undertake; but when he attempts to follow the only inhabitants of the region in their slides and drops, clamberings and leapings, he takes his life in his hands and is very likely to tumble it down a chasm. The prize that flits about like a will-o-the-wisp among the crags and fissure of these perilous heights is a valuable one, and to the daring hunter is a temptation to take great risks, for to have brought down a mountain goat is a signal of achievement and success brings substantial reward as well as glory."
>
> "**Located by Denver Hunters.** Two months ago a party representing the Colorado Museum and Library association started from Denver for the goat district in the Clearwater mountains of Idaho. High on the mountains they fastened their tent ropes and carried such camp equipment as could be transported up the steep and around the cliffs. The hights were freezing cold and artificial heat difficult to produce. Week after week they scaled the rocks for a sight of a goat, but

each day brought only discouragement. Finally their pluck was rewarded. The long-pursued quarry was located."

"The hunters who secured these rare prizes were Victor Borcherdt, A.B. Daniels, Dr. David Mechlin and Dr. E.C. Rivers of Denver. They had permission from the governor of Idaho to take six specimens, if they might get them; but they were well satisfied at bringing out four, one of the killed having fallen down a precipice where the body could not be rescued."

"The four mountain goats arrived in Denver a few days ago, and, after being mounted, two of them will be placed in the Museum association's collection, where they will be preserved as the rarest specimens in the museums. Mr. Borcherdt will retain the other two for his own private collection."

The article clearly shows that the Borcherdts believed that the Rocky Mountain goat inhabited Colorado. On Feb. 20, 1901 both Rudolph and Victor were hired as the museum's taxidermists. The first four groups they prepared were: "antelope, goat, bighorn sheep, and bison" (Rockwell letter). These four groups were to be the first displays in the museum depicting Colorado's native fauna. They were completed by 1906 but it is not known how many of the specimens came from the Carter collection. According to the *Denver Municipal Facts* (1909), the ten goats came from Idaho, the bison came from the Carter collection, seven bighorn came from Victor Borcherdt (location unknown), and eight antelope were killed seventy-five miles east of Denver by museum staff. It is interesting that these four species were the first groups to be worked on. From the 1901 First Annual Report of the President (of the Colorado Museum of Natural History) it is apparent that the philosophy for the collection stemmed from a need to acquire and display, thus 'preserving', those animals that were going extinct. These thoughts come from an article titled The Genesis of the Colorado Museum of Natural History, written by John T. Mason:

"When Edward Carter, of Breckenridge, Colorado, nearly fourty years ago, first took up the study of taxidermy, the art was little known in this western country. The large species of game, such as Bison, Elk, Mountain Sheep, etc., then roamed in vast herds, and no doubt very few of even the scientists thought that the time was so near when some of this same species would be practically extinct. That Professor Carter did not realize its approaching extinction, is certain, for in his collection we find about *one hundred elk heads, and one elk*. That is practically true of all the other large mammals with the exception of the bison; of these he preserved eight. Two of these specimens have probably no equal in the world, certainly no superior. They are of the mountain species and were killed in South Park. They are much darker and richer in fur than the bison of the plains, and, when I saw in a sporting magazine of this month a bison head advertised for sale for one thousand dollars, I will leave you to judge what two such bulls, as the Museum possesses are worth. The professor did, fortunately, preserve, more or less, specimens of everything he found, and when he finally died, a few public spirited gentlemen came together and subscribed

sufficient to buy the collection and bring it to Denver. This collection as a nucleus, is valuable, because it contains specimens that would now be impossible to replace."

"But let us take another view, why, at the present time, particularly, museums should be established and supported by the state and municipal government to which they belong. I will not go back to the time, millions of years ago,..... But I will speak of a times within the memory of thousands now living. The *great Auk*, formerly common on the coast of Iceland, and found in such vast numbers on the coast of Newfoundland that the natives are said sometimes to have used them for fuel, disappeared about 1840. A very few are in musuems- the New York Museums has one, I believe. To-day a single specimen would be worth throusands of dollars, and a single egg is worth several hundreds."

"It is only about fifty years ago that Audubon lived and wrote his famous "Birds of America." I could fill a volume with changes since his time, but will select two as an illustration. In writing of the Carolina parrot, he says, "the stacks of grain put up in the field are resorted to by flocks of these birds, which frequently cover them so entirely that they present to the eye the same effect as a brilliant colored carpet would, had it been thrown over them." Where is the Carolina parrot to-day? Not one left to tell the story."

"But let us come nearer still. Twenty-one years ago the Bison roamed these plains in such vast herds that they were slaughtered for their hides, and they sold green in this city of Denver for $1. To-day I saw an advertisement in "Outdoor Life," offering a head for $1,000. Plenty of men living in Denver to-day have seen Antelope by the hundreds in what is now the city limits. Does any one doubt for one moment but that their extermination is sure, probably within the next five years. I could go on indefinitely, but I have perhaps said enough on this subject. The facts are, that extermination is doom of all these large mammals with our improved firearms, larger population, etc., it will go on at an increased ratio. The museums all over the world recognize this and are sparing no expense to perfect their collections while there is yet time."

By 1908, the Main Hall was completed and many display cases of both Colorado fauna and animals from around the world (but primarily from North America) were located on the first floor. During the years from 1901 to 1908 the emphasis of the Colorado Natural History Museum evolved to a world wide natural history and art museum. It seems that not everyone was happy over this situation, for on October 16, 1909 Victor Borcherdt resigns from the museum due to "disagreements with John F. Campion" over the arrangement and priortiy of the Colorado specimens. From that decision he moves on to work for the Denver Zoo and becomes well recognized for his specially designed "naturalistic habitats" (Denver Times 1909). Furthermore, his resignation coincides with the death of his father Rudolph Borcherdt. A year later, Alexander Wetmore was hired as the museum's taxidermist. The following year in 1910, the first museum director was hired and in 1911 a position, Head of Mammal Division, was created and filled by Dr. L. J. Hersey. When the second Annual Report of the Trustees came out in 1911 a considerable amount of attention was focused on obtaining more large Colorado mammals for

the first floor of the Main Hall. From this 1911 report it can be confirmed that the mountain goat exhibit was still on display on the first floor. The following is an excerpt from the report:

> "The Museum is without a synoptic collection of the mammals of the state, and the fauna is represented by only comparatively few groups. General field work is therefore imperative if this branch is to be profitably advanced. Heretofore there has been no attempt to establish a collection of mammals, and being without material to utilize in enlarging the exhibits, I strongly recommend assigning a member of the staff to Dr. Hersey for such time as he may deem advisable for this work."
>
> "At present there is no suitable space available for either beaver or black bear groups, and I therefore submit a plan for a rearrangement of the hall- including the present groups and those intended to be installed in the future."
>
> "Reference to the diagram which you have shows the two large double cases containing the two sheep, deer, antelope and goat groups turned across the hall. The space thus acquired will admit of bringing the elk and prospective grizzly bear groups into the floor adjoining the bison group, with passages of eight feet between."
>
> "The proposed floor plan of cases shows the latter groups let into the alcoves. This, and a reduction of the depth of cases at the front, will result in giving a passage of approximately six and one-half feet an advantage that will be appreciated when it is remembered the large empty case must be removed by block and tackle each time it is desired to take even a small case from the work rooms."
>
> "If a grizzly bear group is put into the case in its present position, such moving is out of the question, and future work must be performed in the exhibition hall. With the proposed rearrangement of cases there will be an abundance of space between the windows for groups of all remaining large mammals of Colorado, as well as the synoptic collection- of which the Museum is greatly in need."

Begining in 1913, the Biological Survey compiled a list of fauna and flora in Colorado. The Biological Survey was closely linked with staff members of the museum. Reports from these surveys laid the foundation for what fauna and flora were considered indigenous to Colorado and what would thereafter be excluded. The survey added several species of birds and eventually bumped "obviously doubtful forms" from the exhibit of Colorado mammals as a 1915 Annual Report to the Trustees reads:

> "In summing up the results of the biological survey during the past two years it was apparent the progress already made would warrant a material reduction of activities in that important work during the present and succeeding years. Field parties were therefore instructed to largely confine their efforts to securing group material and to avoid permitting other interests to interfere with the complete success of providing an abundance of groups for the full winter's work. As many species of both birds and mammals were represented by satisfactory series of specimens, survey work was greatly reduced. The scientific results, however, equal those of previous years. This is due, in part, to efforts in the extreme southeast section of the state---a region heretofore neglected

> by our collectors. In connection with the latter work, the Museum's appreciation is due Dr. F. Regnier, whose assistance has been a large factor in its success."
>
> "A part of the specimens secured during 1914 are not yet fully classified, but there is no reason for doubt that five species of birds and mammals, represented by specimens, were added to the state list; while two and probably three are new to science. At the same time there is an added accumulation of negative evidence towards the elimination of obviously doubtful forms."

The 1920 Annual Report to the Trustees exhibits a total reversal of consensus regarding whether the Mountain goat was indigenous to Colorado:

> "To carry out the plan of devoting the first floor of the main building exclusively to Colorado mammals will involve some changes of a major character. Among these are transferring the Goat and Canada Moose groups to the Standley Wing; installing groups of the Mountain Sheep and Western White-tailed Deer in the cases thus made vacant and enlarging the case containing the group of Elk."

Thus Rocky Mountain goats were informally declassified as indigenous by the museum when the Biological Survey parties failed to find specimens in the state in the biological surveys taken during 1913 and 1914. This movement towards the belief in the non-native status of Rocky Mountain Goats happened in a casual manner. There had been no detailed studies or searches of literature to see whether mountain goats had or had not been present in Colorado. The Borcherdts, who had believed in the indigenous status of the Rocky Mountain goat, were both dead by 1920. Unfortunately, they never published their opinions regarding the Rocky Mountain goats for the Museum's future reference. The museum directors and staff of 1920 had no reason to believe in the indigenous nature of the Rocky Mountain goat in the state, so they had the mountain goats removed from the Colorado mammal exhibits. Rather they had documented proof that the goats had come from Idaho, and were apparently unaware of the October 14, 1900 *Denver Times* article reporting that the Idaho specimens were meant as replacements for Colorado.

Owen Wister, Musk-ox, Bison, Sheep, and Goat (1904)

Wister remarks on the dearth of research and information regarding the mountain goat saying on page 249, "It is surprising, indeed, that at this late day, when investigations and verifications are so easy, no naturalist seems anywhere to have written a plain, complete

paragraph answering the plain, natural question: In what states and territories does the white goat live?" .

Wister made the first attempt to determine the distribution of the Rocky Mountain goat. Specifically, he was interested in whether or not they were indigenous to Wyoming. Finding none himself, in the early 1900s, he concluded that mountain goats did not live there. His quote: "My knowledge of him goes no further south than the Saw Tooth Range, which is in Idaho." Page 247 indicates the southernmost place at which he could find the goat in 1903. He was aware of the writings of Warburton Pike placing the animal as far south as 40°North latitude.

Wister also encountered the common error of the confusion between the bighorn sheep with the Rocky Mountain goat. He remarked that:

> "In the front hall of a certain club there used to hang--and still hangs, for all I know-- the head of a white goat. I stood near it one day in 1894 or 1895, while two gentlemen were looking at it. One had hunted in our West, and was asked by the other what animal this was. He replied with certainty, "A mountain sheep." It was no business of mine, and I did not correct him. But how inveterate and singular was the confusion! for these two wild animals do not resemble each other a particle more than do their domestic namesakes."

In other instances he encountered doubt as the the very existence of the mountain goat from even experienced mountaineers. He wrote on page 251,

> "A while ago I spoke of a great tradition in Wyoming. Now it was not until the fall of 1889 that I believed there was such a thing as this goat anywhere. I thought--I could not then say why--that the unlettered mountaineers and plainsmen, whose talk I had heard, were speaking of sheep; and, also, they contradicted each other in a way so curious and persistent that the animal became in a manner fabulous to me, like the unicorn, or the wool-bearing horse. Now I would meet the assurance that 'over there somewhere,' among the mountains near the Pacific, a snow-white goat lived, with long hair; again, I would meet a positive denial of this. Some sceptical old trapper or prospector would proclaim that he 'guessed that he had been most everywhere,' and nobody could 'fool him about no goat' with long hair. Indeed, when I last laid my own goat trophies, head and hides, before the eyes of my old friend John Yancey of the Yellowstone Park, they gave him a genuine sensation. He had wasted small faith in any tales of goat. He stared at them, he touched them, he lifted them, he could not get over it; they caused me to rise in his esteem, and he refused to believe that circumventing a mountain sheep is a far more skilful exploit. He, too, like myself, had supposed that in some way this notion about goats could be traced to mountain sheep, and that they were one and the same animal. I found this error spread eastward to the great cities."

Conclusion

If mountaineers of the 1820s and 1830s saw Rocky Mountain goats (*Oreamnos americanus*) they may have had no name for it or were simply not motivated to explain their findings to the scientific community of their time. Recorded testimony of the mountaineers regarding the mountain goat appears to change over several decades. Testimony recorded by the earliest mountaineers conflicts with accounts given by the "old timers" who were still around at the turn of the century (Wister 1904). The earlier books and journals show less disagreement with regard to its existence and presence in Colorado, they believed that Rocky Mountain goats inhabited Colorado. Early disagreement was mainly between the writers who inquired about where to hunt Rocky Mountain goats and the mountaineers who told them. The writers doubted the sincerity of the mountaineers for a number of reasons, but foremost among them was their failure to kill any mountain goats in Colorado.

Cuvier places a mountain goat species at the base of the mountains of New Mexico or southern Colorado. The drawing he acquired was made of a mountain goat that was shot near the headwaters of the Red River around 1827. He acknowledges his own suspicion about the accuracy of the drawing, but reasonably suggests that such information is worthy of note until better sketches can be obtained by experts in the field. His description of the drawing he obtained is closer to the mountain goat than any other animal it might conceivably have described.

Burrington in 1838-1842 describes only the horns being used in a native ceremony. As an experienced hunter, he is capable of making the distinction between one or another type of animal horn. The tribe with whom he is a guest is located in the Colorado Rocky Mountains and had several men who ultimately agreed to take him on a hunt of the animals in the vicinity which could provide the unusual horns.

The U.S. Army hunting party of Cooke, 1847-1848, killed a Rocky Mountain goat in the Southern Teton mountains. One year later two *O. americanus* specimens were obtained for the Museum of the Royal College of Surgeons of England south of the 40th parallel in present day Colorado. Four years later in 1853 a U.S. Army topographical survey team recorded nine shootings of Rocky mountain goats as the party explored the Gunnison and Colorado Rivers. In all of these cases, the mountain goats were represented as a species distinct from all others and the time period of the sightings predates any possible importation of Angora goats.

Sporthunting aristocrats were present in Colorado during these times. As an example of this type of recreation, Gore provides us with an example of the flagrant disregard these hunters had for the long term preservation of wildlife in the region. The thousands of animals he slaughtered for amusement were the food not only of the local native population, but also that of the new arrivals in the region.

The Colorado Gold Rush of 1858 initiated a tremendous surge of immigration to the territory and its mountains. Gold seekers arriving in the mountain mining camps found that they were poorly supplied and forced to pay outrageous prices for food. Occasional riots were only one result, market hunting was begun to fill the need for food (Ubbelohde et. al. 1988). After depleting local game populations, market hunters were forced to seek their quarry at longer distances and higher elevations. Meanwhile, the Utes were still roaming free in the mountains, resorting to higher elevations in order to feed their hungry families. Hostilities were on the increase as many of these natives turned to theft when they were unable to find game (Marsh 1982).

The citations suggest a downward trend in the mountain goat population commencing in 1858 with the Gold Rush. For example, from 1882 throught 1885 Baille-Grohman stated explicitly that he had been repeatedly advised to search for Rocky Mountain goats in Colorado. He makes no mention of experienced mountaineers disagreeing over whether or not the animal inhabited Colorado, let alone disputing its very existence. Compare this to the account of Wister two decades later where the local mountaineers as far north as Yellowstone in Wyoming deny

that the animal even exists. Notwithstanding his own opinion, Baille-Grohman mentions a number of trustworthy sources who claimed that the mountain goat ranged as far south as Colorado. His own research and experience had a strong influence on his opinion; he found that mountain goats were rare and discovered that they were not easy to hunt because of the high elevation of their habitat. He concluded that their range must be unchanging because of these difficulties. Thus, because of their supposedly constant distribution, they must not be living outside the range in which he could find them at the time. More significantly, another trusted friend had told him of a herd of imported Angora goats which had gotten loose on the mountains in Northwestern Colorado around 1872. He assumed that it was the Angora goats which mislead his respected colleagues into believing that the mountain goat lived in Colorado. Compare this to Roosevelt's Missourian guide who believed he might have accidently killed one of these domestic goats near Cañon City in the Southeastern region of the Colorado Rocky Mountains. The Missourian asserts fourteen years later that he must have been originally mistaken, that he had actually shot a wild mountain goat. He subsequently provides Roosevelt with vivid descriptions of aggressive mountain goat behavior that have an extremely close similarity to other mountain goat observations by authors whom he never met.

In 1887 the Colorado General Assembly passed its first law establishing hunting seasons and restrictions of certain listed species of game of which included the Rocky Mountain goat. Hornaday noted that he visited Colorado the same year and purchased 150 mountain goat hides for an exhibit on the extermination of mammals in North America. Like Baille-Grohman, he mentions the difficulty of hunting mountain goats and is optimistic that they will not be driven to extinction like the prairie bison.

In 1868 Edwin Carter and William Wilkinson started a museum of natural history in Breckenridge to display the natural fauna of the Colorado Rocky Mountains. With one known exception, a mule colt, the Carter exhibit displayed only indigenous animals that were collected in Colorado. One of the photographs taken of the exhibit shows a complete adult Rocky mountain goat specimen. Upon acquiring the Carter collection, Borcherdts of the Colorado

Museum of Natural History included the Rocky mountain goats in their own display of wildlife indigenous to Colorado.

By 1898, the publication Where to Hunt American Game states plainly that Rocky mountain goats are not abundant in Colorado. In fact, as original members of the Colorado Museum and Library Association, the Borcherdt's find that they are forced to go to Idaho to obtain mountain goat specimens for the Colorado Museum and Library Association's collection. After completion of the Main Hall of the Colorado Museum of Natural History, the Biological Survey (aided by museum staff) began collecting and describing the fauna and flora of the state. This began in 1911 and continued through 1914. Upon failing to find Rocky Mountain goats, the Colorado Museum of Natural History subsequently encouraged their removal from the museum exhibit of indigenous mammals.

The literature suggests that the downward population trend of Rocky Mountain goats led to local extinction. Credible sources place the mountain goat in Colorado prior to (Topographical Reports, etc), and shortly after, the Gold Rush (Roosevelt,etc). Considering the wide distribution and low density of potential observers in the earlier times, the fact that they found mountain goats at all is worthy of note. Compare this to later sources which find that the mountain goats are rare, and even later sources which state that they no longer exist in Colorado (Denver Times 1900) or Wyoming (Wister 1904).

The literature provides enough information to suggest cause and effect. Miners and hunters flooding the state in the 1860s had a tremendous effect on animal populations. Their mountain supply lines were inadequate and they had to eat what they could obtain locally. Since game depletion at lower elevations drove the native people to higher elevations, a reasonable hypothesis may be proposed that they were forced to subsist on the last remaining mountain goats in Colorado. Such hunting activity would never have been recorded except in the oral tradition of the Utes which is beyond the scope of this survey.

This literary survey provides the only known comprehensive search for references to the Rocky Mountain goat in all available writings on Western history. Many of the mountain goat

descriptions of authors cited here are highly reminiscent of one another, from its defense against dogs to the musky flavored meat of the adults. The assumed exotic status of the mountain goat may have originated from a lack of information about the early history of the state. Compounding the situation, the radical change of Colorado from a pristine land of hunter-gatherers to an industrial mining state happened in less than five decades, a change that science failed to outrun in any attempt to study the indigenous life of the region. The historical documentation presented here contains the testimony and records of numerous witnesses placing the Rocky Mountain goat in Colorado prior to 1900. From these documents we have reconstructed a distribution map revising the original range of the Rocky Mountain goat to include regions cited in the historical literature. See figure 9 in Appendix. The question of whether Rocky Mountain goats inhabited Colorado prior to their (re)introduction is highly pertinent not only to the management of wildlife, but to natural history as well.

Science and History

"Biogeography is the study of geographical distributions of organisms, both past and present (Brown & Gibson 1983)". Biogeographers attempt to describe the distribution of species through historical science and ecological biogeography. Historical biogeography is "the study that attempts to determine the relationship of present and past distributions of organisms to the physical history of the earth." This branch of biogeography uses fossils to answer questions like: "how did a species come to be confined to its present range? or What is the history of the group, and where did their ancestors live? etc." This can be compared to the definition of ecological biogeography which claims to be: "the study of the ecological factors influencing the distributions of organisms."

The Literary Review of the Historical Distribution of the Rocky Mountain Goat does not strictly adhere to the methods used in the above mentioned disiplines. It pieces together historical documentation to estimate the probable distribution of the Rocky Mountain goat. Granted, this method of research may be unprecedented, but due to the diffficulty and expense of investigating the validity of our hypothesis by more deductive methods, this was the only practical approach. Our hypothesis asserts, based in part on the evidence of Pleistocene fossil beds containing the remains of *Oreamnos americanus* in the Laramie Mountains, that the goat inhabited Colorado and became locally extinct by overhunting during the Pike's Peak Gold Rush and the decades that followed.

Historians and biologists have different methods for ascertaining the truth in each of their respective disciplines. Historians depend on testimony, documentation, and in some cases, archeological evidence to provide a basis for hypotheses and conclusions. Biologists are observation oriented; they measure, quantify, and experiment. Historians are constrained to an inductive method; they are forced to speak in terms of probability when speaking of past events because most of history is neither directly observable, nor available for experimentation.

The central problem of a paper like this is that it must use the methods of historical research to shed light on a subject that falls within the realm of biology. Historians are interested mostly in human events. This paper is a departure from the usual subject matter of history because its focus is upon the history of the Rocky Mountain goat.

Historical Names of the Rocky Mountain Goat
(Oreamnos americanus)

Common names:

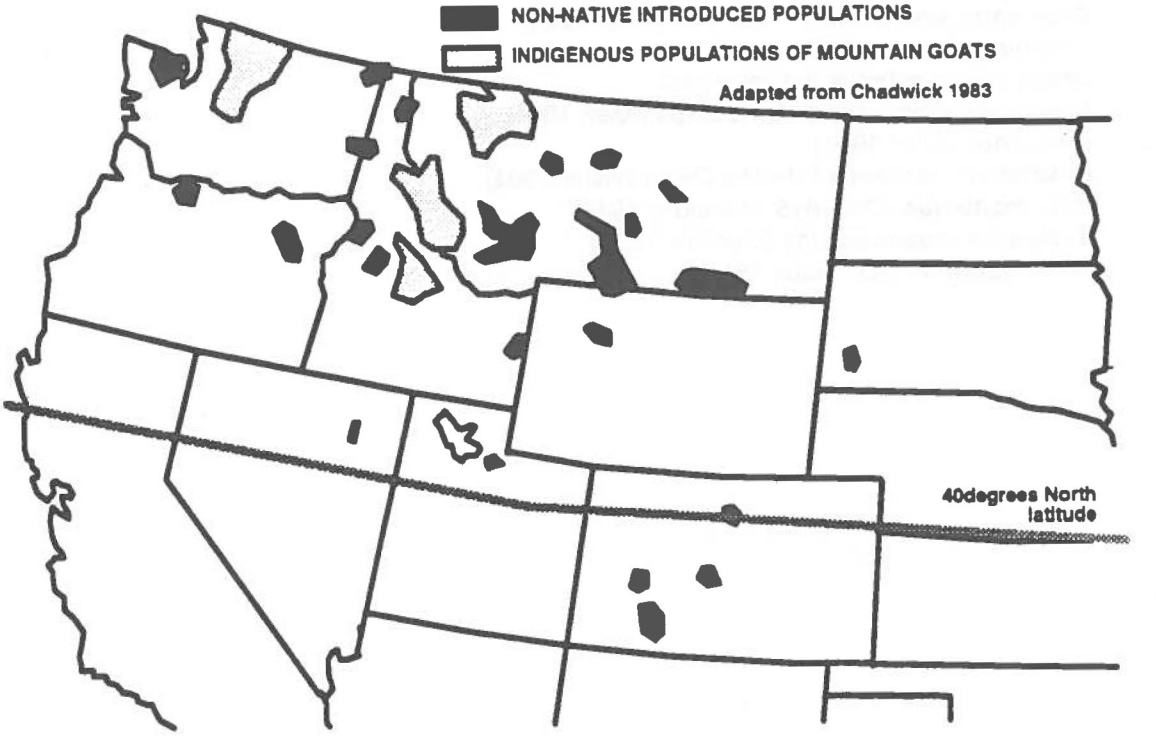
American chamios (mentioned by Baille-Grohman; Cuvier; de Blainville)
American pigmy bison (term used by Dwight W. Huntington 1904)
Antelope-goat (common and widespread; de Blainville)
Alpine antelope (George Bird Grinnell)
Chichiltic (common name for *Aploceri temmamazama*, Cuvier 1922)
Macatl chichiltic (common name used by people of New Spain)
Mountain buffalo (mentioned by Baille-Grohman)
Mountain goat (widespread use in 1800's)
Mountain sheep (common and widespread usage noted by John Davidson Godman in 1826 and Owen Wister in 1904; name enterchanged between bighorn and mountain goats by William Dunbar & Dr. Hunter of Lewis and Clark exploration party)
Ovine antelope (Common name for *Aploceri mazama* Cuvier 1922)
Rocky Mountain Sheep or Goat (The two species were one in the Encyclopaedia Britannica as late as 1900)
Rocky mountain goat (earliest use 1900's ?)
Snow deer (used in far North Pacific mountain range)
Snow goat (common in British Columbia, far North Pacific Slope)
Temmamazame (common name used by people of 'New Spain')
White buffalo (english translation of native american term; but distinctive from Gray's knowledge of albino *Bison spp.* Gray)
White goat (widespread use; term most common in hunting books)
Wool-bearing antelope (Cuvier)

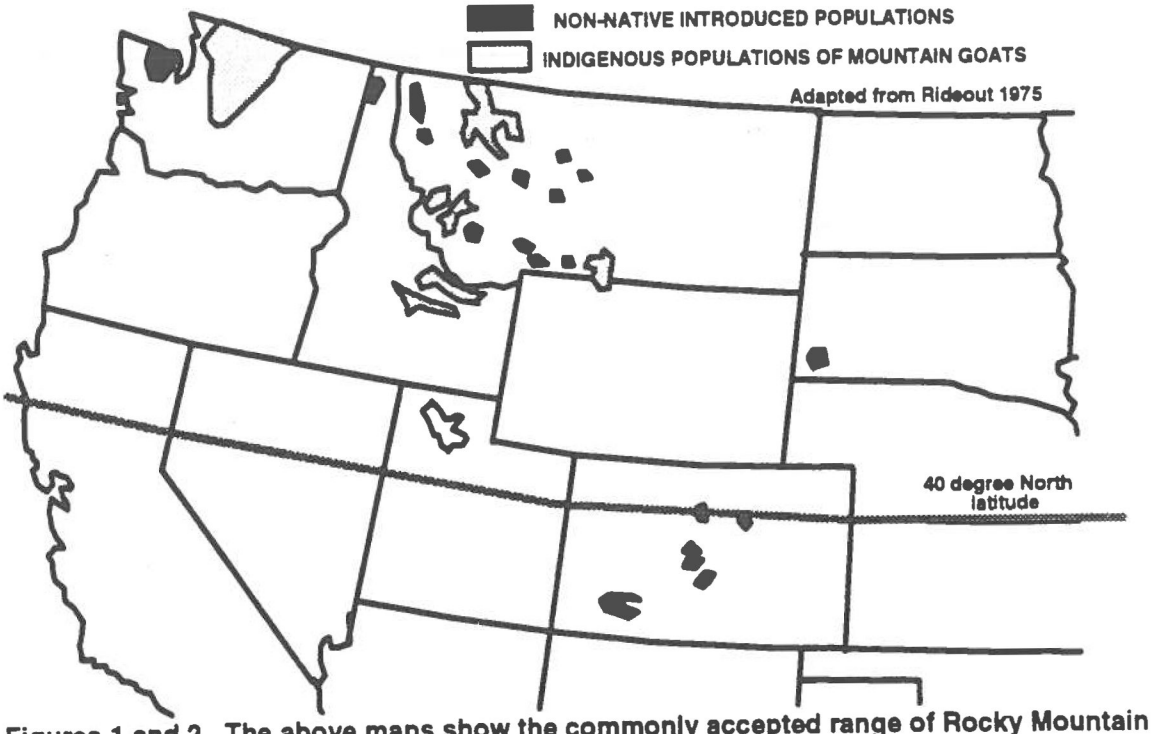
Scientific nomenclature designations:

Antilope americana (de Blainville 1816)
Antilope lanigera (Chester Rideout claims C.H. Smith translated this from Cuvier, Rideout is mistaken. C.H. Smith's book published *Aploceri langera* (1822))
Aploceri (Cuvier 1822)
Aploceri lanigera (Cuvier 1822)
Aploceri mazama (Cuvier 1922)
Aploceri temmamazama (Cuvier 1922)
Aplocerus (C.H. Smith translation 1827)
Aplocerus columbianus (Elliot Coues 1877)
Aplocerus montanus (Spencer Baird; english version of *Haplocerus montanus*. Used by T.M. Trippe in his appendix to Oscines)
Capra americana (Desmarest 1845)
Capra columbiana (Desmoulins 1823)
Capra montana (G. Ord 1826)
Haplocerus montanus (Wagner 1844)
Mazama [Order Stereophlia] (Rafinesque 1817)
Mazama dorsata (Rafinesque 1817)
Mazama pita (Rafinesque 1917)
Mazama puda (Rafinesque 1817)
Mazama sericea (Rafinesque 1817)
Mazama tema (Rafinesque 1817)
Oreamnos (Rafinesque 1817)
Oreamnos americanus (Blainville 1816)

Oreamnos americanus americanus (Blainville 1816)
Oreamnos americanus columbiae (Hollister 1912)
Oreamnos americanus kennedyi (Elliot 1900)
Oreamnos americanus missoulae (Allen 1904)
Oreamnos kennedyi (Elliot 1900)
Oreamnos montanus (Harlan 1843)
Oreamnos montanus columbianus (Allen 1904)
Oreamnus (Elliot 1901)
Oreamnus montanus (cited by Owen Wister 1904)
Ovis montanus (Ord 1815, Hornaday 1914)
Rupicapra americana (de Blainville 1816)
Temamazame (Rafinesque 1817)

APPENDIX OF ILLUSTRATIONS





Figures 1 and 2. The above maps show the commonly accepted range of Rocky Mountain goats. This project challenges this view and places the indigenous mountain goat distribution south of 40° N latitude.

APPENDIX OF ILLUSTRATIONS

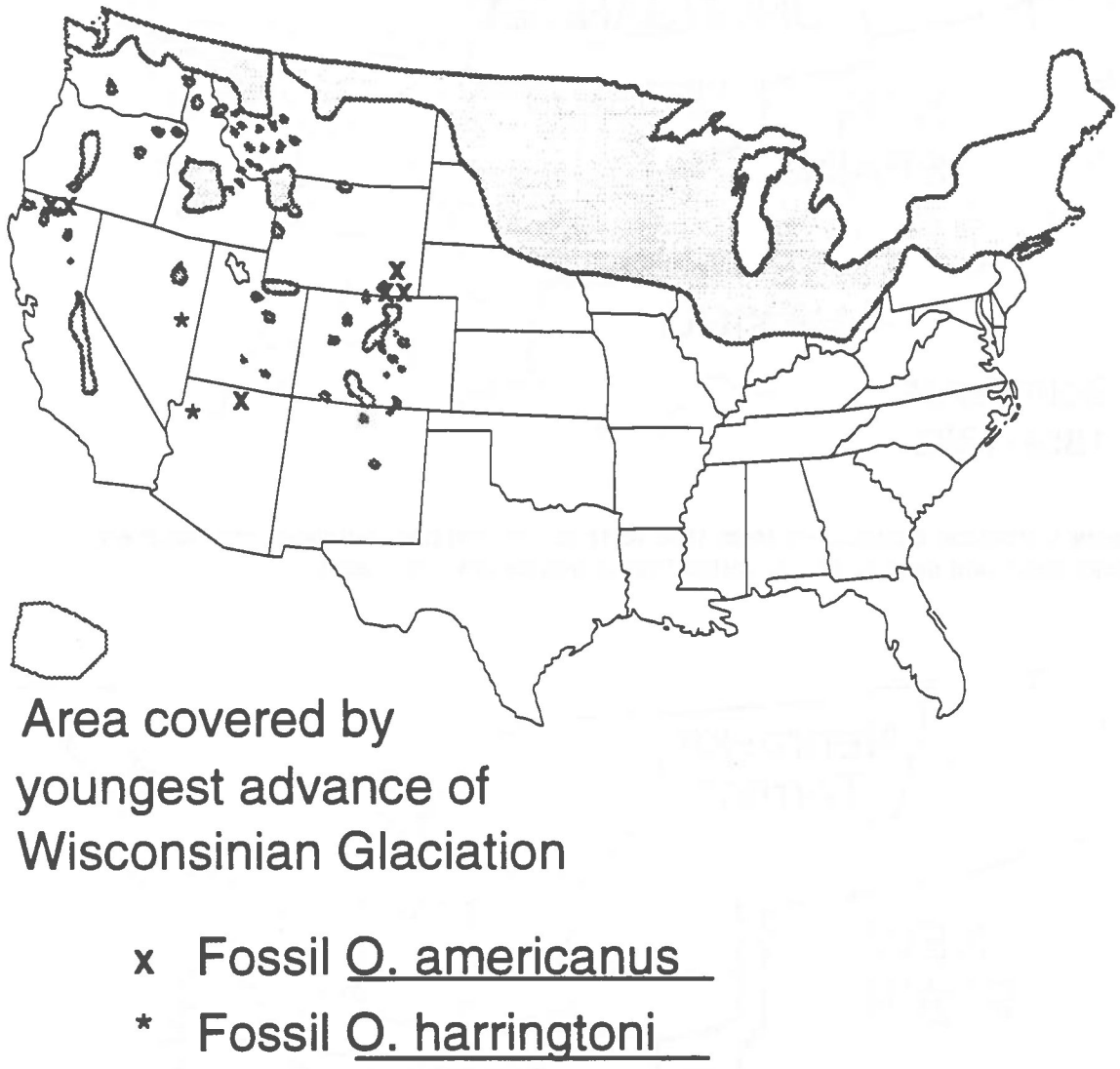


Figure 3. Wisconsinan Glaciation Map. *Oreamnos americanus* fossils have been found in Bell, Horned Owl, and Little Box Elder Caves in southern Wyoming. Other discoveries include Samwell and Potter Creek Caves of California and, Stanton's Cave of Marble Canyon in Arizona.

APPENDIX OF ILLUSTRATIONS

Figure 4. Political Boundaries from 1803 to 1822. Most of the southwest and southern Rocky Mountain section of the United States was called New Spain.

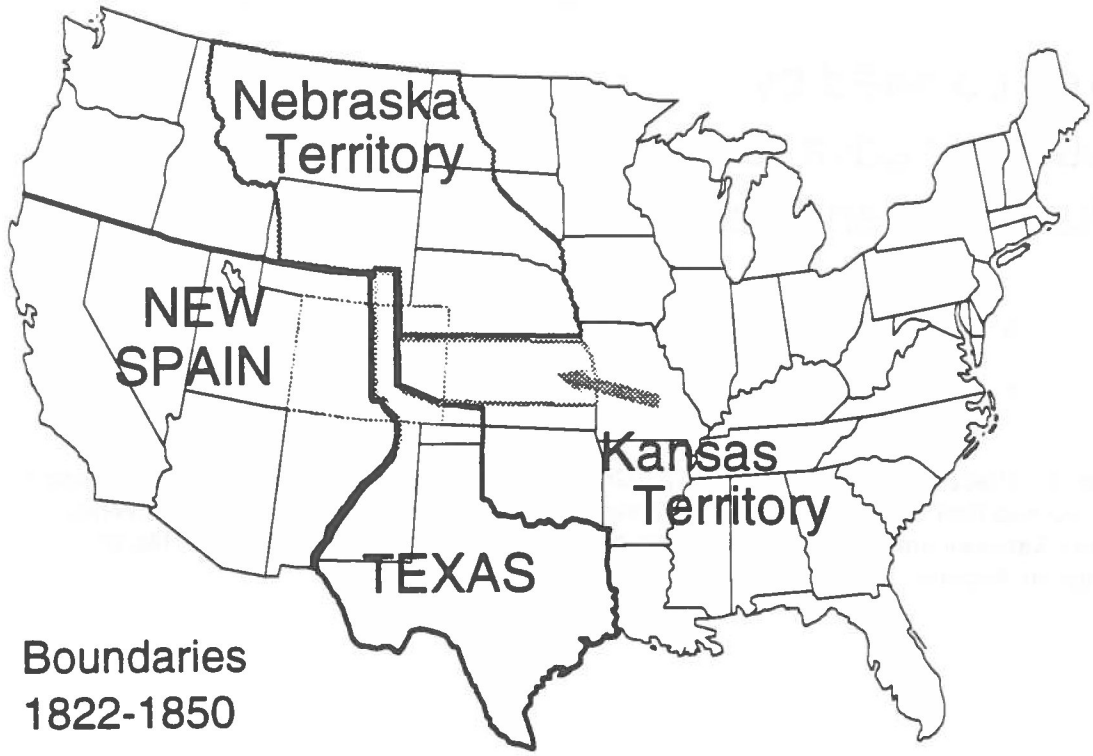


Figure 5. Political Boundaries from 1822 to 1850.

APPENDIX OF ILLUSTRATIONS

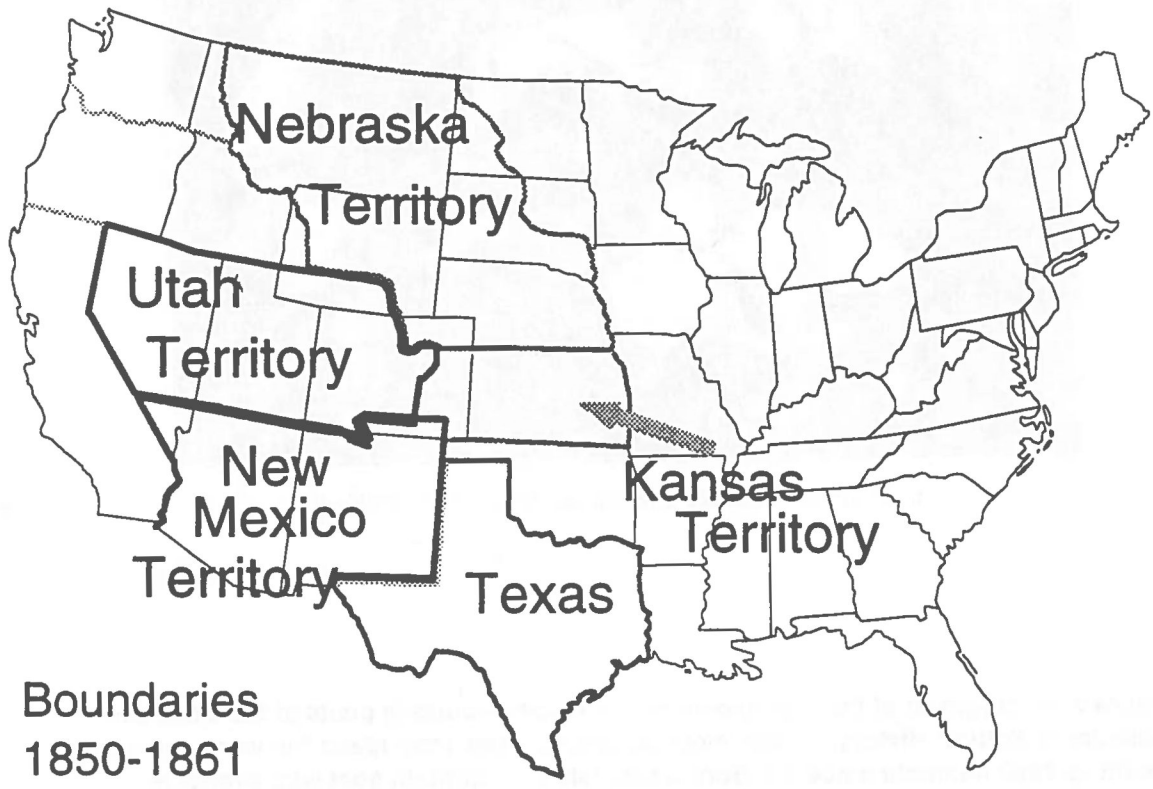
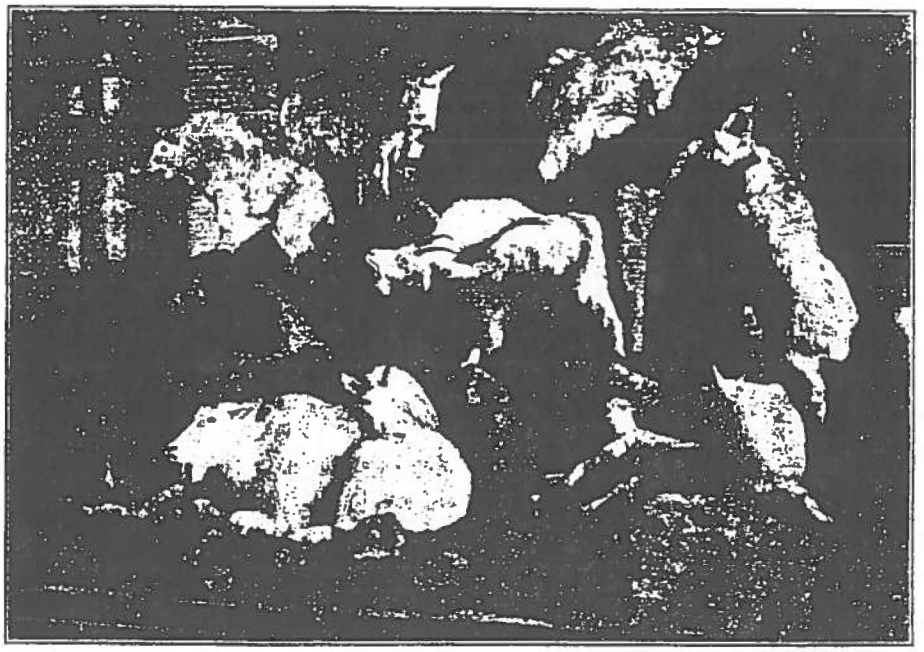


Figure 6. Political Boundaries from 1850 to 1861. Colorado is sliced into Nebraska, Utah, New Mexico, and Kansas Territories. Most settlers in the mining towns and the east-plain cities referred to the area as Jefferson Territory. It was not until 1876 that Colorado reached statehood.



The Group of Mountain Goats at the Museum in City Park.

Figure 7. Photograph of the first specimens of Rocky Mountain goats at the Colorado Museum of Natural History. These mountain goats came from Idaho but were apparently meant as replacements since the Borcherdts felt the mountain goat was extinct in Colorado. [Photograph was reproduced from the *Denver Times* March 13, 1909 newspaper.]

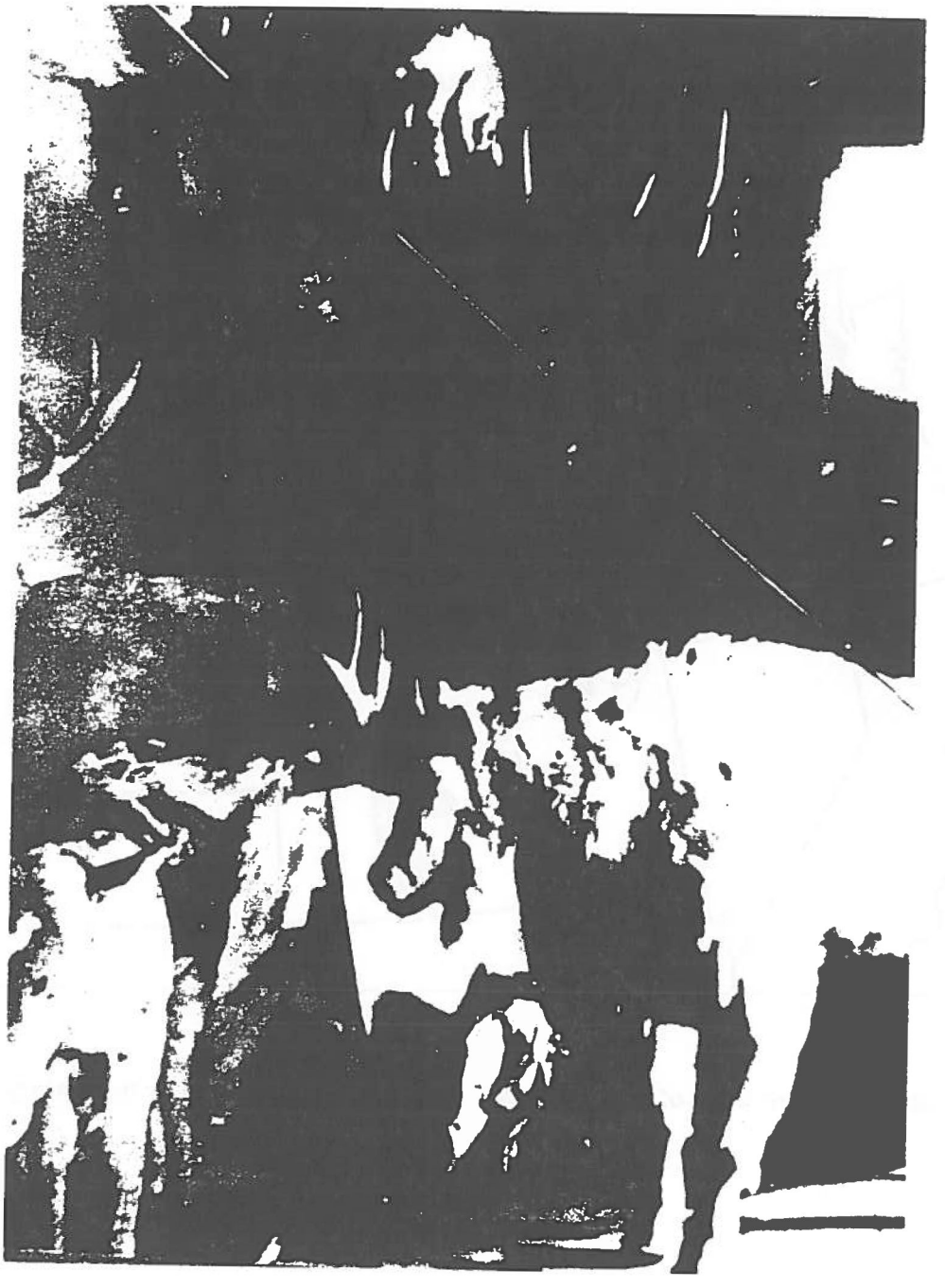


Figure 8. Photograph of a Rocky Mountain goat in the Edwin Carter museum during the late 1800s. Prior to this project it was believed that Edwin Carter had no mountain goats as part of his collection. This photograph shows a full body mount of a Rocky Mountain goat standing in the north room of his museum. [Photograph reproduced with the permission of the Summit County Historical Society.]

APPENDIX OF ILLUSTRATIONS

Figure 9. Historical distribution of the Rocky Mountain goat as suggested by the literary review.

Loss of Archives

While researching the Literary Review of the Historic Distribution of the Rocky Mountain Goat it became apparent that citations of documents printed prior to 1940 would be difficult if not impossible to find. The largest resource available to me for this project was the Denver Public Library Western Historical Collection (DPL WHC). While the State Archives were helpful to my cause, their method of index (or rather lack of one) did not contribute to my gathering of information I already knew to exist. The Denver Public Library WHC, has a large assortment of documents that are both easy to discover and use as a pool of information. Most of their newspapers printed before 1900 are preserved either on microfilm or microfiche. Unfortunately, most of their journals and books printed prior to 1900 have not undergone this type of preservation. Rather these materials are "preserved" by their placement inside the library's vault and by the zealous protection to remain there by the librarians. The WHC has several systems they use to cataloge their materials. The first and most widely used is the CARL data base. Then there is the WHC card catalog which is an additional source of information that picks up many details not listed in the CARL system. The WHC also has a collection of newspaper clippings arranged and compiled by subject matter. The most difficult aspect of using the WHC is gaining access to the materials inside the vault. Due to the decayed stated that most of these documents are in, the Head Librarian is usually unwilling to let the researcher investigate these documents. For a total of eight different times, I have been turned down on my request to look at materials within the vault and as absurd as it may sound, there have been instances where I was not allowed to turn the pages of the journal myself!

To add to the frustration, many books and articles listed on the CARL system and located in the Archive section of various Universities (UNC, CSU, CU, & UWY) are in such a state of disrepair that the archivist forbids the access to these materials. A CSU archivist confined to me that a newspaper listed on the CARL system should be taken out (because they

don't allow access to it) but, since the library likes to boast it's large selection, they are unwilling to delete information from the data base.

With the ever present fear of budget cuts and the overall lact of interest in archives by the general public, the fate of many of our records certainly seems doomed to extinction. That is, if they are not that way now.

Review of the Policies on
Exotic and Non-native Big Game

Since the signing of Executive Order 11987, on May 24, 1977 by ex-President Jimmy Carter, the federal government has been restricted from introducing exotic organisms into land they administer. This Order included guidelines and encouraged the prevention of introductions by other government agencies and the private citizen. This Executive Order also provided legal definitions for introductions, exotic species, and native species.

The following is a reprint of Executive Order 11987.

QUOTE
Presidential Documents
Title 3- The President

Executive Order 11987 May 24, 1977

EXOTIC ORGANISMS

By virtue of the authority vested in me by the Constitution and statutes of the United States of America, and as President of the United States of America, in furtherance of the purposes and policies of the Lacey Act (18 U.S.C. 42) and the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 *et seq.*), it is hereby ordered as follows:

Section 1. As used in this Order:

(a) "United States" means all of the several States, the District of Columbia, the Commonwealth of Puerto Rico, American Samoa, the Virgin Islands, Guam, and the Trust Territory of the Pacific Islands.
(b) "Introduction" means the release, escape, or establishment of an exotic species into a natural ecosystem.
(c) "Exotic species" means all species of plants and animals not naturally occurring, either presently or historically, in any ecosystem of the United States.
(d) "Native species" means all species of plants and animals naturally occuring, either presently of historically, in any ecosystem of the United States.

Section 2.:

(a) Executive agencies shall, to the extent permitted by law, restrict the introduction of exotic species into the natural ecosystems on lands and waters which they own, lease, or hold for purposes of administration; and, shall encourage the States, local governments, and private citizens to prevent the introduction of exotic species into natural ecosystems of the United States.
(b) Executive agencies, to the extent they have been authorized by statute to restrict the importation of exotic species, shall restrict the introduction of exotic species into any natural ecosystem of the United States.

(c) Executive agencies shall, to the extent permitted by law, restrict the use of Federal funds, programs, or authorities used to export native species for the purpose of introducing such species into ecosystems outside the United States where they do not naturally occur.
(d) This Order does not apply to the introduction of any exotic species, or the export of any native species, if the Secretary of Agriculture or the Secretary of the Interior finds that such introduction or exportation will not have an adverse effect on natural ecosystems.

Section 3.:

The Secretary of the Interior, in consultation with the Secretary of Agriculture and the heads of other appropriate agencies, shall develop and implement, by rule or regulation, a system to standardize and simplify the requirements, procedures and other activities appropriate for implementing the provision of this Order. The Secretary of the Interior shall ensure that such rules or regulations are in accord with the performance by other agencies of those functions vested by law, including this Order, in such agencies.

S/ Jimmy Carter

In addition to the specification of the Executive Order, the US Department of the Interior National Park Service has a management policy for reintroducing native plants and animals into the National Park ecosystem (USDINPS 1978). This management policy, page IV-10 states:

REINTRODUCTION OF NATIVE PLANTS AND ANIMALS

The reintroduction of native species into parks is encouraged, provided that:

- adequate habitat exists in the park and on adjacent public lands and waters to support the species;

- the species, based on an effective management plan, does not pose a serious threat to the safety of park visitors or park resources, or to persons or property outside of park boundaries;

- the species being reintroduced most nearly approximates the extirpated subspecies or race;

- the species disappeared, or was substantially diminished, because of human-induced changed-- either directly or indirectly-- to the ecosystem; and

- confinement of the animals by fencing will be permitted only until the animals become thoroughly accustomed to the new area or they have become established sufficiently that threats from predators, poaching, disease, or other factors have been minimized.

Such programs will be carried out in cooperation with other affected parties and agencies.

Included in the Management Policies are definitions and examples of how the terms are used. The following is a reprint of both the "Definitions", "Introduction of New Exotic Species", and their management plan towards "Control of Exotic Species Already Present in a Park."

EXOTIC PLANTS AND ANIMALS

Definitions- Exotic species are species that occur in a given place, area, or region as the result of direct or indirect, deliberate or accidental introduction of the species by humans. For example, species that humans deliberately have introduced into, and established in, the wild in North America for use as free-roaming game animals on private and non-park public lands clearly are exotic species on National Park System lands that have been set aside for preservation of examples of the natural or historic features characteristic of the United States. Such exotic species are not natural components of the ecological systems characteristic of the given location, and as a result, have not evolved in concert with the evolution of those species that are native to the location. The native species are species which presently occur, or once did occur prior to some human influence, in a given place, area, or region as the result of ecological processes that operate and have operated without significant direct or indirect, deliberate or accidental alteration by humans. For the purpose of this section, direct or indirect, deliberate or accidental introductions by humans are ones that have permitted species to cross natural barriers to their dispersal capabilities thus giving those species opportunities to become established in areas previously inaccessible to them because of natural forces. For example, the stocking of fish-free portion of a river above a waterfall with fish taken from a portion of the same river below the waterfall is a human act that permits a species to cross a natural barrier to dispersal and thus is an act of deliberate introduction of an exotic species.

Introduction of New Exotic Species - Decisions on whether to introduce to a park species that are not native to the park will be controlled by the purposes and designated zones of the park. In natural zones, non-native plant and animal species may not be introduced except in rare cases where they are the nearest living relatives of extirpated native species or where they may be used to control established exotic species. In historic zones, non-native plant and animal species may be introduced in rare cases similar to those identified for natural zones. In addition, non-native species that are a desirable part of the domestic historic scene being represented in an historic zone may be introduced, but only if they are controlled and maintained by recognized domestic techniques, such as cultivation, tethering, herding, or pasturing. In park development and special use zones, non-native species of plants and animals may be introduced to carry out programs consistent with park

objectives only when it can be shown: 1) that the most appropriate native species are extinct, 2) that other native species will not meet the needs of the management program, 3) that, based on scientific advice from appropriate Federal, State, local, and non-governmental sources, each species proposed for introduction will not become a pest, and 4) that such introductions will not spread and disrupt desirable adjacent natural plant and animal communities and associations, particularly those of natural zones.

Reference: Executive Order 11987, Exotic Organisms, may 24, 1977

Control of Exotic Species Already Present in a Park - Manipulation of population numbers of exotic plant and animal species, up to and including total eradication, will be undertaken whenever such species threaten protection or interpretation of resources being preserved in the park. Examples of threatening situations include: 1) being detrimental to public health, 2) disrupting the faithful presentation of the historic scene, 3) damaging historic and archeological resources, 4) threatening the perpetuation of natural features, native species (including especially those that are endangered, threatened, or otherwise unique), natural ecological communities, or natural ecological processes, and 5) significantly hampering the management of adjacent park or non-park lands. Control programs will most likely be taken against exotic species which have a high impact on protected park resources and where the program has a reasonable chance for successful control; programs are least likely to be initiated against exotic species which have almost no impact on park resources and where there is minimal probability for successful control. The decision to initiate a control program will be based on existing and newly acquired, scientifically valid resource information that identifies the exotic status of the species, demonstrates its impact on park resources, and indicates alternative control methods and their probabilities of success. Development of a control plan and implementation of actions to protect the park resources will be done according to established planning procedures and will include provisions for public review and comment. Care will be taken that programs to control exotic species do not result in significant damage to native species, natural ecological communities, natural ecological processes, or historic objects.

Guidelines for determining the indigenous status of fauna and flora, within the parameters of the National Park, have been printed in the Fauna and the National Parks of the United States: a Preliminary Survey of Faunal Relations in National Parks by Wright, Dixon, and Thompson (1933).

In conjunction with the guidelines set by the Executive Order 11987, the US. Bureau of Land Management has also established criteria concerning introductions and transplants. The

following is an excerpt from the U.S. Department of the Interior 1985b, BLM Manual Section 6820.

BLM MANUAL SECTION 6820
6820-WILDLIFE INTRODUCTION AND TRANSPLANTS

01 *Purpose.* This section establishes the Bureau of Land Management's policy and provides general guidance for recommending, evaluating, approving or disapproving, and planning for introducing exotic species, transplanting native wildlife species, and reestablishing native wildlife formerly indigenous to the area on BLM-administered public lands. Wildlife species, introduced or transplanted, already occurring within defined areas in a self-sustaining wild state or in an established fish-stocking program, i.e., ring-necked pheasants, chukar and Hungarian partridge, eastern brook trout, rainbow trout, etc., are not affected by this Manual Section.

02 *Objective.* This objective is to ensure that wildlife introductions and transplants on national resource lands (NRL) are ecologically sound and that such actions will not adversely affect native flora and fauna.

03 *Authority.* Sources:

A. National Environmental Policy Act (83 Stat.852)

B. Taylor Grazing Act of 1934 (48 Stat. 1269), as amended

C. Public Land Administration Act of 1960 (74 Stat. 506)

D. Endangered Species Act of 1973 (80 Stat. 926)

E. Wild and Scenic Rivers Act of 1968 (82 Stat. 906 and 907)

F. Federal Land Policy and Management Act of 1976 (90 Stat. 2743)

G. Presidential Order 11514, Protection and Enhancement of Environmental Quality

H. Departmental Regulation, Cooperation on Wildlife (43 CFR Subtitle A, Part 24)

I. Department Policy established and approved by the Secretary of the Interior in August of 1966.

04 *Responsibility.* (See also BLM Manual Section 6500.04)

A. *Assistant Director, Resources,* is responsible for applying systematic procedures for evaluating, approving or disapproving, and planning for approved introductions of exotic or native wildlife species which will occur in two or more States.

B. *State Directors* are responsible for applying systematic procedures for evaluating, approving or disapproving, and planning for approved introductions of exotic or native wildlife species within their respective jurisdictions.

05 *Definitions.* (See also BLM Manual Section 6500.05)

A. *Exotic Wildlife*: includes all species of mammals, birds, fish, mollusks, crustaceans, amphibians, reptiles, or their progeny or eggs, not endemic to the 48 contiguous States and Alaska, and normally found in a wild state. Endemic species are thse so defined by the appropriate State wildlife agency on an individual State-by-State basis as presently or historically occurring within each State. A species within the United States may well be endemic to one State but exotic in another. For example: Moose is endemic to Wyoming but exotic to New Mexico.

B. *Introduction*: the act of releasing exotic wildlife for the purpose or intent of creating self-sustaning populations in the wild state.

C. *Reestablishment*: the act of releasing native wildlife into habitat formerly occupied by that species for the purpose of intent of creating self-sustaining populations in the wild state.

D. *Release*: the act of releasing any wildlife species for the purpose or intent of creating self-sustaining populations in the wild state.

E. *Transplant*: the act of releasing any wildlife species into habitat not previously occupied by that species for the purpose or intent of creating self-sustaining populations in the wild state.

06 *Policy*. It is BLM policy that:

A. Only the introduction, transplant, or reestablishment programs approved or sponsored by the State wildlife agency may be considered for release on the NRL.

B. Introductions or transplants may not be made into any area in which endangered or threatened native wildlife or plants occur, unless it can be conclusively demonstrated that no conflict will occur between the native and proposed release species.

C. No release may be made which conflicts with existing land uses and which cannot be resolved, provided that in cases where the release may be of greater benefit than the competing use, the release may take precedence. (See also BLM Manual Section 1603.2)

D. Individuals or organizations may be held liable for damages and responsible for expenses incurred in control of unathorized exotic wildlife introductions to the NRL.

E. Effective quarantine procedures must be applied to ensure disease free wildlife for release stock. Quarantine procedures must comply with all Federal and State regulations, restrictions, and requirements governing the importation of exotic animals into the United States. Only the offspring of such exotic animals imported into the U.S. may be introduced, all such offspring must pass an examination by a qualified veterinarian for all known diseases.

F. Exotics considered for release must not be species possessing the potential for hybridization with native fauna, unless this is an objective of the release.

G. No exotic introductions may be made into wilderness areas or areas being considered for wilderness classification. Lands considered for special designation, such as primitve areas, natural areas, research natural area, etc., may be considered on an individual basis.

H. Exotic wildlife introductions must be excluded from a surrounding buffer zone to exclude ingress into ay of the above areas. The width of the buffer zone is determined by the mobility of the exotic species, type of terrain, and the ease with whcih the species can be controlled. The width of such zones around wilderness areas is judgement factor based upon knowledge of the life history of the species to be released. Where such knowledge reveals that the species is likely to move into a wilderness area, then the release should not be made.

I. Top priority must be given to protecting, maintaining, and enhancing the status of native fauna and flora. Introduction of exotic wildlife must be directed to filling a specific vacant ecological niche or a niche not filled by or suitable for a native species. Considerations should be given to an endangered or threatened exotic species where introduction may play a key role in the survival of that species.

Bibliography

Books and Articles Investigated for the
Historical Distribution of the Rocky Mountain Goat

by
LaNette Irby

This bibliography is divided into two parts. Part I lists the books I have investigated personally Part II is a bibliography compiled by Mr. Terry Fridh, of the International Order of the Rocky Mountain Goats, listing all books that the IORMG group reviewed on the topic. Many of the books do not have remarks following the citation. This indicates that the book had no mention of Rocky Mountain goats occurring in Colorado. Selection of the books listed in part 1 reflects all sources of pertinent information. Taken together, these books describe the history of Colorado and represent a survey of historical documents that claim the Rocky Mountain goats inhabited Colorado.

Adams, James T. 1943. Atlas of American History. New York: Charles Scribner's Sons.

Adams, W.H. Davenport 1874. The Hunter and the Trapper in North America or, Romantic Adventures in Field and Forest. From the French of Benedict Révoil. 393 pp., illus. T. Nelson & Sons, Paternoster Row; London. **This book is a translation of the work originally published in French by the author M. Benedict Révoil. In chapter 12, The Wild Goats, he writes of his journey as: "ascending the course of the river Arkansas which has given its name to one of the large states in the North American Republic..." The reader should be aware that from 1819 to 1824 Arkansas Territory consisted of present day Arkansas and the wide portion of Oklahoma state as defined by the Missouri Compromise. "the traveller soon arrives at the foot of the Masserne Mountains, a range of precipitous peaks in continuation of the great chain of the Cordilleras." We now call this the Rocky Mountains. He describes these mountains as having numerous glaciers that feed the "boundless wastes of the American Sahara". Originally, he had other business in the states prior to his arrangement to hunt the "wild goat" and didn't get around to it until 1845. He compared hunting the wild goat with that of the European chamois. There are several problems with this book being a reliable indicator on whether or not the Rocky Mountain goat inhabited Colorado: 1) no precise description of his 'wild goat' was given; 2) no chapter devoted to or mentioning hunting the bighorn sheep (in order to show he was aware that they were two different animals); 3) a strange (if not false) mention of ostriches running wild in the U.S. Occupied Territories; and 4) by the time he finally goes hunting, Arkansas has been a state for 9 years and the reader is left wondering where he is exactly. This research does not credit M. Révoil as having hunted the mountain goat.**

Allard, Dean Conrad, Jr. 1978. Spencer Fullerton Baird and the U.S. Fish Commission.

Allen, Joel Asaph 1875. Notes on the mammals of portions of Kansas, Colorado, Wyoming, & Utah. Essex Inst. Bull. 6 (1874): 43-66. **This article may very well be cited in every Colorado mammalogy textbook. This document is significant because it represents one of the first lists of mammals devoted to their location in the mid-**

west. It was put together by J. Allen, a well respected zoologists of that time, who went on to become an important person in the activities of the New York Zoological Society. Unfortunately, his mammal list for Colorado is restricted to Park County and the South Park area.

Allen, J.A. 1904. "New forms of the mountain goat (*Oreamnos*)". Bull. Amer. Mus. Nat. Hist. 20:19-21.

Alter, J. Cecil 1982. Jim Bridger. Norman: University of Oklahoma Press. **It is important to note that many of the U.S. fur traders, frontiersmen, and scouts, like Jim Bridger, did not venture very often into the high alpine areas. The beaver they were after inhabited the montane and riparian habitats of lower elevations. Furthermore, many neither wrote nor kept diaries of their lives. Jim Bridger did explore the Colorado- New Mexico border along with Idaho and Utah during his fur trapping years of 1822-1842. There is no account of Jim Bridger describing any game animals like the mountain goat.**

Anderson, Rudolph Martin 1934. The distribution, abundance, & economic importance of the game & fur bearing mammals of western North America. 5th Pacific Sci. Cong., Canada (1933) Proc. vol. 5: 4055-4075, illus. **Not available.**

Apperley, C.J. (Nimrod) 1914. The Life of A Sportsman. The Life of John Mytton, Esq. Kegan Paul, Trench, Trubner, & Co. Ltd. London. **Theodore Roosevelt cited this person in his "Books on Big Game" chapter of his Outdoor Pastimes book. Most of Apperleys books were sold in England and the only available book was devoted to fox hunting.**

*Armstrong, D.M. 1972. Distribution of mammals in Colorado. Mono. Mus. Nat. Hist., Univ. of Kansas, Lawrence. No. 3, 415pp. **Cites Coes and Yarrow (1875:68) as reporting one "seen in Colorado by Lieutenant Marshall's party". Also lists Trippe (1874:22) as listing the mountain goat "*Aploceros montanus*" among the mammals of Clear Creek and Gilpin counties. Armstrong has noted that: "There is no concrete evidence to indicate that the mountain goat has occurred in Colorado in Recent times prior to its introduction by man. Perhaps early reports represent sightings of bighorn ewes."**

Athearn, Robert G. 1962. Westward the Briton. Lincoln: University of Nebraska Press.

Audubon, John James, & John Bachman 1846-54. The Quadrupeds of North America. 3 vols., illus. New York. **Read edited version. Original not available. His drawing of the mountain goat (and the drawing he submitted to Rafinesque for classification purposes) were of mountain goats killed in the British territories of Canada.**

Baille-Grohman, William Adolph 1882. Camps in the Rockies. New York.

------- 1885. Hunting the White Goat. *The Century*. Vol 7. pg. 193-201.

Baille-Grohman, William Adolph 1900. Fifteen years sport & life in the hunting grounds of western America & British Columbia. 403 pp., illus. London. **From 1882 through 1885 Baille-Grohman set out to hunt the Rocky Mountain goat. From information he acquired by Mr. Warbuton Pike in the *Encyclopeadia of Sport*, he tried the "breezy mountain ranges of Wyoming, Colorado, Idaho, and eastern Montana, but [I had] failed utterly to find my game [mountain goat] elsewhere than in the imagination of romancing trappers and guides..." See analysis of literary sources. This book is**

the only source, in this bibliography, reporting counter-evidence to mountain goats' existence in Colorado. On page 116 Baille-Grohman claims: "Of another cause of these mistakes an English sportsman, who is an old resident of Wyoming and Colorado, has lately given me an interesting account. According to him, some of the Angora goats imported years ago have run wild, and are to be found in one or two districts of Western Colorado and Northern Utah, he himself having seen their horns."

Baker, James H. 1927. History of Colorado. 5 vol. Denver, Colorado.

Barber, Edwin A. 1876. Rock-Inscriptions of the "Ancient Pueblos of Colorado, Utah, New Mexico, and Arizona. *American Naturalist.* pp. 716-725. **Barber describes the ideographs as resembling domestic goats, suggests that they are bighorns. Quotes Coronado (1540): "Here are also wild goats, whose heads likewise I have seen." Barber responds: "These were probably the Rocky Mountain goat or sheep."**

Bartram, William 1980. Travels. Salt Lake City: Peregrine Smith, Inc.. Introduced by Robert Mc C. Peck.

Berkeley, Grantley F. 1861. The English Sportsman in the Western Prairies. London.

Borland, Hal. 1975. The History of Wildlife in America. National Wildlife Federation Press.

Bradley, James H. 1923. "Sir George Gore's Expedition." Contributions to the Historical Society of Montana. vol. IX, pp. 245-51.

Branch, E. Douglas. 1962. The Hunting of the Buffalo. Lincoln: University of Nebraska Press.

Brandborg, S.M. 1970. Alive in the Wild: The Mountain Goat Edited by V.H. Cahalane. Prentice-Hall, Englewood Cliffs, New Jersey, pp. 184-189.

Brown, James H. & Arthur C. Gibson 1983. Biogeography. St. Louis: C.V. Mosby Co.

Campion, J.S. 1878. On the Frontier. London: Chapman & Hall.

*Cartwright, David W. 1875. Natural History of Western Wild Animals and Guide For Hunters, Trappers, & Sportsmen. Blade Printing & Paper Co. Toledo Ohio. **In chapter 5, The Rocky Mountain Goat, he accurately describes the mountain goat and states: "It inhabits the highest and most inaccessible peaks of of the Rocky mountains, ranging from 40 deg. to 60 deg. north latitude". Importantly he states: "Travelers, who more frequently see the big-horn sheep of the mountain regions, mistake it for the goat. The big-horn lives in the valleys; but the goat rarely descends to the valleys, and never makes its home there."**

Cary, Merritt 1911. A biological survey of Colorado North American Fauna 33. 256 pp., illus.

Cassin, John. 1858. United States Exploring Expedition During the Years 1838, 1839, 1840, 1841, 1842, Under the Command of Charles Wilkes, U.S.N: Mammalogy and Ornithology. Two vols.

Catlin, George. 1973. Letters and Notes on the Manners, Customs, and Conditions of North American Indians. 2 vols. New York: Dover Publ.

Chadwick, Douglas H. 1983. A Beast the Color of Winter: The Mountain Goat Observed. San

Francisco: Sierra Club Books.

Chicago Record 1900. Compilation of articles for 1900 and arranged by subject.

Chittenden, Hiram Martin 1936. The American Fur Trade of the Far West. 2 vols. New York.

Clark, Thomas D. 1959. Frontier America. New York: Charles Scibner's Sons.

Clarke, Dwight L. 1961. Stephen Watts Kearney: Soldier of the West. University of Okla. Press. Norman. **Kearney was cited as someone who had hunted wild goats by Benedict Revoil (the French hunter). This book shows he did not travel into the Colorado Rocky Mountains nor any alpine regions at the date given by Revoil. Being closely associated with the Lewis family, I believe he used the terms of "goats" and "buck goats" to identify the pronghorn the same way Lewis and Clarke did on their exploration of the Louisiana Purchase.**

Cockerell, Theodore D.A. 1927. Zoology of Colorado. Published Univ. of Colo. Boulder. pp. 32-33. **He mentions the Rocky Mountain goat along with other Colorado fauna but he doesn't make a statement whether or not it inhabits the mountains of Colorado.**

Cody, William F. 1894. "Famous Hunting Parties of the Plains." Cosmopolitan, June 1894. Vol. XVII, No. 2.

Colorado Historical Society.
1) The A.A. Humphreys Papers, chief of the Bureau of Explorations and Surveys.
2) The George Gordon Meade Papers.
3) The Isaac Roberdeau Papers.
4) Seth Eastman portfolio.

*Colorado Museum of Natural History. 1901, 1911-1940. Annual Report to the Trustees. Colorado Museum of Natural History Publishing, Denver, Colorado. **Collectively it gives some insight as to who might have believed the Rocky Mountain goat was native to Colorado and why that idea was changed years later.**

Cooke, Philip St. George 1847-48. Notes of a Military Reconnaissance from Fort Leavenworth, in Missouri, through the Rocky Mountains to San Diego, California. Subreports from A.R. Johnston, and James W. Abert. **Mentions: "Saw one of Lewis and Clarkes Rocky Mountain goats crossing a steep mountain face without missing a step. ....I shot it square in the back, he fell 100 feet to his death." This occured in the southern most range of the Teton Mountains.**

*Cooper, C.A. 1890. The Big Game of North America. Its Habits, Habitat, Haunts, & Characteristics. Edited by G.O. Shields. pg. 343-361. illus. Rand, McNally Co.. Chicago, New York. **In the chapter The Rocky Mountain Goat, John Fannin writes: "The Rocky Mountain Goat has been reported as far south as 36 degrees North latitude, and as far north as 62 degrees; but I am unaware that any definite information exists respecting the limit of its northern range."**

Cope, E.D. 1887. The classification & phylogney of the Artiodactyla. Amer. Phil. Soc. Proc. 24:377-400.

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Coues, E. & H.C. Yarrow 1875. Report of the collection of mammals made in portins of Neveda, Utah, California, Colorado, N.M., & Arizona, during the years 1871, 1872, 1873, & 1874... Explorations & surveys west of the one hundredth meridian...Wheeler, 5:35-129, 969-976. **Many pages are missing. Coues finds it unfortunate that Lewis and Clark called the mountain goat a "sheep" for, in 1815 this led George Ord who classified many of the animals described by Lewis & Clark to name the animal, *Ovis montanus*. Coues also mentions that the mountain goat was first seen by Clark in: "mountains near The Dalles, Oregon Aug. 24, 1805. The term "goat" was used repeatedly by both Lewis and Clarke in their diaries and refers to the antelope rather than the white goat of the mountains. They called them mountain sheep."**

Cowan, I. McT. & McCrory, W. 1970. Variation in the mountain goat, *Oreamnos americanus* (Blainville). J. Mammalogy. 51, pp. 60-73.

Culbreath, J.C. 1947. Colorado's exchange of game. Colorado Conserv. Comments. 10:1-4.

Dartt, Mary. 1870. On the Plains and Among the Peaks; or How Mrs. Maxwell Made her Natural History Collection. By Mary Dartt. Philadelphia. **This describes Mrs. Maxwell's taxidermy work and lists the different mammals hunted in the main body of the book. Dr. Coues, a naturalist, prepared a list of her specimens which was inserted as an appendix. The purpose of this appendix was to list the fauna of Colorado. This list has often be cited as an `authority' of what mammals inhabited Colorado prior to the turn of the Century. This is a wrong perception however, since she lived only in the Boulder area and obtained most of her specimens from this area. The collection started in 1868 and she did not have mountain goats among this collection.**

Dawson, Thomas. 1900. Scrapbooks. Collection of the Colorado Historical Society. Denver, CO.

Denver Municipal Facts
March 13, 1909 November, 13, 1909
Compiled articles bound in one volume for 1906 through 1913

*Denver Times 1900. Denver Hunters Bag a Mountain Goat. *The Denver Times*. Oct. 14, 1900. page 19. (Author unknown). **This news article is the link between the Colorado Museum of Natural History mountain goat display and the how and why it got there. In summary, Victor Borcherdt (he and his father were the first taxidermist of the museum) set out to Idaho for the purpose of acquiring mountain goats for the museum. The article begins: "The white goat of the mountains has passed almost as the brown bison of the plains. In Colorado it has become quite extinct, but farther north in the Rockies small bands are occasionally found. Properly, the Rocky mountain goat is not a goat at all. It is really a species of antelope; but having a whiskery bunch of long white hair under its chin, it bears resemblance to the "billy" of the alley and vacant lot, and therefore has been classed with the animal of tin-can appearance and poster proclivities....." The illustration accompanying the article depicts a poorly drawn bighorn. However, a *Denver Municipal Facts* (March 13, 1909) photograph confirms that these animals shot in Idaho are *Oreamnos americanus*. These mountain goats along with bison, bighorn, and pronghorn exhibits made up the first group displays in the Colorado Museum of Natural History.**

DeVoto, B. 1953. The Journals of Lewis & Clark. Houghton Mifflin, New York. **It is evident from the journal of Lewis and Clark that inaccurate and generalized naming of big game was common-place among the white settlers of this era. During the course**

of their journey in 1804 they referred to pronghorn as goats and buck goats. In April 1805 they saw their first bighorn and named it the bighorn or mountain sheep. In August 1805 they first saw the Rocky Mountain goat in which they called it a mountain goat or mountain sheep (members among the expedition interchanged the two names). Here after they "renamed" the pronghorn to antelope or pronghorn. Many military officers were acquainted with the papers of the Lewis and Clark expedition and began a "tradition" of generalizing and misnaming big game. Specifically, for another quater of a century, the antelope were often referred to as the wild goats.

--. 1947. Across the Wide Missouri. Boston: Hougton Mifflin.

Doane, Gustavus C. 1970. Battle Drums and Geysers. Chicago: Sage Books, Ed. By Orsen H. and Lorraine Bonney.

Dunraven, the Earl of. 1967. The Great Divide. Lincoln: University of Nebraska Press. Introduction by Marshall Sprague. **He did not hunt in Colordo.**

Elliot D.G. 1900. "Description of an Apparently New Species of Mountain Goat". *Field Columbian Museum*. Vol. 3 pg. 3-5.

--------. 1901. A Synopsis of the Mammals of North America and the Adjacent Seas. *Field Columb. Mus.*; Zool. Ser. 2:xv 1-471.

*Feltner, George. 1972. A Look Back: a 75 Year History of the Colorado Game, Fish, and Parks Division. Denver: Colorado Division of Game, Fish and Parks. **Feltner reports the 1887 Session Law, from the John Hart papers, and quotes: "The reference to Rocky Mountain goats is strange since, as far as can be ascertained, there were no wild goats in Colorado until their introduction in 1948."**

Fitz, Grancel 1957. North American Head Hunting. Oxford Univ. Press. New York.

Fiester, Mark. 1973. Blasted, Beloved, Breckenridge. Pruett Publ. Co. Boulder, Colorado. **In his chapter, Edwin Carter: Miniature to Magnificent, he gives the history of the Edwin Carter collection, its founding of the Colorado Natural History Museum, and the men involved. One of the correspondence letters published to Edwin Carter was from Mr. Ben Stanley Revett, who expresses deep interest in his collection and in the process of setting up the museum in Denver. Revett's name appears once more in association with Edwin Carter and this occurs in the Probate Record. The probate cites Revett as the owner of two mounted specimes of Rocky Mountain goats. The full relationship between the two men is not known.**

Flowers, W.H., & J.G. Garson 1884. Catalog of the specimens illustrating the osteology and dentition of vertebrated animals, recent and extinct, contained in the museum of the Royal College of Surgeons of England. Part 2, Mammalia other than man. *Royal Coll. Surg. London*, xliii + 779pp.

Fremont, John Charles 1846. Narrative of the exploring expedition to the Rocky Mountains, in the year 1842, & to Oregon & north California, in the years 1843-44. 324 pp., illus. London.

Frewen, Moreton. 1924. Melton Mowbray and Other Memories. London: Herbert Jenkins Ltd..

Ford Motor Co. 1950. Ford Treasury of the Outdoors. Simon & Schuster. New York.

Fowler, Jacob 1989. Journal: narrating an adventure from Arkansas through the Indian Territory, Oklahoma, Kansas, Colorado, & New Mexico to the the sources of the Rio Grande del Norte, 1821-22. Edited with notes by Elliot Coues. 183 pp. New York. **The Fowler party did not explore alpine or high montane areas. Their travels in Colorado where limited to the eastern plains.**

Fox, Joseph, L. Smith, Christian, A. Schoen, John W. 1989. Relations between mountain goats and their habitat in southeastern Alaska. *Gen. Tech. Report*. PNW-GTR-246. Portland, Or.: USDA,FS, Pacific Northwest Research Station. 25p.

*Garson, J.G. 1871. Specimen checklist in the museum of the Royal College of Surgeons of England. Mammalia. *Royal Coll. Surg., London*. Checklist Papers #2. **This report lists where each of their specimens came from. 12 mountain goats came from Canada (these are the ones that make up mounted displays in the Royal College Museum), 2 from northern Montana collected in 1854 around the "Lewis and Clarke's Pass" , and 1 female and kid collected in 1849 south of 40 degree latitude.**

Gerstaecker, Frederick 1850. Wild Sports in The Far West. Translated from the German. William L. Allison Publ. New York.

Gilbert, Bil. 1983. Westering Man: The Life of Joseph Walker. New York: Atheneum.

Gilbert, Kenneth 1949. Challenge of the Wild. Superior Publ. Co. Seattle.

Gillmore, Parker ("Ubique"). 1871. A Hunter's Adventures in the Great West. London. **Not available.**

------. 1871. Gun, Rod, and Saddle. Personal Experiences. Geo. E. Woodward, Publ. New York.

Godman, John Davidson 1826. American natural history. 2 vols. Philadelphia. **Remarks that the mountain goat is: "commonly called Rocky Mountain sheep." The nomenclature he was using at this time, in 1826, was *Capra montana* as described by George Ord. Strangely, he states that Major Long: "in his communication to the Philadelphia Agricultural Society, [claims that the Rocky Mountain goat] inhabits the portion of the Rocky Mountains situated between the forty-eighth and sixty-eighth parallels of north latitude." There are no records or journal citation etc. that would indicate Major Long ever saw a Rocky Mountain goat during his lifetime. Furthermore, when exploring the Unorganized Territories he did not travel north of the forty-second parallel.**

Gordon-Cumming, Roualeyn 1855. Thrilling Stories of the Forest and Frontier: By an Old Hunter. Philadelphia.

Gowans, Fred R. 1976. Rocky Mountain Rendezvous: A History of the Fur Trade Rendezvous 1825-1840. Provo, Utah.

Grant, Madison 1904. The origin and relationship of the large mammals of North America. N.Y. Zool. Soc. 8th Ann Rpt. 1903:182-297.

Greenwood, James 1870. Wild Sports of the World. A Book of Natural History and Adventure. Harper & Brothers Publ. New York.

Grinnell, George Bird. 1973. Two Great Scouts and Their Pawnee Battalion. Reprinted from originals. Lincoln: University of Nebraska Press.

--. 1933. Hunting Trails on Three Continents. A Book of the Boone & Crockett Club. Windward House. New York.

--. 1913. Beyound the Old Frontier. New York: Charles Scibner's Sons.

--. 1913. Hunting at High Altitudes. The Book of the Boone and Crockett Club. 511 pp. illus. Harper & Brother, Publ. New York & London.

--. 1897. Trail and Camp-fire. The Book of the Boone and Crockett Club. Forest & Stream Publ. Co. New York.

*Guilday, John E., Harold W. Hamilton, and Eleanor K. Adam 1969. Animal remains from horned owl cave, Albany County, Wyoming. *Univ. Wyo. Contri. to Geol.* 6(2): 97-99. **This paper reports that 1 proximal phalanx of *Oreamnos americanus* was discovered in Horned Owl Cave, Albany County, Wyoming. It also states: "Mountain goats (*Oreamnos*) at one time ranged further to the south than they do today. An extinct species, *O. harringtoni* Stock, smaller than the living *O. americanus* is known from fragmentary remains of post Pleistocene age from Smith Creek Cave, Nevada (Stock, 1936) and Rampart Cave, Arizona (Wilson, 1942). The Horned Owl Cave specimen appears to be too large for *O. harringtoni* (as that species is now understood) and is referred to the modern *O. americanus*. *O. americanus* is also known from Stanton's Cave, Marble CAnyon, 31 miles downstream from Lee's Ferry, Coconino County, Arizona (collected by deSaussure, July 13, 1955; 1 phalanx, no. D-731, Catalogue of the Museum of Northern Arizona). The Horned Owl Cave specimen, CM12858, an unassigned proximal phalanx, measures 48.5mm in total length; height and width of proximal end equals 19mm x 23 nnm height and width of distal end equals 16mm x 22mm.**

Remains of such northern mammals as *Microsorex, Dicrostonyx, Gulo, Ovibos, Oreamnos,* and *Ochotona* occurred in the Laramie Mountains during late Pleistocene times and have been reported from Little Box Elder Cave, Wyoming (Anderson, in press) about 60 miles north of Horned Owl Cave. Unfortunately neither site is dated."

Hafen, Les Roy R. 1965. The Mountain Men and the Fur Trade of the Far West. Glendale: The Arthur H. Clark Co. **The historical records we have on the fur trade and mountain men primarily centers on the rendezvous of the Green River area. Biographies of their lives, especially thoses who inhabited the Colorado Rocky Mountains, are exceedingly rare.**

Haight, Austin D. 1939. The Biography of a Sportsman. Thomas Y. Crowell Co. New York.

*Hallock, Charles 1879. The Sportsman's Gazatteer and General Guide. The game animals, birds & fishes of North America: Their habits & various methods of capture. Forest & Stream Publ. Co. Orange Judd Co. New York. **Hallock, a British hunting sportsmen, authored a book on game animals and where they could be hunted. He has chapters devoted to both the Mountain goat (*Aplocerus columbianus*) and the Bighorn (*Ovis montana*) in which he accurately describes both. His distribution of the Mountain goat is: "The White goat is confined to the loftiest peaks of the Rocky Mountains: it is not known south of Colorado, and is probably rare south of Washington Territory, but is found to the northward as far as Alaska." See report of literary analysis for more information.**

*Hanington, Charles H. 1938. The Colorado Museum of Natural History: An Historical Sketch. *Proc. Col. Mus. Nat. Hist.* Vol. XVII (1), March 1, 1938. **A printed letter by Robert B.**

Rockwell (early employee of the museum) describes the early years of the Colorado Museum of Natural History. "My first contact with the Colorado Museum of Natural History was during the year 1906....It I recall correctly the only two employees were Rudolph and Victor Borcherdt, father and son, and most excellent taxidermists. Their first major groups- antelope, goat, bighorn sheep, and bison- were as fine as any groups that had been produced in America." He also gives some insight as to why many of the mammals used in the original displays did not come from the Carter collection: "Mr. Carter's preparation of bird skins was very good, but the quality of his mounted birds and animals left much to be desired. I have been told that the shoulder and hip bones of his mounted bison were huge rocks suspended from a rough wooden frame with bailing wire, and that the bodies of the animals were stuffed with *straw*."

Harper, J. Russell 1971. Paul Kane's Frontier. Austin: University of Texas Press.

Harrington, C.R. 1971. A pleistocene mountain goat from British Columbia and comments on the dispersal history of *Oreamnos*. Can. J. Earth Sci. 8:1081-1093.

*Hart, John. "Colorado's Department of Game and Fish, Yesterday-Today." 1954. Colorado Division of Wildlife files. **The John Hart papers may be the first Colorado Game and Fish document reporting of the 1887 Session Law. The purpose of the report was simply to record the history of the Colorado Department of Game and Fish from it's birth. In reference to the 1887 Session Law he states: "Yet history does not have the game man give way to despair for the 1887 Session Laws created a ten year closed season on buffalo or bison; an 8 year closed season on Mountain Sheep and a ten year closed season on "Ibex" or Rocky Mountain Goat." Outside of this, there is no other mention of the Rocky Mountain goat.**

Harvey, A.K.P. 1908. In the Glow of the Campfire. Stories of the Woods. The National Sportsman Press. Boston Mass.

Hayes, W.J. 1871. Notes on the range of some of the animals in America at the time of the arrival of the white men. Amer. Nat. 5:387-392. **He concentrates on the distribution of the bison and does not mention the Rocky Mountain goat.**

Heldt, F. George 1876. Sir George Gore's Expedition. Contributions to the Historical Society of Montana. Vol. I. pp. 128-31.

Henry, Alexander, & David Thompson 1897. New light on the early history of the greater northwest. The manuscript journals of Alexander Henry...and David Thopson...1799-1814...Edited w/ commentary by Elliot Coues. 3 vols. New York.

Hess, Richard 1952-1958. Colorado Outdoors Index by author and title. Colorado Game & Fish Dept.

Hibbs, L.D. 1965. The mountain goat of Colorado. M.S. Thesis. CSU., Fort Collins. 152 pp.

-- 1966. A literature review on mountain goat ecology. Colorado Dept. Game, Fish & Parks & Colorado Coop. Wildl. Res. Unit Spec. Rep. No. 8. 23pp.

Higginson, A. Henry 1949. British and American Sporting Authors. Berryville, Va.

Hirsch, Peter I. 1961. The Last Man in Paradise. Doubleday & Co. Inc. Garden City. New York.

Hoffmann, R.S. & R.D. Taber 1967. Origin and history of holarctic tundra ecosystems, with

special reference to their vertebrate faunas. Pp. 143-170, in Artic and Alpine Environments (H.E. Wright, Jr., & W.H. Osburn, eds), Indiana Univ. Press, xii + 308 pp.

Hornaday, William Temple 1914. The American natural history; a foundation of useful knowledge of the higher animals of North America. 449 pp., illus. New York. **In the chapter, Rocky Mountain Goat, he starts out talking about ibex and states: "Thus far without one exception all the rumors of 'ibex' that have come from Wyoming, Colorado, Montana and British Columbia have proven entirely without foundation. In one case a Colorado hunter discovered a small band of once-tame goats running wild and reported it to *Recreation* magazine, with a photograph of a mounted specimen. It is reasonably certain that no representative of the genus *Capra* inhabits North America or ever has done so during historic times, and all stories of "ibexes" in America may be put down as chargeable to young mountain sheep rams or ewes with extra-large horns." But he does not compare or explain how this relates to the Rocky Mountain goat. Stuffed between the pages of his discription of the Mountain goat and their behaviors, he printed a map of the distribution of the white mountain goat in which he drew black dots to represent actual occurrences. The lower edge of the map is cut off at the southern border of Wyoming so that Colorado is not shown or mentioned. Interestingly, there is a black dot in the middle of the Teton Mountain range. Also, he mentions purchasing 150 "nicely tanned skins of our wild white goat" in Denver in 1887. Unfortunately, he does not elaborate on this.**

House, Edward J. 1909. A Hunter's Camp-fires. Harper & Brothers Publ. New York & London.

Houston, D.B. 1971. "Ecosystems of national parks. *Science* 172:648-651.

Hunter, J.A. 1952. Hunter. With introduction by Capt. A.T.A. Ritchie. Harper & Brothers Publ. New York.

*Huntington, Dwight Williams 1904. Our big game; a book for sportsmen and nature lovers. 347 pp., illus. New York & London. **Huntington reports that: "Some writers say we may find a few of these curious animals in isolated colonies in the high mountains in Wyoming, Colorado, and New Mexico. Owen Wister, however, gives the range as extending from Alaska to Montana and Idaho, but only in "spots" in the two States named. Goats are also found, he says, in the northern Cascades in Washington, but not in the Olympic range nor in the southern Cascades in Oregon." In his Preface he acknowledges the use of information from "Roosevelt, Grinnell, Hornaday..and many others."**

Hutchinson, Horace G. 1800's? Shooting. R. & R. Clark Publ. London. Volumes I & II.

Ingersoll, Ernest 1885. The Crest of the Continent. 344 pp., illus. R.R. Donnelley & Sons, Chicago.

---- 1883. Knocking round the Rockies. 220 pp., illus. New York. **Ernest Ingersoll was invited to travel with the Hayden Survey party in 1858. This book is a narration of his adventures with and without the party. He describes how the movements of the large survey party was not conducive towards seeing large game nor collecting natural history specimens. Despite his love for hunting and animals he never saw a Rocky Mountain goat.**

----- 1897. Wild Neighbors: Out-Door Studies in the United States. 301 pp., illus. Macmillian Company, New York & London

Irving, Washington 1843. The adventures of Captain Bonneville. pp. I-X; 389 pp. Handy volume edition. New York and London.

K, A.A. 1885. Hunting for meat. Forest & Stream 25:264-265. .

Kennerly, William Clark 1958. Persimmon Hill. Norman: University of Oklahoma Press.

Kingsley, George H. 1900. Notes on Sport and Travel. London: Mac Millian and Co., Ltd.

Kurtén, Björn & Elaine Anderson 1980. Pleistocene Mammals of North America. Columbia University Press. New York. **This book is the most recent cataloge of Rocky Mountain goat fossils. Kurtén states: "Wisconsinan occurrences included Bell, Horned Owl, Little Box Elder, Samwel, and Potter Creek caves". The term Wisconsinan refers to the most recent glaciation period in North America. Bell, Horned Owl, and Little Box Elder are three archeological digs in the Laramie Mountains of Wyoming. These sites are approximately 30 miles north of Laramie Wyoming.**

Labisky, R.F., C.V. Burger, R.S. Ellarson, D.J. Forsyth et. al. 1975. Ecopolicies of The Wildlife Society. Wild. Soc. Bull. 3:36-24.

Lawrence, George Alfred. 1873. Silverland. London: Chapan and Hall. **I could not find this book.**

Leveson, Henry Astbury 1890. Sport in Many Lands. London.

Laycock, G. 1966. The Alien Animals. Nat. Hist. Press, Garden City, New York. 240 pp.

Lydekker, R. 1895. The Royal Natural History. London Press, London.

------- 1898. Wild Oxen, Sheep and Goats Living and Extinct. 318 pp. illus. Rowland Ward, Limited, London.

Macomb, John N. 1876. Exploring Expedition from Santa Fe, New Mexico to the Junction of the Grand and Green Rivers of the Great Colorado of the West in 1859. Boston.

Marsh, Charles S. 1982. People of the Shining Mountains. Boulder, CO., Pruett Publishing Co.

Martin, P.S. 1973. The discovery of America. *Science* 172:969-974. **This paper looks at the extinctions of terrestrial mammals in the Pleistocene. It is Martin's contention that large mammals were preyed upon by invading humans and, archaeological data directly supports this view. Presumably large mammals would be more susceptible to extinction by humans than small mammals. This premise is that humans migrated into an area that had abundant large herbivorous mammals and began extensive hunting. It is currently not known how this may have impacted the large herbivorous Pleistocene mammals of the Colorado region. However, Colorado may have provided a refuge for alpine mammals long after the glaciers receded.**

Matthew, W.D. 1902. List of the Pleistocen fauna from Hay Springs, Nebraska. *Bull. Amer. Mus. Nat. Hist.* 16:317-322.

Maxwell, Sir Herbert 1898. The Honourable Sir Charles Murray, K.C.B., A Memoir. Edinburgh.

Mayer, Alfred M. 1883. Sport with Gun and Rod in American Woods and Waters. 892 pps. illus. The Century Co. New York. **The only mention of the Rocky Mountain goat is by Olaus Murie in his chapter describing the Bighorn sheep. He explains that both of these animals are hunted by Pacific Coast Indians by "setting up" the game drive by placing the women and childern along the edge borders of the cliffs and subsequently chasing the animals into an ambush of hiding warriors. He also tells how the chasers would cloth themselves in the skins and heads of the animals in order to get close enough to drive them in the correct direction.**

McCowan, Dan 1927. American big game trophies. Record heads & trophies from American big game fields & inland waters. Forest & Stream 97:81, 114, illus.

Merritt, John I. 1985. Baronets and Buffalo. The British Sportsman in the American West 1833-1881. 217 pp., illus. Mountain Press Publ. Missoula, Montana. **This book describes where the early aristocratic sportsmen went to hunt. Most joined fur trading companies and hunted along the Missouri river and Green river areas. Of the men described, George Ruxton and Sir George Gore were the only men who spent considerable time hunting in the Colorado Rockies. Ruxton appeared in Colorado in 1846 and Sir Gore in 1854. Ruxton did not encounter Rocky Mountain goats and Sir Gore did not leave behind any letters or diaries describing his hunting adventures.**

--. 1980. "William Henry Jackson." The American West, September 1980.

Messiter, Charles A. 1890. Sport and Adventures Among the North-American Indians. London.

*Messiter, Charles H. 1878. Last days of the Savage. London. **Prior to the extinction of the Kiquweetchee tribe (1842?) this tribe of Utes ? [unknown] Indians performed an interesting dance that involved: "[of what animal this belongs I haven't seen] shiny long black horns braided into the greesy [greasy] black hair of the savages...moving side by side stomping their bare feet into the ground". Burrington describes them as living and hunting along the Arkansas river, possibly near the Canon City area, but the exact location is not known. Burrington specifically went with several of the young warriors to hunt for: "the animal that possess the black horn." He was not successful. Burrington's servant had a contagious disease which eventually lead to the extinction of this tribe. This book is the chronicals of John Burrington's hunting trip in the west from 1835 through 1845. Burrington's cousin, the father of Charles Messiter, published his diary.**

Miller, Gerrit Smith Jr. 1912. List of North American land mammals in the United States National Museum, 1911. U.S. Nat. Mus. Bull. 79, 455 pp.

Mullen, W. ("Oliver North") 1874. Rambles After Sport. London.

Murphy, John Mortimer 1880. Sporting Adventures in the Far West. New York

--. 1879. Rambles in North Western America. London.

Murray, Charles Augustus 1839. Travels in North America. London.

--. 1844. The Prairie Bird. London.

National Archives 1952. The Catalogue of the Exhibition of Geographical Exploration and Topographical Mapping by the United States Government National Archives Publication No. 53-62. Washington, 1952. **Gives a good description of some of the important**

maps in this collection. Wagon Report of Jefferson Territory has never been published outside of collection.

National Park Service 1981. An environmental assessment on the management of introduced mountain goats in Olympic National Park. NPS Report, 49 pp.

Newbigin, Marion I. 1913. Animal Geography: the faunas of the natural regions of the globe. 328 pp. illus. Clarendon Press. Oxford.

Office of Exploration and Surveys 1851-61. Catalogue of the books of the library of the Office of Explorations and Surveys. **Provides insight into the geographical and scientific knowledge available to the offices of the Corps.**

*Office of Exploration and Surveys 1851-61. The Records of the Office of Exploration and Surveys, 1857-61. **These records consist of four boxes of folded documents. The records of this office are divided between the Old Army Section, Record Group 77, and the Department of the Interior, Record Group 48. Three food grids, written by Stephen Campbell of Lietenant E.B. Beckwith's party, were found. These three grids show tallies of game eaten by the men of the Great Pacific Railroad Surveys. Grid number one is entitled: "Hunted Game" and lists both bighorn rams, ewes, other,... white goat, other, mountain buffalo.....etc.". 'Other' signifies the young of the animal. Grids two and three are entitled: "Game Animals" they list: "bighorn she[e]p, ewes,...,goats,....etc.". Campbell did record a separate list of: "Military Animals for the Use of Food", this is a register of all domestic animals brought on the survey that at one point of the journey were killed and consumed. Some of the animals listed are: "2 camels, 8 horses, 1 mule, 1 dog..."**

Office of Exploration and Surveys 1851-61. Field Notes, occupying 48 drawers and accompanied by De Grange's Index. **Small notebooks full of sketches of the Topographical details used to compile the printed maps.**

Office of Exploration and Surveys 1851-61. Letterbooks of correspondence from the Pacific Railroad Surveys. Old Army Section Record Group 011.

*Office of Exploration and Surveys 1851-61. Letters received by the Office of Exploration, supplementing Old Army Section Record Group 010. **A letter from sergeant Bry to Surgeon/Naturalist Dr. Morgan: "... From a distance of 40 paces I shot all five and the young. The company at[e] the young the female goats were of poor meat. As yo[u] request I am sending the cook's boy to your camp with the wool and horns. ... I have only seen these 5 there are no more." This document is in the packet of letters dated July and August 1853. The shooting took place between the upper Arkansas River and the upper Gunnison River or the Sangre de Christo Pass or Cochetopa Pass.**

Ord, George. 1815. North American Zoology. Pp. 290-361, in A new geographical, historical, and commercial grammer...(W. Guthrie). 2nd Amer. ed., vol. 2, Johnson & Warner, Philadelphia. **The book is heavily stained, damaged, and illegible. Copies are unavailable.**

Palliser, John (Peregrine Herne) 1969. Solitary Rambles. Rutland: Charles E. Tuttle Co..

--. 1860. Perils and Pleasures of A Hunter's Life or the Romance of Hunting. GG. Evans Publ. Philadelphia.

Peale, Titian R. 1848. United States Exploring Expedition During the Years 1838, 1839, 1840,

1841, 1842, Under the Command of Charles Wilkes, U.S.N.: Mammalogy and Ornithology.

Peek, J.M., D.G. Miquelle, and R.G. Wright. 1987. "Are Bison Exotic in the Wrangell St. Elias National Park and Preserve?" *Environmental Management* 11:149-53.

*Pike, Warburton T. 1872. Encyclopædia of Sport. Vol. 1, p. 456. **States: "In Colorado, Wyoming, and Nevada, authentic instances of their [Rocky Mountain goats] occurrence have been noticed within the last twenty years."**

Pike, Zebulon Montgomery 1895. The expeditions of Zebulon M. Pike, to head-waters of the Mississippi River, through Louisiana Territory, and in New Spain, during the years 1805-6-7. New ed., by Elliot Coues. 3 vols., illus. New York. **Pike saw his first bighorn Dec 29. 1806 in Cotopaxi of Southern Rocky Mountains. Latter entries descibe the bighorn and eating etc. Interestly, on Dec. 28, 1807 his journal entry claims: "Saw one of a new species of animal on the mountains; ascended to kill him, but did not succeed." Unfortunately, he did not write down a description of this animal so, it is not known what he saw.**

Porter, Mae Reed & Odessa Davenport 1963. Scotsman in Buckskin. Hasting House, New York.

Price, Sir Rose Lambart 1877. The Two Americas: An Account of Sport and Travel. London: Sampson Low, Marston, Searle, and Rivington.

Rafinesque, C.S. 1817. Descriptions of seven new genera of North American Quadrupeds. *Amer. Monthly Mag.* 2:44-46. **Rafinesque cites 5 species given the genera name of Mazama and descibes each. They are: *Mazama tema, Mazama pita, Mazama dorsata, Mazama puda* and *Mazama sericea. Mazama tema* is reported to be in Mexico (the Mexico of that time period), *Mazama dorsata* is claimed to be G. Ord's *Ovis montana*, and *Mazama sericea* is Blainville's *Rupicapra americana*. He further decides to separate them into a new subgenera "or perhaps [new] genus". He picks three of them to go under the new name of *Oreamos* they are: *Mazama dorsata, Mazama pita,* and *Mazama sericea*. Despite his claims at *Mazama tema* inhabiting Mexico, it is not known where he believes the distribution of each species is.**

Reuben Gold Thwaites Series 1852. Early Western Travel, 1748-1846. 32 volumes. Cleveland Press.

Rhoda, Franklin 1877. Topographical report on the southeastern district. In Hayden, Ferdinand Vandiveer, Ninth annual report of the U.S. Geological & Geographical Survey of adjacent Territories.. for the year 1875. Pt. 2: 302-333. illus. Govt. Print. Off., Washington.

Rideout, Chester B. & Robert S. Hoffmann 1975. Mammalian Species No. 63 Oreamnos americanus. *The Amer. Soc. of Mamm.* 63:1-6.

Rocky Mountain News:

Aug. 27, 1869	Mar. 30, 1873	June 3, 1873	May 1, 1880
April 9, 1882	March 1, 1887	March 2, 1887	March 9, 1887
March 18, 1887	Feb. 26, 1889		

*Roger, Archibald 1897. Hunting American Big Game. Charles Scribner's Sons. **In the chapter by George Bird Grinnell, Climbing for White Goats, he gives a detailed distribution**

of the Rocky Mountain goat range and that is: "Besides this territory over which the species is generally distributed there are a number of out-lying localities, like Mount Whitney, a peak or two in Colorado, and few other points where white goats have been found."

*Roosevelt, Theodore 1888. Ranch Life & the Hunting Trail. illus by Frederic Remington. Lincoln: Univ. of Nebraska Press. **In chapter 12, The Game of the High Peaks: the White Goat, Theodore Roosevelt goes hunting the " white antelope-goat" in the Cœur d' Alêne of Montana. He introduces the reader to his guide a "happy-go-lucky mountaineer, who, like, so many of the restless frontier race, was born in Missouri." Then he goes on to talk about the: "white goats have been known to hunters ever since Lewis and Clarke crossed the continent, but they have always ranked as the very rarest and most difficult to get of all American game. ..They are found here and there on the highest, most inaccessible mountain peaks down even to Arizona and New Mexico; but being fitted for cold climates, they are extremely scarce everywhere south of Montana and northern Idaho and the great majority even of the most experienced hunters have hardly so much heard of their existence." Next he narrates an experience that his Missourian guide has told him. "The Missourian, during his career as a Rocky Mountain hunter, had killed five white goats. The first he had shot near Canyon City, Colorado, and never having heard of any such animal before had concluded afterward that it was one of a flock or recently imported Angora goats, and accordingly, to avoid trouble, buried it where it lay; and it was not until fourteen years later, when he came up to the Cœur d' Alêne and shot another, that he became aware of what he had killed. He described them as being bold, pugnacious animals, not easily startled, and extremely tenacious of life."**

--. 1899. Big Game Hunting in the Rockies and On the Great Plains. G.P. Putnam's Sons. New York & London.

-- 1905. Outdoor Pastimes of an American Hunter. Stackpole Books. Macmillian Company.

--. 1900. Hunting Trips on the Prairie and In the Mountains. "Hunting Trips of a Ranchman Part II". G.P. Putnam's Sons. New York & London.

*---. 1900. The Wilderness Hunter: An Account of the Big Game of the United States and its Chase with Horse and Hound, and Rifle. G.P. Putnam's Sons. New York & London. **This book restates Roosevelt assertion that the white goat can be found in Colorado. In Chapter 7, Mountain Game; the White Goat, he gives some of the history surrounding the white goat: "Although in certain localities it is now decreasing, yet, taken as a whole, it is probably quite as plentiful now as it was fifty years back; for in the early part of the present century there were Indian tribes who hunted it perseveringly to make the skins into robes, whereas now they get blankets from the traders and no longer persecute the goats. The early trappers and mountain men knew but little of the animal. Whether they were after beaver, or were hunting big game, or were merely exploring, they kept to the valleys; there was no inducement for them to climb to the tops of the mountains; so it resulted that there was no animal with which the old hunters were so unfamiliar as with the white goat." He ends the chapter with the range he believes the white goat extends to: "In the Rockies and the Coast ranges they abound from Alaska south to Montana, Idaho, and Washington; and here and there isolated colonies are found among the high mountains to the southward, in Wyoming, Colorado, even in New Mexico, and, strangest of all, in one or two spots among the barren coast**

mountains of southern California."

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[now southern Colorado]....Its size equal to a kid; the horns about five inches and a half long, black, slender, wrinkled at the base, lying straight along the prolongation to the forehead...." Cuvier expressed doubts about making a distinction between the three species. There are some complexities and problems with this source. See Report.

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Topographical Corps 1857. Reports of Explorations and Surveys to Ascertain the Most Practicle and Economical Route for a Railroad from the Mississippi River to the Pacific Ocean. 13 volume set. **A quarto set, it contains the correspondence and field journals of the various railroad exploring parties of 1853-55. Volumes 7, 9, & 10 are devoted exclusively to scientific reports on botany and zoology. These volumes are considered to be among the most important American scientific productions of the nineteenth century. Volume 5 reports: "42 white goats killed for meat." This occured north of Meade and Wasatch Canyon of southern Idaho. The scientific name and description of their white goat is listed in volume 9. This is the Rocky Mountain goat and the scientific name they gave it was A*ploceros montanus.***

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*United States Cartridge Company 1898. Where to Hunt American Game. Produced in Lowell Mass.. Publ. Rumford Press, Concord N.H. **The preface of the book begins with: "This volume is published with the hope of enlightening sportsmen upon the**

perplexing question, Where to Hunt American game. That such information is sought we have ample proof." Essentially the Cartridge Company wrote to the different governers asking for information on their huntable game. "Most of the governors referred the matter to the game commissioners and it has their approval". Page 31 begins the chapter on Colorado. On page 40 there is the statement that: "There are some Rocky Mountain goat in the state, but they are not abundant."

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Reviewed all General Assembly Revisor Statutes Session Laws from 1876 to 1897.

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*Session Laws of Colorado 1887 (H.B. 133) pg. 276. 6th Session
*Session Laws of Colorado 1889 (H.B. 143) pg. 172. 7th Session

*Probate Record for Edwin Carter. Summit County January term 1900.
Page 384 -"1 goat skull and horns" found in the loft.
Page 385 -"1 goat skull and horns" found in carpenter shop.
Bottom page 385- "The above is, to the best of our knowledge, a complete inventory of the specimens of Colorado fauna, and taxedermists supplies of the museum belonging to the estate of the late Edwin Carter".
Page 386 - Inventory: Specimens Belonging to Others in the Museum. -"2 Mountain Goats= B.S. Revett" (Ben Stanely Revett of Denver). In the carpenter shop -"1 white goat skin. R
Page 387 -"In the Museum to deliver the following articles in the inventory" -"2 Mountain Goats B.S. Revett". -"1 white goat skin. Revett." (in carpenter shop). -"1 bundle white goat skin. Revett".
Page 393 - Appraisement Bill -"2 goat skulls and horns. 1.50."

Part II

International Order of Rocky Mountain Goat's

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(My appologies to IORMG for any books or records not listed here [L.I.])