The California Chaparral Field Institute

…the voice of the chaparral

August 31, 2005

Mr. Jeff Stephens, Deputy Chief for Vegetation Management
California Department of Forestry and Fire Protection (CDF)
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Dear Mr. Stephens,

We are submitting the following comments in reference to the CDF's Notice of Preparation (NOP) for the Vegetation Management Program (VMP) Draft Environmental Impact Report of 2005.

There are four important issues we would like to address that have relevance to the proposed VMP and the upcoming final Environmental Report:

1. The use of vegetation treatment methods to attempt to reduce the frequency and size of catastrophic fires.
2. The need for a critical and objective analysis of the costs vs. benefits of various fuel modification treatments available today.
3. The classification of old-growth chaparral as "decadent."
4. The recognition of chaparral as an important economic, recreational, and natural resource that needs to be managed as carefully and with as much focus as the state's forest systems.

Our comments focus primarily on wildfires relating to chaparral, California's most extensive and characteristic plant community; an ecosystem that is also associated with the most devastating wildfires in the state. These are important points to highlight because much of what is within the California Fire Plan tends to treat different types of fuels with the same broad brush, "one-size-fits-all" approach, failing not only to recognize the distinct differences between forest and chaparral, but also the important differences within chaparral types themselves. These differences have important fire management implications that need to be addressed. Not doing so will dramatically reduce the effectiveness of our state's fire management efforts.

1. The use of vegetation treatment methods to attempt to reduce the frequency and size of catastrophic fires.

It is a common perception that wildlands in California are unnaturally overgrown with a half-century's worth of highly combustible brush and small trees because of successful firefighting efforts since the 1950s. Such conditions are often blamed for allowing wildfires to become large and catastrophic. As a consequence, firefighting agencies are frequently held responsible for being the cause of our current wildfire crisis. This model is well supported in the coniferous belt of California, but the lower elevation chaparral is a completely different story. Support for this perception, especially in southern California, has come from studies relating to systems in Baja California (Minnich 1983, 1995) that are not particularly comparable to landscapes north of the border.

A suggested remedy to correct the "fuels problem" has been landscape level vegetation management projects that include prescribed burning and other treatments. According to this model, once a "mosaic" of mixed aged fuels is created, the size and frequency of large, catastrophic fires will be reduced dramatically in California. This is suggested in the NOP as well as the California Fire Plan (1995).

Recent scientific research, however, performed over the past ten years by numerous investigators and since the Fire Plan was written seriously challenges this assumption (Keeley et al. 1999, Moritz 2003, Wells et al. 2004, Moritz et al. 2004). In particular, studies have shown that fuel age does not significantly affect the probability of burning. Zedler and Seiger (2000) examined the same question through mathematical modeling and arrived at the same conclusion. Under extreme weather conditions, fire rapidly sweeps through all chaparral stands, regardless of age.

In addition, the fire suppression/fuel accumulation model does not agree with fire history trends in southern California over the past century; the number of acres burned per decade has remained relatively constant (Keeley and Fotheringham 2003) with fire frequency increasing in lock step with population growth. Please see Figures 1 and 2. Indeed, roughly a third of San Diego County burns every decade. At no time in the past would fires have burned more frequently than this because it is at the threshold of tolerance for most chaparral species.

Although fuel is obviously important, we know fires do not become catastrophic without corresponding extreme weather conditions (low humidity, high winds and temperatures). During such conditions, fire can be spread by burning through younger fuels or by spotting up to a mile away from the fire front. Both the 2003 Cedar and Otay fires in San Diego County burned through multiple numbers of large, young age-class mosaics less than eight years old. Please see Figure 3. Reducing fuel loads at strategically placed locations can provide anchor points and safety zones for firefighters, especially during non-wind driven events, but they have not proven effective in stopping the spread of wind-driven fires.

Contrary to conventional wisdom, large wildfires have always been part of the southern California experience, even before fire suppression. Relating to a huge fire in Orange County, L.A. Barrett wrote, "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 to equal it." Barrett wrote this in 1935 and was referring to one of several large wildfires that burned during the last week of September, 1889 that consumed an estimated 800,000 acres. This estimate represents a firestorm equivalent to the southern California event in October, 2003 that burned 750,000 acres.

2. The need for a critical and objective analysis of the costs vs. benefits of fuel modifications available today.

If landscape level fuel treatments are not effective in preventing large fires, how then do we reduce wildfire risk? Fuel treatments can be extremely expensive, pre-fire management funds are limited, and the windows available for prescribed burning projects are constrained by safety issues. When deciding what to do, our decisions should be based on a careful analysis of the costs and benefits of the various methods and strategies available to prevent loss of life and property. This sort of analysis is required before we can conclude with confidence how much modification to do and where to perform it.

As stated in the California Fire Plan,

> *"The typical vegetation management project in the past targeted large wildland areas without assessing all of the values protected. Citizen and firefighter safety and the creation of wildfire safety and protection zones are a major new focus of the new prefire management program. Now, increasing population and development in state responsibility areas often preclude the use of large prescribed fires…The vegetation management program will shift emphasis to smaller projects closer to the new developments, and to alternatives to fire, such as mechanical fuel treatment."*

We support the objective of shifting our fire management focus to the wildland/urban interface with smaller fuel modifications as suggested by the California Fire Plan. If a thorough analysis of the true costs of various fuel modification treatments is performed (one has never been done), we believe concentrating efforts directly where loss of life and property can occur will produce the greatest and most effective benefit.

<u>Strategically placed</u> prescribed burns near communities, reasonable defensible space requirements around structures (thinning within the 30-100 foot zone rather than clearing to bare soil), and well coordinated education efforts through community based Firewise and Fire Safe programs are all within CDF's mandate. And although difficult to implement, placing more emphasis on making structures more fire safe needs to be part of any long term fire planning process. Executing such a management plan will not only be the most efficient use of fire management dollars, but will also limit potential resource

damage that can be caused by large, landscape level vegetation management projects in the backcountry.

> *"Given that department funds for prefire projects are limited, the department must carefully and systematically select the projects that provide the greatest benefit for a given investment."*
>
> -California Fire Plan

3. The classification of old-growth chaparral as "decadent."

We would like to propose the CDF eliminate the term "decadent" when describing older-growth chaparral stands. Although the characterization has significance to firefighters when describing stands that have accumulated dead material, it is has pejorative connotations and does not reflect our current understanding of the chaparral ecosystem.

Use of this term has unfortunately led credence to the assumption chaparral "needs" to burn every 20 to 30 years to in order to renew itself, suggesting the necessity of using prescribed burns as a resource management tool. Field research has failed to support this notion. Specifically,

- The continued ability of chaparral stands nearly a century old to maintain productive growth has been confirmed by multiple investigations (Hubbard 1986, Larigauderie et al. 1990),
- The accumulation of living material (biomass) steadily increases for at least 45 years in chamise chaparral (Specht 1969) and probably more than 100 years in other types, especially north facing stands, and
- Shrubs in older chaparral communities are not constrained by limited soil nutrient levels (Fenn et. al. 1993).

While it is true some individual specimens of certain ceanothus species will die as a stand reaches 20-40 years of age (Keeley 1975), others remain an important part of chaparral stands over 90 years old (Keeley 1973). All of these species have dormant seed banks that ensure their long term persistence in the ecosystem even if fires only occur every century or so. When spaces do appear in the chaparral, living plants quickly fill the void. For example, chamise shrubs that have not experienced fire for at least 80 years continually send up new stems from their base (Zedler and Zammit 1989).

Not only do mature shrubs continue growing over time, but seeds from the majority of species common to north facing, mesic chaparral stands require long fire-free environments before being able to germinate. Moisture protecting shrub cover and leaf litter are needed to nurse the seedlings along. Plants such as scrub oak (*Quercus berberidifolia*) and holly-leafed cherry (*Prunus ilicifolia*) fall into this category. So rather than being a "decadent" habitat of dying shrubbery, many mature chaparral stands are just beginning a new stage of growth after fifty years of age.

Although chaparral is a fire-adapted ecosystem and some types do accumulate significant amounts of dead wood, the system certainly does not need human caused ignitions to remain healthy especially in light of the increased number of fires occurring in southern California shrublands today. The idea chaparral needs to burn is related more to human perceptions than any ecological process.

The term decadence needs to be placed in the context of what we know about threats to healthy chaparral ecosystems. Senescence risk, which is the risk of loosing species if fires are too infrequent has never been demonstrated for any chaparral in any part of the state. In fact, studies show good ecosystem recovery even following 150 years without fire. Immaturity risk on the other hand, which is the risk of loosing species if fires are too frequent, has been repeatedly demonstrated in countless studies.

4. The recognition of chaparral as an important economic, recreational, and natural resource that needs to be managed as carefully and with as much focus as the state's forest systems.

Chaparral provides essential protection against erosion on our hillsides, allows the recharge of underground water supplies, provides recreational value, and offers unique opportunities for citizens to remain connected to nature on a local level. Yet the system remains relatively unknown and little understood by both the public and many land managers.

This misunderstanding has caused, as mentioned above, chaparral to be either ignored or lumped together with other vegetation systems. This leads to poor land management decisions and inaccurate conclusions. For example, while mentioning California's unique Mediterranean climate, the California Fire Plan misapplies research that is applicable to certain non-Mediterranean influenced forests, but not chaparral.

> "*Suppression of fire in California's Mediterranean climate has significantly altered the ecosystem and increased losses from major fires and fire protection costs. Historical fire suppression has increased periods between fires, volumes of fuel per acre, fire intensities, etc….*"

While this may be true for some of the conifer forests on the western slope of the Sierra and some other southwestern forests (Swetnam et al. 1996), it is definitely not true for southern California chaparral as explained earlier. An additional claim states that,

> *"Vegetation in California's Mediterranean climate was dominated by a complex succession ecology of more, smaller and less damaging wildfires before European settlement began."*

Again, this may applicable to certain forests in the state as shown by tree ring studies, but there is no such evidence supporting such a conclusion in chaparral dominated systems.

Applying the right knowledge with the appropriate ecosystem is crucial if we want to properly manage our state's wildlands. Since chaparral is California's most extensive plant community, it is prudent to make sure we understand both its particular fire regimes and its sensitivities to changes in those regimes.

There was a period in the last century when one of the primary objectives of the CDF was to increase and "improve" range land by eliminating chaparral through type-conversion through the use of increased fire frequency. With increasing population pressures, a generally fire illiterate public, and an expanding wildland/urban interface, the Department's mission is quickly changing. The CDF is not only a highly skilled resource manager trying to protect life and property from wildfire, but also one trying to balance the demands of competing interests in order to prevent the wholesale elimination of California's native landscapes.

Preventing unwanted type conversion of chaparral due to increased fire frequency should be added as one of the VMP's objectives and included in the final environmental report. One of the best ways to accomplish the "control of invasive and noxious weeds", a current program objective, is to maintain healthy chaparral plant communities by making sure the appropriate fire regimes are preserved (Keeley 2004). We don't really know what the natural fire return interval is for each type of chaparral, but we do know fires occurring closer than 15 – 20 years apart can threaten many of them (Zedler et al. 1983, Haidinger and Keeley 1993, Keeley 1995, Zedler 1995, Jacobson et al. 2004). There is a distinct possibility there can be local extinctions of certain species if some chaparral types are not allowed to exist past 50 years.

The California Fire Plan acknowledges that,

> *"California has a complex fire environment, with multiple climates, diverse topography and many complex vegetation communities. CDF data on assets at risk to damage from wildfire is incomplete."* And, *"unnaturally frequent patterns of fire can overwhelm the inherent ability of many fire adapted species of plants to sustain themselves."*

We feel it is crucial for the CDF's final environmental report reflect these observations in light of the data we have presented here.

Sincerely,

Richard W. Halsey
Director
Southern California Chaparral Field Institute

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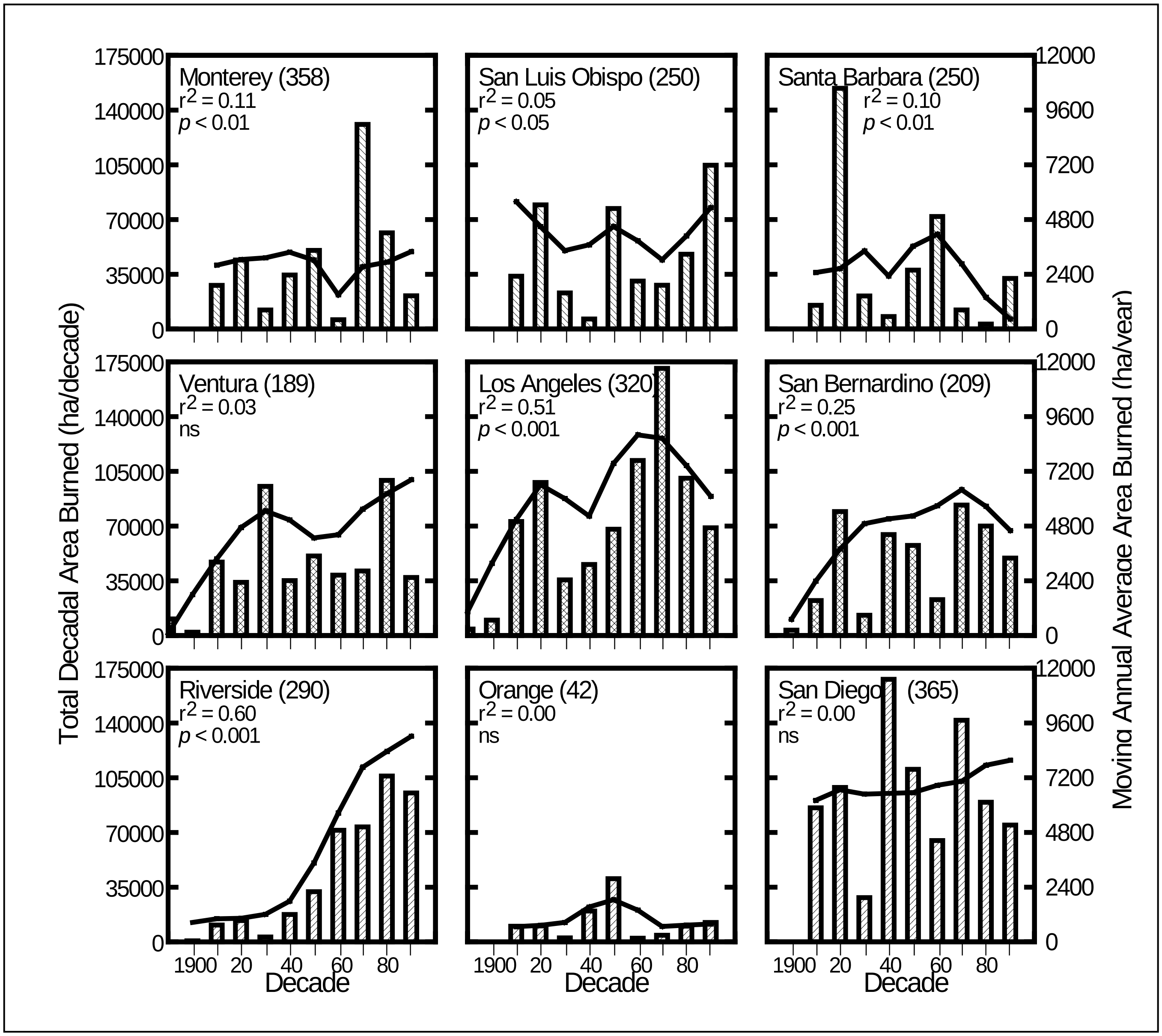

Fig. 1. Area burned per decade and 10-year running annual average during the 20th century for nine counties in central and southern California. Shrubland area in thousands of hectares shown in parentheses following the county name. 1 hectares equals 2.47 acres (adapted from Keeley and Fotheringham 2003).

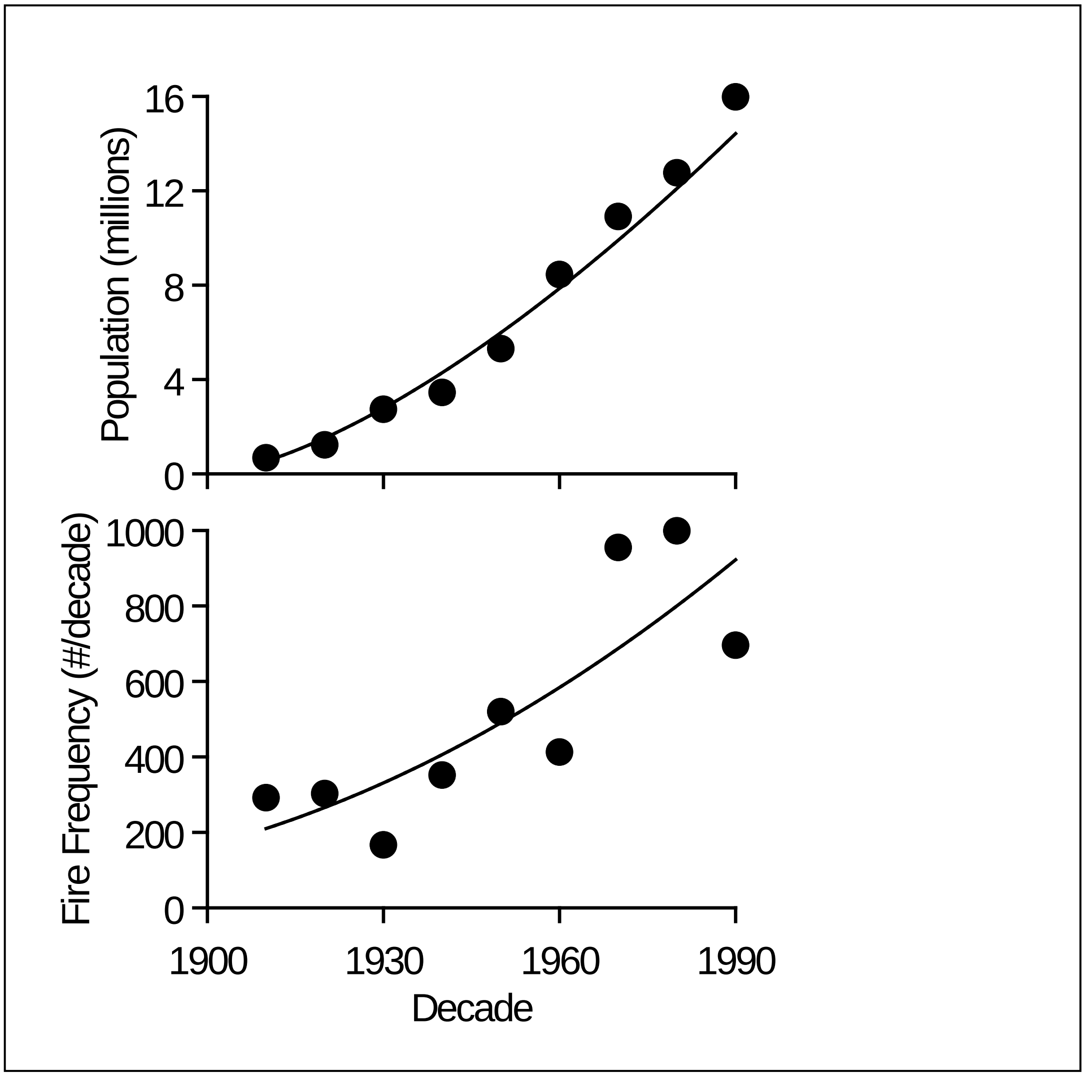

Fig. 2. Decadal changes in human population and fire frequency in southern California (from Keeley and Fotheringham 2003).

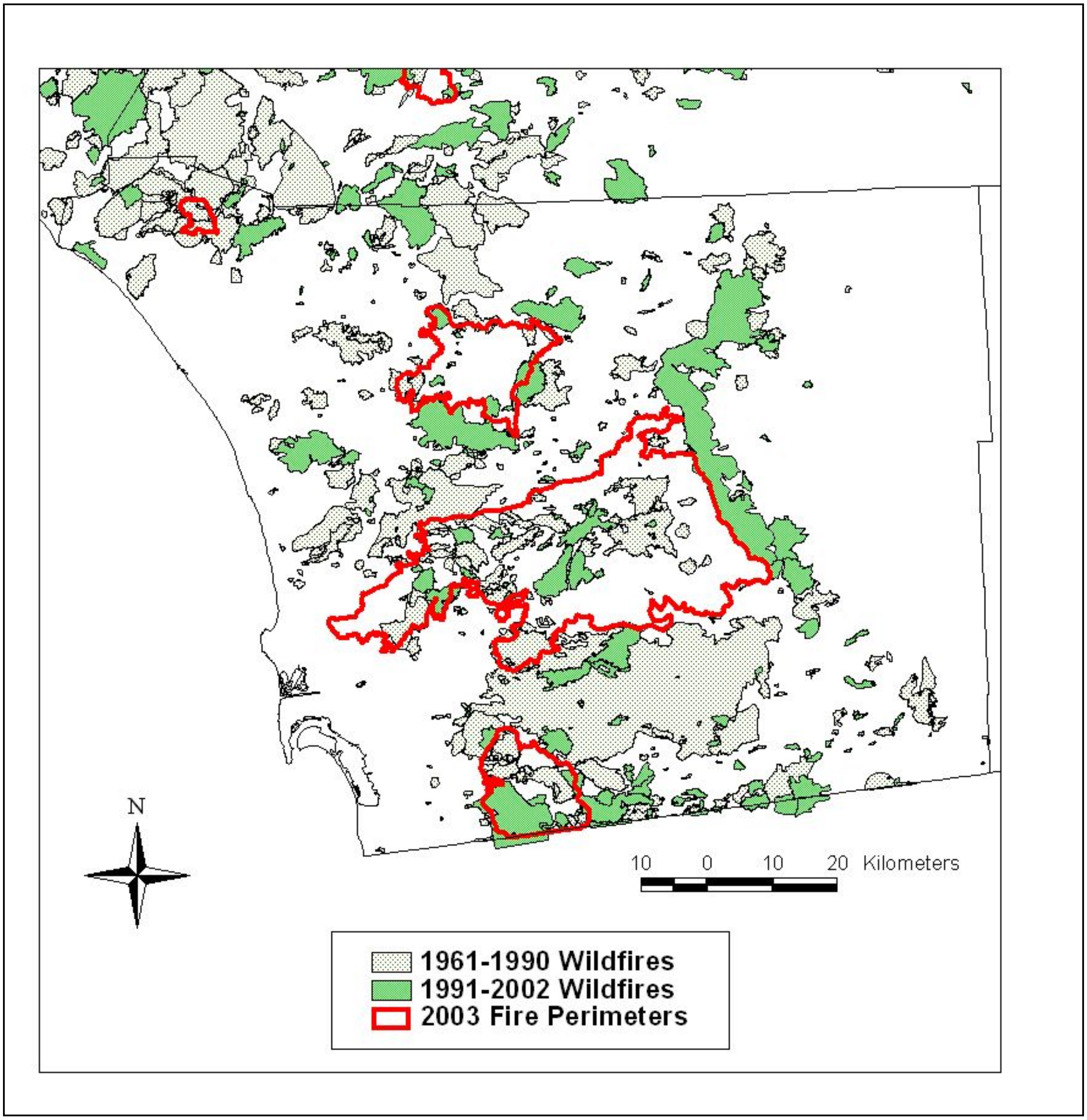

Figure 3. Historical Fire Perimeter Map of San Diego County. Both the Otay fire (lower middle dark outline) and the Cedar (central dark outline) burned through several large patches (mosaics) of young chaparral (Halsey 2005).