

## CHAPARRAL AS A NATURAL RESOURCE: CHANGING THE CONVERSATION ABOUT CHAPARRAL AND FIRE

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### ABSTRACT

The historical bias against chaparral has shaped current decisions on how to address fire risk in California. To correct this problem, chaparral needs to be recognized as a valuable natural resource, and fire risk and resource management need to be addressed together in land management plans.

Key words: biofuel, brush, chaparral, elfin forest, fire risk, land management, wildfire.

### INTRODUCTION

Jon E. Keeley, a nationally recognized chaparral and fire ecologist, often reminds audiences during his presentations on California's wildland fires that, "Every decade we see one or more massive wildfires followed by a major symposium on wildfires. Every decade we increase funding for fuel modifications and fire suppression activities, followed by a decade of even worse fire impacts" (J. E. Keeley pers. comm.).

The current decade is no exception. After the 2003 and 2007 firestorms in southern California, firefighters and land managers expressed shock and dismay over the size and intensity of the fires, frequently portraying them as the worse they had ever seen in their careers. Conferences and seminars were convened to discuss the "wildfire crisis," producing volumes of documents that offered both scientific and personal insights into possible solutions. Despite some promising initiatives emphasizing changes in building codes and land use planning, most of the financial support and rhetoric has continued to be focused on "fuel modifications," namely the removal of native vegetation.

To appreciate just how long Californians have been reacting like this, it is helpful to examine accounts of a large fire early in the state's history.

During the past three or four days destructive fires have been raging in San Bernardino, Orange and San Diego... It is a year of disaster, widespread destruction of life and property—and, well, a year of horrors.

*-Daily Courier, San Bernardino, Sept. 27*

I was living in Orange County at the time and well remember the great fire reported herein from September 24 to 26. Nothing like it occurred in California since the National Forests have been administered. In fact in my 33 years in the Service I have never seen a forest or brush fire equal to it.

*-L.A. Barrett, U.S. Forest Service*

The cause of the spreading fires is the dry brush, which is allowed to remain on the unoccupied lands, and so long will San Diego be menaced by these running fires. The menace should be removed by the removal of the brush. It is unsightly and is dangerous.

*-Daily San Diegan, Sept. 26*

These quotes could have easily described both the 2003 or 2007 firestorms. Instead, they are accounts of the monstrous September 1889 Santiago Canyon Fire that burned approximately 300,000 acres in Orange and San Diego counties (Keeley and Zedler 2009). This fire remains the largest in the state's history. The last quote would fit in well with the 2005 fire management plan for Tulare County, CA. It declared that in order to attain the goal of minimizing the threat of fire, "we must reduce the amount of brush covered lands."

Since large, chaparral fires are nothing new to California and our emphasis on "fuel modifications" has failed to prevent such fires, why do we continually respond in the same way? Millions of dollars have been spent each year on "clearing the brush," yet large fires continue and homes keep burning. Is there a better approach than trying to manipulate the natural environment?

To properly answer these questions, it is important to understand a few fundamentals. First, the largest and most damaging wildland fires in California do not occur in forests, but in shrubland ecosystems or degraded versions thereof. The most extensive of these is chaparral, a shrub-dominated plant community shaped by the Mediterranean-type climate that so characterizes much of coastal California: cool, wet winters and hot, dry summers. Unfortunately, the public appears to be generally unaware or confused over what chaparral really is, making attempts to craft successful land management plans extremely difficult. This confusion becomes obvious after every large fire when citizen groups initiate campaigns to “re-plant” trees in burned areas when in fact there were never trees there in the first place. Less than 5% of the 739,597 acres burned in the 2003 firestorm was in forested areas.

Secondly, there is no question that properly managing vegetation within the 100-foot defensible space zone around homes and communities in direct contact with wildland areas is a critical component in reducing fire risk. The problem arises when government agencies focus their fire safety messages almost exclusively on vegetation “clearance” and ignore the main reason homes ignite—through contact from embers that can travel more than three miles ahead of the fire front (Maranghides and Mell 2009).

Finally, trying to determine human motivation is obviously complicated and involves multiple variables that will be impossible to discuss here. However, by examining the history of attitudes about chaparral, we can begin to understand their influence on current decisions. The answer may have more to do with how we view nature than our failure to learn from past mistakes.

### WORTHLESS BRUSH?

Clearing the “worthless brush” is part of Western tradition. In an 1879 map drawn by California’s Survey General’s Office of the northern part of what was to become San Diego County, highland areas above creeks and valleys were labeled “Unsurveyable worthless brushy Mountains” (Ward 1984). Early settlers saw chaparral as having little economic value. Consequently, they continuously tried to eliminate chaparral in the easiest way they could, by burning. Ranchers used fire to expand rangelands, prospectors burned areas they intended to explore, and hunters would start fires to drive out game.

In order to convert chaparral-covered landscapes into something more economically viable, land managers tried to not only replace them with grasslands as forage for livestock, but also attempted to turn them into forests. One early report suggested that “perhaps 1,000,000 acres of chaparral area would support a growth of the more desirable species of eucalyptus, and on an additional 1,000,000 acres certain more hardy but less commercially valuable species could be grown” (Plummer 1911). During the 1920s over a million conifers, a substantial share of which were non-native, were planted in the San Gabriel Mountains in Los Angeles County. Most were eventually killed by fire or drought, finally convincing foresters that chaparral, not forest, was the most sustainable plant community in the area. However, the desire to protect introduced trees that have survived within chaparral plant communities remains. In 2008, a healthy, old growth stand of manzanita chaparral was clear-cut in the Cleveland National Forest to maintain the “health” of a 50-acre tree plantation established in 1956.

In a 1949 document on “brushland management” one author wrote, “Our real problems as far as range improvement in brush areas is concerned, are how to eliminate the brush from areas capable of producing appreciable quantities of forage, how to prevent the invasion of brush on our better range areas, and how to revegetate these areas with good forage plants...” (Madson 1949). A detailed report describing the techniques that “have been developed for establishing grass while destroying the brush” was published by the U.S. Forest Service in 1967. The report listed “desirable attributes” of grass over chaparral including, “good soil cover, excellent forage for livestock, good supplement for deer browse, lower water use than brush, and low fuel volume for easier fire control” (Bentley 1967).

The desire to increase “deer browse” and improve access to hunters has long been a reason given for breaking up large, contiguous stands of old growth chaparral through prescribed fire or other techniques. Such management activities appear to be more related to local desires than attempts to “restore” the natural balance as is frequently claimed. The perspective that we should open up areas that have been supposedly “choked by vegetation and overgrown chaparral” probably says more about human values than natural, ecological processes.

While a number of techniques have been used to eliminate chaparral (hand-cutting, bulldozing, discing, and brush crushing by huge metal rollers), “from time immemorial, fire has been the traditional tool for brush removal” (Berry 1973). However, due

to concerns over the liability of escaped prescribed fires and the small window of opportunity when such burns can be accomplished, mechanical methods such as “mastication” (a method by which large, mechanical chippers are used to grind up shrubs and small trees) are often preferred. Ideas for how to conduct such mastication projects with relative ease for the purpose of fuel management have been frequently offered. For example, during a 1975 brushland management conference held in the Mendocino National Forest, it was suggested that one “...might employ a giant all-terrain vehicle that could mow and spray brush to maintain an acceptable fuel volume. The tremendous cost of its operation might be partially offset by distillation of wood alcohol for fuel from brush that it could harvest” (Adams 1975).

The hope of trying to squeeze some commodity value out of chaparral continues today. In referencing a bill he authored in the California Assembly that would have provided economic incentives for removal of native shrublands, Assemblyman Nathan Fletcher said the program would “increase the economic value of the shrubbery—that stuff has little value today—by buying down the cost of transporting materials” (San Diego Union Tribune 2009).

Grinding up chaparral to create biomass that could be used to create “biofuel” is currently being promoted by some as a “green” solution to address global climate change. Converting chaparral into biofuel has been discussed many times in the past with various degrees of enthusiasm. However, due to the complications in obtaining/processing biomass from chaparral plant communities, maintaining a commercially viable enterprise to do so is probably not realistic. Beyond the economics, biomass harvesting can have devastating consequences on native shrublands (Conservation Biology Institute 2009).

Seeing chaparral as worthless unless something can be made from it may have also influenced the 2004 U.S. Forest Service land management plan for the four national forests in southern California. Tree species were carefully distinguished and management strategies were offered for seven different forest types. Yet when it came to chaparral, the dominant plant community within these “forests,” different types of chaparral were not distinguished and none were given specific resource management plans.

This lack of recognition of the diversity and value of chaparral ecosystems reflects the difficulty in changing attitudes and combating institutional inertia because many within the Forest Service have come to appreciate the chaparral over the past several

decades. More than twenty years prior to the 2004 forest plan, Ralph C. Cisco, Supervisor of the Cleveland National Forest, presented a paper at a symposium in San Diego, CA, acknowledging that management of the so-called “brushlands” was in the past “oversimplified because the vegetation was seen as being very uniform and, more or less, worthless.” But now, he continued, “we have begun to recognize the diversity that actually exists in these vegetation types,” and that “management schemes for these various chaparral types should reflect their diverse characteristics and requirements” (Leisz 1982).

However, convincing some foresters of the value of chaparral remains a challenge because forestry is basically concerned with engineering a better forest to exploit its economic value. Shrubs are seen as “pests” that get in the way of efficiency. Valuing the diversity and habitat quality of chaparral requires a different approach, one that emphasizes variation. This may partially explain the conflict that can occur between ecologists and foresters. Whereas ecology deals in the analysis of variance and the interrelationships between many species, forestry focuses more on linear approaches that emphasize reducing variation to increase the timber cut. Hence, ecologists see old growth stands of chaparral and forest as rich, vibrant ecosystems. Foresters often characterize such systems as decadent and unproductive.

One of the common arguments used to justify the removal or burning of chaparral is that large stands are not “natural,” being the product of past fire suppression activities. A related perspective is that Native Americans burned landscapes everywhere, preventing the growth of dense stands of chaparral, which supposedly prevented large fires. Some have also suggested fire is needed to eliminate chemicals in the soil that have been claimed to inhibit seed germination (allelopathy). All of these hypotheses have been either rejected or seriously challenged by scientists over the past twenty years (Halsey 2004; Barrett et al. 2005; Keeley and Zedler 2009). However, the lack of scientific support for such ideas has not prevented local governments, such as San Diego County, from using them to justify large-scale fuel treatment projects instead of supporting other efforts such as retrofitting flammable homes in vulnerable communities.

## A NATURAL RESOURCE

Considering the historical hostility toward native shrublands, helping the public learn to value and

appreciate chaparral as an important natural resource will be challenging. It will take patience because chaparral does not have the same cultural allure that other plant communities may possess. Yet it can be done if hearts and minds are open. Francis M. Fultz referenced this in his 1927 book, *The Elfin-Forest of California*, when he wrote,

The Chaparral is very dear to me now, but when I first “hit the trail” that led me into it, it did not strike me at all favorably... I knew, however, that the feeling was unjust, for I was fully aware the Chaparral was a forest-cover designed by Nature as the best possible means for the conservation of the land. I knew, too, the proper thing for me to do was to down the unfriendly feeling and make an honest effort to get acquainted.

Echoing Fultz’s perspective that once one takes time to appreciate the chaparral, it becomes a wonderful destination to explore, Winfield “Bud” Head wrote in his now 1972 classic *The California Chaparral, an Elfin Forest*,

After a day or weekend in the Elfin Forest, most individuals admit that there is a fascination here. Perhaps not as glaringly apparent as in other forests. In many cases, it was necessary to point out certain sights to them. Within a short time, the newcomers to this country were asking questions. Then I knew I had them hooked.

By the 1980s, likely due to California’s changing demographics and the decline of ranching, negative attitudes toward chaparral began to wane. Richard Vogl, a prominent California ecologist, wrote in 1981 that, “In recent years there has been talk among even the hard-core brush fighters of ‘learning to live’ with chaparral. One does not know if this is an admission of defeat or the acquisition of ecological wisdom.” However, he added,

The brush fight will continue to arise in various forms unless we make efforts to fully understand chaparral ecosystems... If we think that chaparral presents problems and appears worthless, we have not thought ahead to the degraded alternatives that would replace chaparral if we succeeded in eliminating it. When man wars against nature, man wars against himself.

Foreshadowing the renewed hostility toward chaparral that has manifested itself since the 2003 firestorm, Vogl warned that, “We must also be aware of California’s history of a ‘brush fighter’s’ mentality

and that such feelings toward ‘brush’ still exist and might again prevail” (Vogl 1982).

With renewed interest in vegetation management by federal and state fire agencies, a significant amount of attention has been placed back on removing chaparral in wildland areas as Vogl predicted. Unfortunately, this approach appears to be partially based on the centuries old, but incorrect viewpoint that chaparral is just “worthless brush” and fails to consider that our efforts to manipulate instead of adapting to California’s fire-prone environment have proven unsuccessful.

Besides providing a wide variety of ecosystem services (watershed protection, biodiversity, habitat, aesthetics, etc.), chaparral defines California like no other plant community. If we intend to solve the wildfire problem, we need to recognize the natural resource value of chaparral and develop land management plans that reflect that reality. Too many times, especially at the local level, fire management plans fail to consider the entire fire environment, ignoring important resource issues. Fire and natural resources need to be considered together if we hope to maintain a sustainable environment. The first step is to accept the fact that we are part of nature, not apart from it.

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