

“*The North Kaibab, or simply the Kaibab, is famous for producing large-antlered, record-book mule deer. The Kaibab historically, however, is also noted for something else—a controversy!*”

THE KAIBAB DEER INCIDENT: *Myths, Lies, and Scientific Fraud*

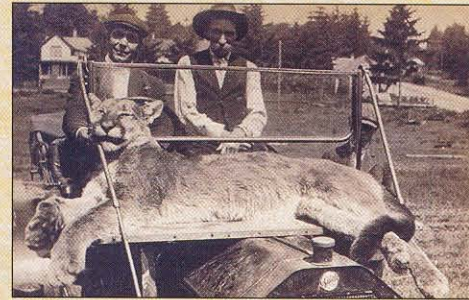
The North Kaibab, or simply the Kaibab, is famous for producing large-antlered, record-book mule deer. The Kaibab historically, however, is also noted for something else—a controversy! At least one book has been written on the Kaibab Deer Incident, as well as scores of scientific reports and monographs. The Kaibab figures prominently in the history of mule deer management in the West and even the U.S. Supreme Court has weighed-in on the Kaibab. Although the story has changed over the years, the Kaibab is still discussed in wildlife textbooks and the ghost of the Kaibab stalks wildlife management to this day.

The Kaibab Plateau is bordered on the south by the Grand Canyon, on the west by Kanab Canyon, and on the east by Houserock Valley. The plateau, which is entirely in Arizona, slopes gently downward to the north and ends

near the Utah stateline. The plateau reaches a height of 9,200 feet and although the Kaibab receives abundant snow and rainfall, surface water is exceedingly rare due to the area's geology. Winter range is abundant on the Kaibab, while summer range is more limited—the exact opposite of most western situations. Approximately two-thirds of the mule deer on the Kaibab, winter on the west side with the remaining deer wintering to the east. There is very little movement of mule deer into Utah. Thus, the deer herd on the Kaibab is essentially an insular population with little immigration or emigration. Cliffrose is the most important browse species on the plateau's shrub-dominated winter ranges.

The Kaibab was established as a Forest Reserve in 1893 and in 1906 it was designated as the Grand Canyon National Game Preserve by President Theodore

Roosevelt. Today, the southern end of the plateau is in the Grand Canyon National Park, while the rest of the area is managed by the U.S. Forest Service. When the Kaibab was declared a game preserve in 1906, hunting was prohibited and the federal government began an extensive predator control program. Between 1907 and 1923, an average of



40 mountain lions, 176 coyotes, 7 bobcats, and 1 wolf were killed each year. In all, only 30 wolves were ever killed by government agents on the Kaibab. Instead, the main predators were mountain lions and coyotes. The Forest Service also reduced the number of livestock permitted to graze the plateau.

In response to those measures, the mule deer herd irrupted from around 4,000 animals in 1906 to an estimated 100,000 head in 1924. As might be expected, the growing deer population severely overgrazed both the summer and winter ranges. This led to a number of studies and reports, as well as a dispute between the federal government and the state of Arizona. In short, the Forest Service said that the deer herd needed to be reduced to prevent further range damage but the state refused to open the area to hunting. In response, the



Photo - Ryan Hatch

BY DR. CHARLES KAY

federal government claimed that it could kill deer on the Kaibab to protect habitat without a state permit. Needless to say, Arizona objected and the ensuing legal battle made it all the way to the U.S. Supreme Court.

The Supreme Court agreed that the Kaibab deer herd had exceeded the range's carrying capacity and that overgrazing by mule deer had denuded public lands. The Court also sided with the federal government in ruling that the Forest Service could authorize hunting on the Kaibab without state approval. This legal precedent still stands and means that when push comes to shove, the federal government can control



wildlife populations on public lands. Arizona had no alternative but to capitulate, but it was too late because the plateau's mule deer had experienced a major die-off and by 1931 fewer than 20,000 animals were left.

For years, the Kaibab deer irruption overgrazed range, and subsequent die-off were cited in wildlife textbooks as a classic example of what happens when predators are controlled and hunting eliminated. "The Terrible Lesson of the Kaibab" became a cornerstone of modern game management and an example of why hunters were needed to harvest surplus animals. Even Aldo Leopold cited the Kaibab in his study of mule deer overgrazing on western ranges. This interpretation of the Kaibab Deer Incident was accepted as fact for over 40 years until New Zealand biologist, Graeme Caughley, questioned its validity





Back in the good ol' days most camps on the Kaibab Plateau held at least one big non-typical. The smoker buck seen in the photo above was shot by Buster Gubernator in the 1960's. Photo credit - Kyle Gubernator

in a 1970 paper published in *Ecology*—the scientific journal of the Ecological Society of America. Caughley's reanalysis of the Kaibab Deer Incident involved primarily published mule deer population estimates. In a later paper, Caughley admitted that he had never set foot on the Kaibab and that he had conducted his reanalysis from a desk 10,000 miles away! Caughley cautioned that his "interpretation may therefore be wrong."

Nevertheless, others sized on Caughley's reinterpretation of the Kaibab Deer Incident to call it a "cherished fable" and a "long-persisting myth." Caughley too failed to heed his own advice and went on to develop mathematical models to support his contention that predators had no effect on prey populations—instead ungulate numbers were limited by their available food supply. According to Caughley, wildlife overgrazing is natural and the ecological norm. Caughley also defined what he termed "Economic Carrying Capacity," where managers control livestock numbers so as to maximize rangeland health and productivity, versus what he termed "Ecological Carrying Capacity," where wildlife population are limited not by predators, but by food and that what to range managers appears to be severe

overgrazing is instead "natural and normal." Thus, neither hunting nor culling are needed to prevent herbivores from causing range damage.

As strange as it may seem, the wildlife and ecological professions bought into his new view hook, line, and sinker. This was especially true of the National Park Service. Parks, such as Yellowstone, Rocky Mountain, Mount Rainier, and Olympic among others, were no longer overgrazed by unnatural

concentrations of unhunted elk. Instead, the range was always beat-to-death by large numbers of food-limited elk, and thus no corrective management was needed, despite nearly 50 years of Park Service data to the contrary.

The pro-predator people were also delighted because according to Caughley's new paradigm, wolves and other carnivores had no impact on wildlife populations, hence there was no reason to kill predators—instead, predators needed to be protected and restored. Animal rightists were overjoyed because now there was no ecological justification for hunting, as ungulate populations would "naturally regulate without destroying their habitat." And finally environmentalists were jubilant because their solution to most every ill is to throw out the humans and let nature take its course, returning the West to a supposed idyllic Garden of Eden.

Caughley has since died and in his obituary he was hailed as a pillar of the wildlife and ecological establishments because his views on ungulate population dynamics, that is letting nature take its course without human interference, had come to dominate ecological thinking and management, especially in national parks and other protected



Another great photo from the good ol' days shows a 35-inch non-typical from the Kaibab. Although over 2,000 buck tags are now given out annually, only a handful of large bucks, similar to this brute, are taken.



Highlining is where the deer physically consume all the lower branches as high as the starving animals can reach. The Kaibab Plateau saw huge amounts of highlining after 1918.

areas. Robert May, one of the leading ecological modelers of the day and an Oxford Don, called Caughley's 1970 Ecology paper a "brilliant demolition of the Kaibab deer population 'data.'"

The question we are left with, however, is who was incompetent? And did anyone lie? Aldo Leopold and other early range scientists, who recorded what they saw on the Kaibab...or Caughley and his supporters, who said the Kaibab Deer Incident was a cherished myth? They both cannot be right, though, of course, they both could be wrong. To answer those questions, I have conducted my own study of the Kaibab. Unlike Caughley, I have been to the Kaibab Plateau many times, plus I have gone through the old Forest Service and Park Service records. I have also searched various archives for photos taken on the Kaibab before, during, and after the deer herd irrupted. In addition, I have personally reviewed everything that has been published on the Kaibab Deer Incident.

Four types of data can be used to test Caughley's food-limited model of ungulate population dynamics—historical photographs, first-person historical journals, archaeological data, and detailed analyses of his plant-herbivore and

plant-herbivore-predator mathematical models. If Caughley is correct that large numbers of deer and elk always occupied western ranges and that overgrazing is "natural," then the earliest historical photos should show that preferred woody species, such as aspen and cliffrose, were heavily browsed. Similarly, the earliest explorers should have reported a land teeming with game and archaeological sites should be overflowing with elk and deer bones. And finally, a sensitivity analysis of Caughley's models, which he never fully reported, should support his view of "Economic" versus "Ecological Carrying Capacity." I am the only wildlife ecologist, who has conducted all four tests.

Photographs taken before 1910 on the Kaibab Plateau show no evidence that any of the preferred browse plants had ever been grazed by mule deer. This is also true of conifers, such as spruce, pinyon, and juniper. After 1918, however, even spruce on the summer range were highlined by deer—highlining is where the deer physically consume all the lower branches as high as the starving animals can reach. In extreme cases, like that on the Kaibab or in national parks, this includes normally unpalatable species such as spruce and

other conifers. In fact, of all the earliest photographs taken throughout western North America, none show any evidence of ungulate use on any browse species. None.

Historical journals also indicate that elk, mule deer, and other game animals were rare when the West was first explored by Europeans. Geologist Clarence Dutton, for instance, traveled by horseback across the full length of the Kaibab Plateau in 1880. In Dutton's report of that journey, there are descriptions of flowers, birds, small mammals, and a forest so open and park-like that one could ride everywhere on horseback; but there is only a single passing mention of deer. Dutton himself reported no first-hand sightings of mule deer. Similarly, on Boulder Mountain in southern Utah where there are large numbers of deer and elk today, explorers in 1872 reported no wildlife and had to send back nearly 150 miles for food when supplies ran low. This was before this part of Utah was settled by Europeans or grazed by livestock. Photographs from that expedition show no deer or elk browsing on aspen or other preferred species.

Even in Yellowstone, wildlife was rare. Although Yellowstone is now home to around 100,000 elk and more than 5,000 bison, early explorers, who spent 765 days in the ecosystem on foot or horseback between 1835 and 1876, reported seeing elk only once every 18 days and bison were only seen three times, but not in the park itself. In addition, archaeological data indicate that elk and mule deer were rare on western ranges for at least the last 10,000 years. This is certainly true of the archaeological sites that have been excavated on the Kaibab Plateau, in Grand Canyon National Park, and throughout southern Utah. Remains of elk are virtually non-existent and mule deer bones too are rare. Thus, the unbrowsed condition of the vegetation in the earliest historical images, the near absence of elk and mule deer in the earliest first-person accounts, and the rarity of mule deer and other ungulates in the

archeological record do not support a food-limited model of ungulate ecology.

In presenting the mathematical models to the world which Caughley claimed supported his Kaibab analysis, it turns out that Caughley selected only those parameter values that bolstered his hypothesis. That is to say, Caughley rigged the model's output by only selecting numerical input estimates that supported what apparently were his preordained conclusions. This is certainly true of his plant-herbivore model. Caughley's plant-herbivore-predator model is even more suspect because he selected the precise set of parameter values that produced stability—that is to say, where predators had little impact on ungulate numbers. Varying his input values by as little as a few percent, produces an entirely different outcome from that published by Caughley. There is little doubt that such behavior constitutes scientific fraud by any objective standard.

Why did Caughley lie? And why were the wildlife and ecological professions all too eager to jump on Caughley's bandwagon? It appears that all concerned had hidden political agendas. From Caughley's other writings, it is clear that he was a firm believer in letting nature take its course at all costs with little or no human intervention. For the Park Service, Caughley offered a way to explain away park overgrazing as "natural"—Yellowstone and other national parks still cling to Caughley's "natural regulation" philosophy.

The pro-predator people, including the Ecological Society of America, who published Caughley's 1970 Kaibab paper, now could cite Caughley's "scientific" studies as proof that predators, such as wolves and mountain lions, were warm, cuddly, and had no impact on wildlife populations. While the animal-rights crowd could point to Caughley as "proof" that hunting was not needed to control ungulate population or to prevent range damage, and therefore hunting should be banned. The environmental-

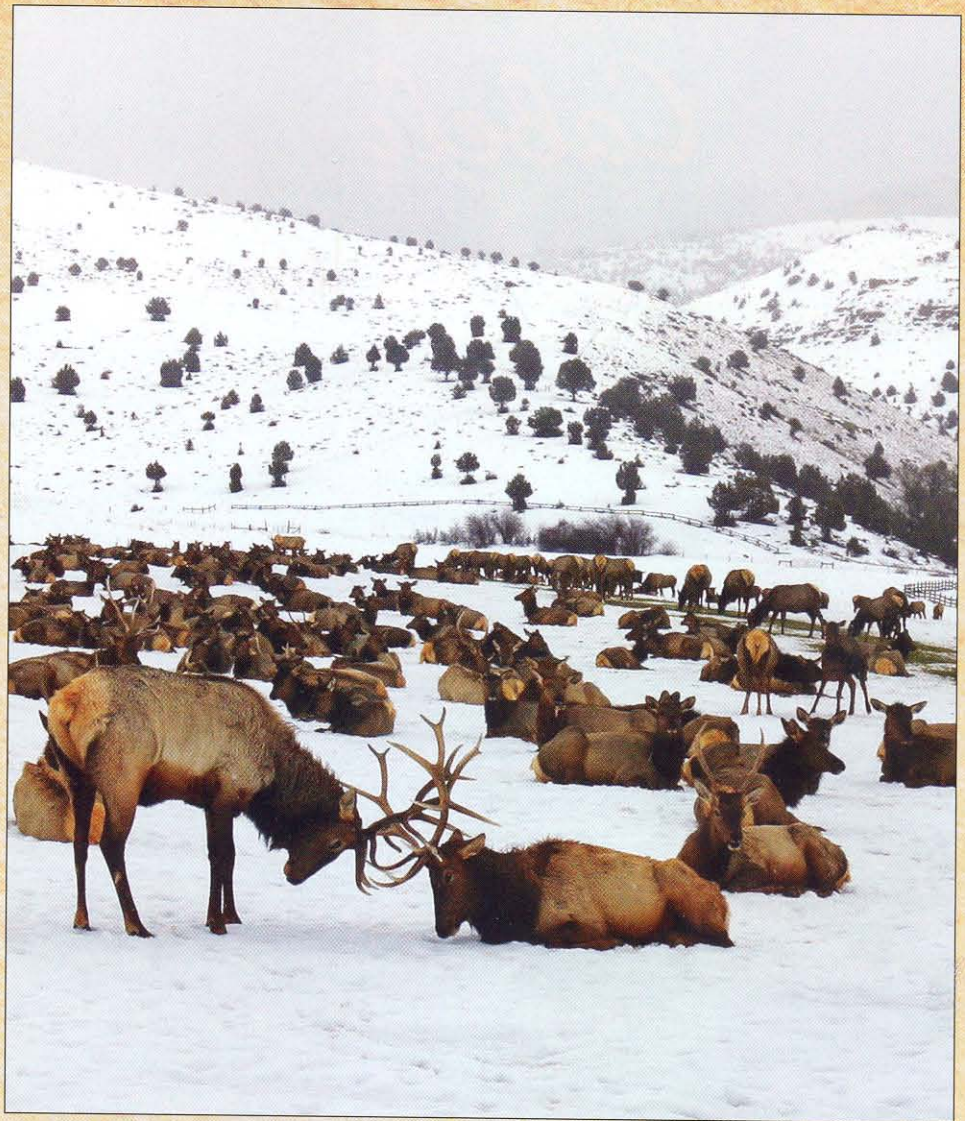


Photo - Becky Blumenship

Environmentalists have turned a blind eye to the ecological damage that has occurred in national parks due to overgrazing by wildlife. While livestock on public lands is evil, wildlife overgrazing is deemed "natural".

ists, who in general have turned a blind eye to the ecological damage that has occurred in national parks due to overgrazing by wildlife, now had even more of an excuse to do nothing. Livestock use on public lands was still evil and had to be eliminated, but wildlife overgrazing was "natural" and therefore okay.

Lest you think this is all ancient history, elephant populations today are at all time highs in southern Africa national parks—and, trust me, you have not seen overgrazing until you have seen what elephants can do. Entire forests have been and are being converted to grasslands. Huge baobab trees that are hundreds or perhaps even thousands of years old are turned into kindling. The

elephants clearly need to be culled to prevent resources damage and to protect biodiversity.

But the greens, animal-rightists, and many ecologists contend that nature should be left to run its course and cite Caughley's "Economic" versus "Ecological Carrying Capacity" as scientific proof that nothing should be done. Similarly, wolf reintroduction in the West was predicated on the premise that predators have no significant impact on game populations. Caughley, unfortunately, is still alive and well.

There is a glimmer of hope, though, for in 2006 Dr. Dan Binkley of Colorado State University and three co-authors published a scientific study entitled,

Cabela's T.A.G.S.[®]

Trophy Applications & Guide Service



Mark Dowse utilized Cabela's T.A.G.S. Our New Mexico outfitter did his homework / he had photos of this public land monster muley prior to opening day! 210" B&C green gross.

Cabela's T.A.G.S. is the only "full-service" licensing program available to today's sportsmen. From professional consultation on where to apply, to properly filling out and submitting your applications, to FLOATING all the necessary tag fees, we have the easiest, most reliable and most complete service to assist you. Once you've drawn a tag, we'll help you book a reputable outfitter. When you're ready to apply for the best big-game tags, or build valuable preference points, just call and speak with one of our professional consultants.

1-800-755-TAGS (8247)

Call today to order your FREE T.A.G.S. catalog

"Was Aldo Leopold Right about the Kaibab Deer Herd?" Dr. Binkley and his associates tested Leopold's and Caughley's hypotheses by aging aspen trees on the Kaibab. They concluded that "the age structure of aspen forests on the Kaibab Plateau supported the classic story of extremely high deer populations in the 1920's." That is to say, deer numbers were so high that the mule deer ate all the aspen suckers to the ground and thereby prevented new aspen trees from growing during the

early 1920's. The authors then went on to refute Caughley's interpretation of the Kaibab Deer Incident.

So if Caughley was wrong about the Kaibab Deer Incident, that must mean that Aldo Leopold and others were right? Not exactly. Recall that earlier I said both could be wrong? Well, both were wrong because everyone involved assumed that Native Americans had no effect on ungulate populations. What kept elephants from destroying African

landscapes before European colonization? Aboriginal hunters. After all, what is more unnatural than an African ecosystem without hominid hunters and fire-starters? Unless, of course, one does not believe in evolution? The same is true here in the Americas, hunting by indigenous people once kept elk and deer populations at very low levels. Native Americans, not carnivores, were the apex, or keystone predator. Thus, national parks and other areas where hunting is prohibited are entirely unnatural—hunting having been a natural process in American ecosystems for at least the last 12,000 years.

The Kaibab band of the Southern Paiutes occupied the Kaibab Plateau when Europeans arrived. The first whites



to enter the area estimated that there were 500 individuals in the Kaibab band. European-introduced diseases to which native people had no genetic or immunological resistance, however, had visited the Kaibab well before actual European contact. Taking that fact into consideration, some anthropologists have suggested that as many as 5,000 aboriginal people may have once occupied this part of northern Arizona and southern Utah. By subsisting mainly on vegetal foods, including agriculture, native people, who hunted the Kaibab, could have kept mule deer populations at very low levels. This is especially true when one remembers that human hunting and carnivore predation are additive.

Native American predation on the Kaibab may have been particularly effective because, as I mentioned earlier,



Stealth Cam 11.17.2009 18:46:33) 32 F

One of the ways native people hunted deer on the Kaibab, was to wait in blinds at watering places for the deer to come to drink. This technique may have been particularly deadly during summer droughts.

surface water, prior to the advent of livestock watering systems, was notoriously scarce on the plateau. The limestone surface of the plateau is extremely porous and all precipitation and snowmelt sink into the ground. Streams are absent on the Kaibab and only 12 small, permanent springs are located on the summer range. Some sinkholes have naturally sealed with accumulated sediments and do hold water, but they are rare and often miles apart. This lack of water, historically and to this day, forces

many Kaibab mule deer to travel great distances to quench their thirst.

One of the ways native people hunted deer on the Kaibab, and elsewhere, was to wait in blinds at watering places for the deer to come to drink. This technique may have been particularly deadly during summer droughts given the Kaibab's limited natural water supply. As noted repeatedly in the pages of *MuleCrazy*, the key to finding trophy bucks on the Arizona Strip and the

Kaibab is to find where the deer water, especially if you are a bowhunter.

In addition, the Kaibab Paiutes located their more permanent camps near lower-elevation springs and therefore those water sources too were unavailable to the deer. Clearly, ecologists need to broaden their perspective to include Native Americans as key ecosystem components.

There are two other messages that readers need to take to heart. Just because something is published in a learned journal does not mean it is correct or even that it is not a scientific fraud. Consensus is the antithesis of science. Science progresses by testing hypotheses with data collected in the real world. Moreover, one should never trust models or modelers unless one first understands all the underlying assumptions, which unfortunately and often not stated—such as neither Caughley nor Leopold ever mentioning Native Americans, though, the unspoken and unwritten assumption was that native people could be ignored. Once you understand all the basic assumptions and the math involved, then you need to go through the computer codes line by line, as all sort of things can be hidden in the actual computer program. And finally, a detailed sensitivity analysis needs to be conducted and fully reported.

You also need to consider if the modeler has a larger, often hidden, political agenda. Then and only then might you be able to put some credence in the model, or the model's output. How Caughley was able to publish different variations of his model in the learned journals that he did, without any of the model's major defects having been brought to light, until now, is certainly an indictment of the scientific process, as practiced in modern times. But then it appears that everyone had his or her own political agenda, all of which involved shading the truth. Unfortunately, some biologists have become as adept at spinning "the facts" as politicians.

