PHOTO COURTESY CHRIS CONRAD

LEFT: George investigates a series of old and still-active beaver ponds in eastern Idaho in 2016. Beavers had been actively "managing" surrounding aspen stands for a long time. BELOW: George in 2001. He wanted to be a major league baseball pitcher but ended up as a world-class wildlife biologist. Lucky us!

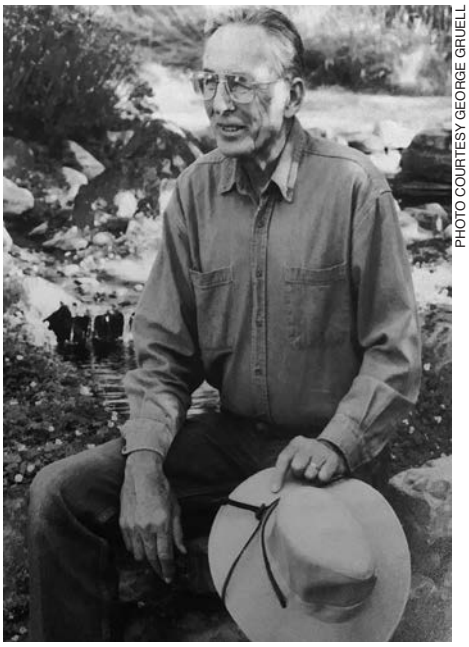


PHOTO COURTESY GEORGE GRUELL

Sculpted by Fire

George Gruell's six decades on watch.
By Jim Petersen & Chris Conrad

George Gruell had hoped to become a major league pitcher. But after three long years in the minors, he reluctantly called it quits. "I had my crack at it," he said when his big-league dreams were over, but he always knew how to work. "I came out of an era having little material goods. All we knew was work. Before I left high school, I was working summers in the oil fields and on agricultural places."

He spent part of that summer in 1950 working for a friend on a crew installing quail guzzlers for the California Department of Fish & Game. It was a job. No pitcher's mound, but it lit a match. "I had a great passion for the out-of-doors," he recalls. George was onto something. He enrolled in Humboldt State in Northern California and in 1953 graduated with a degree in wildlife management. He was soon to enter a league in which he was destined to become widely known. All he had to do was be George Gruell. And work. He did both.

He proceeded to combine his passion for the out-of-doors and his work ethic to forge a career in the wildlife management profession that lasted over 60 years. He also became the author or co-author of a long list of publications that have become legendary in their impact (and can be found via digital archives online). His efforts tower over the rural landscapes of the West and have paved the way for public land managers to be forced to rethink how our wildlands are being managed in almost every locale.

Not long after graduation George interviewed for a wildlife biologist position with Nevada Fish & Game. He got the job and was assigned to a mule deer management project in Elko. It was right down his alley because he was a big game man at heart, and he threw himself into the project. He initiated a deer trapping/capture and ear-tagging program to improve the department's knowledge of deer movements in northern Nevada, conducted aerial deer counts and forage-plant surveys. It didn't take him long, however, to discover that there was something even more interesting than work in the vicinity of Elko. Betty, the love of his life and an Elko native, soon captured his heart, and they were married in 1954. He couldn't have found a better woman to stand by his side.

No men in history have been more worthy of honor than those who had the courage to fight for the truth in public arenas that have been ruled by lies. It takes a certain kind of pluck. The rural American West of the last 50 years is one of those arenas. George Gruell is one of those men.

"When we were initially married," George says, "some of the wives spent time in the field with their husbands. Betty went with me. We camped, and I carried out a study that entailed tagging young fawns in the spring. But as the years went by Betty got less inclined to rough it." That was understandable given the ground George began to cover.

In 1958 George resigned, frustrated with the department's reluctance to invest in new technology including time-lapse cameras and satellite telemetry. Following this, an opportunity to return to the wildlife profession materialized when he learned that the Humboldt National Forest headquartered in Elko was looking to hire its first wildlife biologist. George talked to the forest supervisor about the job and was soon in their ranks. "Boy, was I enthused!" he recalls, because the Humboldt covered well over a million acres and his job was to study wildlife habitat, not just animals. This is where he was provided the opportunity to seriously investigate long-term vegetation changes and their influence on wildlife.

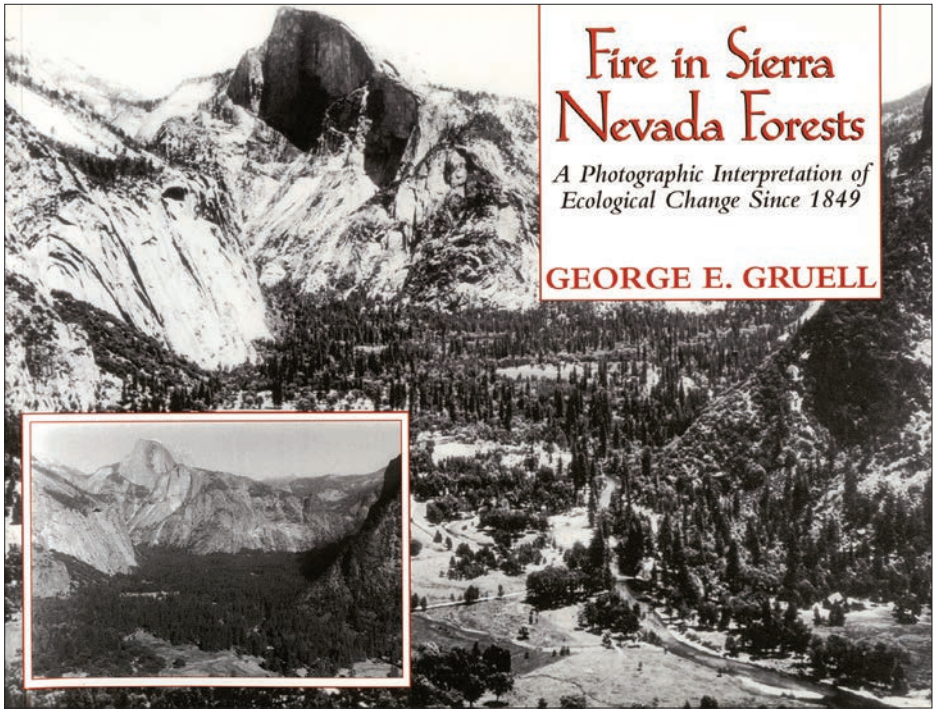
At the time his career started, the United States was coming out of World War II and wildlife managers were focused on the perception that livestock grazing was detrimental to mule deer. George, however, wasn't interested in pointing blame at the easiest available targets. His gut told him to explore and con-

sider things done on the land in the past. He wanted the truth, a resolve that served him well throughout his career.

He had seen two early photographs taken by rangers on the Humboldt showing remarkable vegetation transitions on the land. George looked for more old photos and after accumulating more than 100 images from the National Archives, he began the process of examining and repeating the photos from the same early camera locations.

This often put him on horseback in rough terrain where superior horsemanship was sometimes required. George learned quick. It also put him in contact with locals who had been firsthand witnesses to the vegetative changes that had taken place on the land. Their remembrances went back to the late 1800s with some specific to exact locations. They knew plenty. George says, "They were a gold mine of accounts of wildlife occurrences and habitat conditions."

Old photos, photographic repeats, old-timers, pioneer journals, early newspapers, agency files, early hunting narratives and



BOOK COVER PHOTO BY H.G. PEABODY. INSET BY LLOYD DAVIS, UNDER DIRECTION OF GEORGE GRUELL.

Background photo on book cover was taken in 1899 of Upper Yosemite Valley from Columbia Point. The forest was open with young conifers beginning to encroach on meadows. Stands were relatively wildfire resistant. INSET*: Same location in 1994 shows conifers taller, thicker and wildfire prone.*

PHOTO GEORGE GRUELL

Above left: Johnsville, Calif., an early Sierra Nevada mining community in 1900. Past logging had removed most of the original conifer cover. Wildfire fuel was mostly brush and small trees. Above right*: Johnsville in 1993 (now Plumas-Eureka State Park). Dense conifers obscure view of town. Wildfire danger is high.* Below left*: East Branch of the North Fork of the Feather River near Paxton in 1890. This area had not been logged and illustrates very open structure of an early conifer forest. Risk of wildfire is minimal.* Below right*: Same location in 1993. Closed stands of both conifers and oaks dominate the landscape and fire had not burned here in many decades. Some timber harvest had taken place since 1890 but forest growth had overtaken the landscape. Fire danger was high in 1993. Note: This location was burned over by the devastating 963,000-acre Dixie Fire in 2021.*

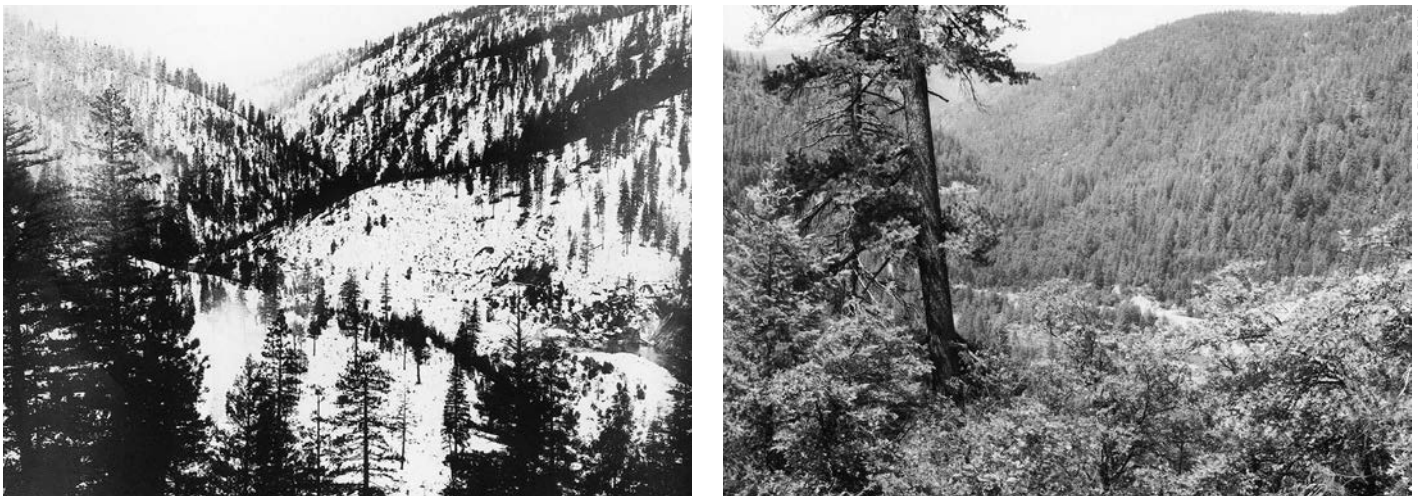


PHOTO GEORGE GRUELL

countless hours in the field in the Intermountain West for the U.S. Forest Service, both on horseback and on foot, became the template for how he documented the long-term changes that had occurred on the land and had influenced the wildlife habitat he was assigned to investigate. This, combined with extensive use of plant surveys and with an acquired knowledge of plant succession and plant-animal interactions, proved to be an extremely reliable investigative method that opened the door to discern the truth. Inevitably his results began to rattle some cages. Many professionals had turf to protect. His work became known outside of Nevada.

In 1967 George received a call from the director of wildlife management for the Intermountain Region offering him the wildlife biologist job. At the time, there was considerable controversy surrounding elk and elk habitat near Jackson Hole, Wyo., with big names and multiple agencies in the middle of the feuding. He was cautioned by the Humboldt Forest supervisor against taking the job because of the political difficulties. But that wasn't the way George looked at it. He says, "It was the chance of a lifetime."

George dove into his new assignment.

PHOTO COURTESY GEORGE GRUELL

George and Betty in 2008 at their comfortable home in Carson City. They have been quite a team. George never stops working. He was out in the field recently sharing knowledge of long-term vegetation changes that have taken place in a watershed close to Pine Valley, Utah, and their impacts on wildlife.

Over the following four years he conducted a substantial study of historical elk use of Big Game Ridge in the Teton Wilderness north of Jackson Hole which was published in 1973. He published another study that same year on the ecological role of fire in the Jackson Hole area. This was the start of his remarkable career accomplishments.

At last count there were 32 publications that he had authored or co-authored which address habitats as diverse as sagebrush, pinyon-juniper, mountain mahogany, aspen, lodgepole pine, and ponderosa pine. One common thread through all has been the dramatic long-term effect of excluding fire from the land and its negative consequences.

What we now know—and what George came to preach—is that excluding fire, logging and grazing from forests and rangelands was the major cause of the stunning transformation in plant and animal species so apparent in the "before and after" photos that documented his decades of research.

George Gruell's illuminating works resonate truth. You can see it. It's the reason they are powerful. His photograph repeats cut through the morass of confusion that has been created in natural resource management over the last half century (and continues today) with "environmental protections" that have focused on building insane regulatory fences around individual species and consequently excluded realistic vegetation management solutions from being implemented on the land.

Truth-Telling Writ Large

There never was a vast sea of old-growth forest that stretched from sea to shining sea.
By Jim Petersen

Although George Gruell is best known for his photographic histories of the region's forests and rangelands, his "repeat photography" formed the visual basis for dozens of publications he authored or co-authored during his 60-year career.

Many are archived at the University of Nevada, Reno. Others are housed on the Internet. I have several, including "Fire in Sierra Nevada Forests," and two more in which he photographs and explains why the West's national forests are burning in wildfires for which no ecological precedent exists. Here are the others:

- *Seventy Years of Vegetative Change in Managed Ponderosa Pine Forest in Western Montana: Implications for Resource Management, Intermountain Forest and Range Experiment Station, Ogden, Utah, August 1982*
- *Fire and Vegetative Trends in the Northern Rockies: Interpretations from 1871-1982, Intermountain Forest and Range Experiment*

Gruell's illuminating work rests on his success in plumbing the depths of the nation's photographic archives, which hold thousands of pictures of western landscapes that date from the 1860s. He took his "repeat" photographs from the same vantage points as the originals, providing us with before-and-after views of astonishing changes in vegetative patterns driven by nature's responses to public policy disasters.

His candor and tenacious attention to detail did not always please his superiors, but it put him on the radar screens of some of the best plant ecologists in the Forest Service, including the late Steve Arno, whose Lick Creek research in the Bitterroot Valley south of Missoula, Mont., was the focal point of Gruell's work during the seven years he was stationed at the Fire Science Lab in Missoula.

The 17 reports Gruell wrote or cowrote during his Missoula years included more than 100 photographs he unearthed from the Montana Historical Society, the Mansfield Library Special Collections at the University of Montana, the National Archives and the U.S. Geological Survey library in Denver.

Congress sent USGS surveyors west four times between 1867 and 1899. Their work, including photographs and narratives, provide the best descriptions of presettlement western landscapes we have. And, no, there was "no vast sea of old-growth forest" that stretched from sea to shining sea.

Surveyors—and pioneers traveling in wagon trains—described mosaics of forest and rangeland sculpted by fire. Not the horrific stand-replacing fires we see today, but less intensive fires caused by lightning or deliberately set by Indians who used fire for a variety of purposes related to food production or self-defense.

What erased these picturesque mosaics?

Two public policy disasters: the nation's ill-fated decision to force Indians from their homelands and onto distant reservations, eliminating Indian fire, and the later decision to exclude all fire from western landscapes that had been sculpted by natural and human fire for eons.

This latter decision seems like such a conundrum today but by 1899—the year the

"What we are preserving isn't natural," George said when asked earlier this year what he sees happening in the West today. "The current direction in federal resource management is self-evident and wrong-headed. There is too much of a preservationist mindset in agency and congressional thinking. We can't turn back the clock, but there are practical things we can do to improve wildlife habitat and reduce wildfire risk."

Like what?

"Look at Arno's work at Lick Creek in western Montana," he replies (referring to a publication he had completed with forest researcher Steve Arno in 1982). "Thinning and prescribed fire in that order, thinning and prescribed fire. It's a slow process, but it works. You'll find similar examples of success in every western state. But you need lots of well-trained people to do this work and right now our federal resource management agencies don't have them."

George adds: "I won't live long enough to see this done at the necessary pace and scale, but we have the repeatable science and the technologies needed to do the on-the-ground work on federal lands in the West before time runs out. We can't just go around lighting fires wherever we want and call it good enough. It's not safe for man nor beast because what we call nature is too far out of kilter."

None of George's publications communicate this story better than the book he authored after he retired from the Forest Service. "Fire in Sierra Nevada Forests" was published in 2001 (and from which photographs have been included here). George received a phone call from California after his retirement asking if he might be interested in conducting another photo study regarding the vegetation changes that had occurred in the Sierra Nevada. Providentially, he and Betty had moved to Carson City, Nev., only a few years before. George's response was, "I think I can help you."

Lack of management and out-of-control vegetation growth has transformed national forests into huge wildfires waiting to be ignited.

He did more than that. He went on to produce a historic book that has proven to be prophetic. California's megafires of the last decade have one primary cause: lack of management. Out-of-control vegetation growth has transformed the forests of California into huge wildfires waiting to be ignited. It's the same story throughout the West. We have been headed down a wrong and dangerous path so kudos to a very good man for a remarkable career. The story he has told and what he has accomplished need to become part of the common wisdom about our wildlands across the West. It will change the landscape when it does. In more ways than one.

George Gruell's works tower over the western landscape because of one thing: he has told the truth. For more than 60 years. And it's time for land managers and the U.S. Congress to finally start listening to him. ■

Jim Petersen is the founder and president of the nonprofit Evergreen Foundation and publisher of Evergreen Magazine, www.evergreenmagazine.com. Chris Conrad is a Sonora, Calif., private-sector forester weary of watching environmental insanities burn down forests. Although George Gruell's book, "Fire in Sierra Nevada Forests," is currently out of print, used copies and many of his other publications can be accessed in digital archives online.

U.S. government sold its first timber sale—the utilitarian need to protect federally designated forest reserves from wildfires was well understood by the handful of American foresters who had been trained in Europe. Among them is Gifford Pinchot, first chief of the U.S. Forest Service.

The coup de grâce was the federal government's 1990 decision to list the northern spotted owl as a threatened species. The ill-conceived and ruinous Northwest Forest Plan brought management as it had been understood since Pinchot's time to a screeching halt. Insects, diseases and wildfires have since devastated more than half the nation's 193-million-acre federal forest estate, including several million acres of designated spotted owl habitat. The California spotted owl restrictions brought similar chaos to California forests.

My Sonora friend Chris Conrad met Gruell in 1992. He had joined a grassroots effort to explain to Californians what dangers the lack of forest management and the absence of prescribed fire posed for Sierra Nevada forests. The result was the aforementioned and prophetic "Fire in Sierra Nevada Forests," which ought to be reprinted and taught in every classroom in California.

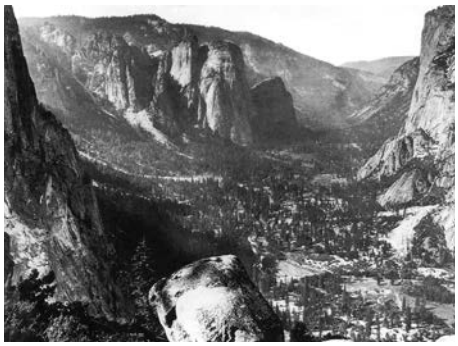
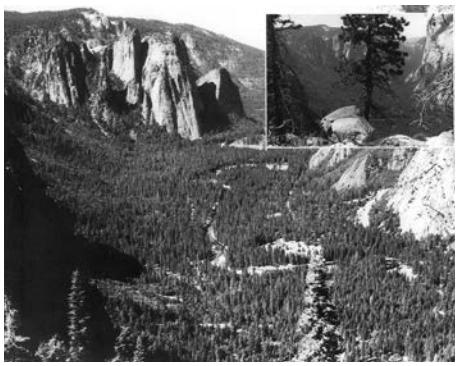


PHOTO BY C.E. WATKINS



PHOTOS BY ROBERT GIBBENS & LLOYD DAVIS

***TOP PHOTO:** Yosemite Valley in 1866 from Union Point. Forests "open and parklike," as described by John Muir. Large pine and scattered oaks are primary tree cover. Meadows and open areas are extensive. **BOTTOM:** Yosemite Valley from Union Point in 1961. Camera point was slightly moved to avoid trees that had grown up. Dramatic increase in conifers. Meadows and open areas have almost disappeared. **INSET:** Photo at Gruell's direction from original camera point shows the trees Gibbens avoided in 1994. Conifers are taller and thicker and fewer open areas are visible. Both photos show highly increased fire risk due to forest density.*

Late last year, at Conrad's urging, Gruell summarized the high points of his career. The typewritten copy runs 12 pages, the three reports cited herein run 394 pages and the entire body of Gruell's 60 years of research runs more than 1,000 pages, not counting footnotes and bibliographies.

Passion and truth-telling writ large. Perseverance times 60.

Gruell's research and photography light the way out of a politically crafted bureaucratic wilderness that was 50 years in the making. Academia and the federal bureaucracy have too many cowards and followers and most of them have shut up even though they knew where forest policies were eventually taking us. They have earned "peer review" a bad name, with some exceptions like Steve Arno and a few others.

It's easy to see that the rural West and its forests are in a death spiral. We best saddle up and ride hard. We have a long way to go and a short time to get there. ■