# EXHIBIT 1

# The California Chaparral Institute

*...the voice of the chaparral*

# FIRE & SCIENCE

## Fire Suppression, Science, and Personal Opinion

When discussing an idea, it is usually best to ignore personalities and stick to the data. This is how science is supposed to work.

Well, there comes a time when a viewpoint becomes so disconnected from the accepted body of scientific knowledge that it distracts from constructive dialogue. At times it can even delay or alter important policy decisions. Such delays create negative consequences for future generations by creating unproductive, "my expert" vs. "your expert" politicized debates in the press. Although each of the experts are assumed to have equally valid viewpoints supported by objective data, one or more are solely interested in promoting their own individual cause or agenda regardless of the facts. Often these causes are pushed by narrow, special interests in a consciously dishonest manner. Or alternatively, the promoter honestly believes his or her own view of the world so strongly that he or she is unable to objectively evaluate contrary data. Instead, everything is seen in light of a favored theory and seemingly obvious contradictions are dismissed (often unconsciously). Consequently, when the cause is continually taken to the popular media instead of being objectively discussed within the framework of science, it becomes impossible to ignore the messenger. This is why a number of well-know fire scientists spoke out this year about Thomas Bonnicksen who was disregarding scientific fact to promote politically motivated policies dealing with wildland fire.

The June 16, 2007, San Bernardino County Sun news article "Forests Need to Burn" was a signal to many of us in the wildland fire and fire science communities that the time has come to directly address Richard Minnich's continual promotion of incorrect and potentially damaging notions about wildland fire management.

In summary:

**In his insistence on focusing on only one variable (chaparral age), Dr. Minnich does not appear to have a clear understanding of wildland fire. Wildland fire risk in Southern California is not the fault of the fire service, or the result of old stands of chaparral, it is an inherent part of the landscape. Laying more fire on the ground on a landscape level or allowing fires to run is unacceptable in Southern California for both safety and ecological reasons. The Baja California fire mosaic model originally described in 1983 and elaborated in 1997 is not applicable to Southern California. The best and most efficient way to reduce wildland fire risk is through proper community design, fire-safe building construction, adequate vegetation management around structures and strategically placed fuel treatment projects.**

Download the full document, "Fire Suppression, Science, and Personal Opinion," here.

# The Baja-Southern California Fire Model

## Or, what's the story behind that map showing such big differences between wildfire size in Baja compared to Southern California?

It is a common perception that wildlands are unnaturally overgrown with a half-century's worth of highly combustible brush and small trees because of successful firefighting efforts since the 1950s. In addition, environmental groups and government regulations are often blamed for preventing thinning and prescribed burns to help alleviate this buildup because of misguided priorities. Such oversimplifications of a very complex problem are not helpful in finding solutions. They also have nothing to do with California's most characteristic wildland, the chaparral.

It does appear that some, but not all, of our nation's forests are unnaturally overgrown, a consequence of past logging and grazing practices as well as fire suppression efforts. However, without understanding the dramatic differences between forests and the chaparral-covered hillsides in California, some are promoting a single solution to deal with the threat of wildfire everywhere. This will not only lead to inappropriate use of scarce resources, but will do little to prevent the kind of firestorms southern California experienced in 2003 and 2007.

The notion of performing controlled burns to alternate patches of backcountry chaparral as a way to prevent wildfires is the basic tenet of the Baja-Southern California Fire Model first suggested by Richard Minnich of UC Riverside in 1983. This model is based on the hypothesis that the size of wildfires north of the Mexican-Californian border are larger than those in Baja because of dramatically different fire management strategies.

According to this theory, a century of fire suppression in Southern California has caused an "unnatural" accumulation of brush that has consequently led to large, destructive chaparral fires. A map showing small fire perimeters south of the border and large ones to the north is often used as supporting evidence.

The map is convincing and the logic appears reasonable. However, after being tested by a diversified group of scientists over the past ten years, the Baja-Southern California Fire Model fails for a simple reason. It ignores a significant number of important variables.

Scientifically, the comparison between southern California and Baja is problematic because of variations between the two regions as well as how the data was collected. Baja is much drier, has different soil types, and is not subject to the same Santa Ana wind conditions as Southern California. In addition, the Baja landscape has been heavily damaged by ranchers who consistently burn back natural vegetation in order to increase grasslands. It is difficult to find an area south of the border that does not show signs of grazing activity.

The other important factor to consider in the Baja comparison is how fire perimeters were determined. In California, fire size is recorded and mapped by state

agencies. Such detailed records do not exist in Baja. Instead, fire perimeters in Baja have to be estimated by LANDSTAT satellite images and subjective, on the ground measurements. These create two completely different data sets which are consequently difficult to use for any comparative analysis. In addition, smaller fires that were extinguished by firefighters in California before they became large ones were left out of Baja/California comparisons.

Extensive research by J.E. Keeley and C.J. Fotheringham has shown that burn patterns have not changed significantly in Southern California since 1878. The California Statewide Fire History Database clearly indicates that since 1910, the mean size of fires in San Luis Obispo, Santa Barbara, Ventura, Los Angeles, San Bernardino, Riverside and San Diego counties has remained constant. The timing of fires is equally consistent, with most igniting June through November with September representing the most flammable period (reference #1).

In a study by S.A. Mensing and others, seabed charcoal deposits off the coast of Santa Barbara County have shown that the frequency of large, Santa Ana driven fires has not changed over the past 500 years (see reference #2). Similar results are produced even when comparing years before and after 1950 when advanced fire suppression technology was developed and utilized on a massive scale. The only important change revealed by these studies has been an increase in fire frequency during modern times, not a decrease.

Fire in chaparral is a natural, unpreventable event. Despite all our efforts to control them, large chaparral fires have continued unabated since our arrival in California. The assumption that old stands with an "unnatural accumulation of old brush" encourage fires to spread and become more dangerous is inaccurate. Studies by M. Moritz and others have shown that fuel age does not significantly affect the probability of burning. These findings analyzed some of the same data used in the Baja Model (reference #3).

P. Zedler examined the same question through mathematical modeling and arrived at the same conclusion. Under Santa Ana conditions, fire rapidly sweeps through all chaparral stands, regardless of age. Once the flames start, everything burns (see reference #4).

Years of fire suppression have not been successful in excluding fire in chaparral landscapes. Relying on non-strategic prescribed burning in the backcountry in order to create mosaics of "mixed-aged stands" will likely prove to be equally frustrating (reference #5).

What is the solution then?

The first task is to objectively examine the research. Unfortunately, fire management has become increasingly politicized. Instead of scientifically analyzing the data, some have the tendency to personalize the discussion and assign names or labels to particular positions. This is not only counterproductive, but confuses the public about how science is supposed to work. There are no positions. There are only collections of observations and facts with conclusions being derived from such data. By looking at the methods, the scientific design, and underlying assumptions, it becomes relatively easy to determine whether or not ignored variables or biases have influenced the results.

Another challenge is to implement fire-safe community planning and long term education programs to help maintain the public's fire vigilance. Unfortunately, developers will continue to be allowed to push farther into the backcountry as the population continues to grow. Homeowners will become complacent again as time goes

on and allow fire-prone vegetation to slowly accumulate next to their homes.

The best way to reduce the damage of wildfires is to allocate scarce fire management resources at the urban interface between development and chaparral and develop strict building codes reducing wildfire risk. This includes new regulations requiring the removal of fire dangers present now such as wood shake roofing and volatile pine and Eucalyptus trees near homes, designing fire-safe vents for attics, and carefully performing strategic vegetation management directly around communities.

Leave the rest of the landscape alone.

## Cited References

See our bibliography for more

You will need Adobe Acrobat to read the referenced papers below. You can go to their site to download if you don't have it.

#1 Keeley, J.E., Fotheringham, C.J., Morais, M. 1999. Reexamining fire suppression impacts on brushland fire regimes. Science Vol. 284. Pg. 1829-1832.

#2 Mensing, S.A., Michaelsen, J., Byrne. A 560 year record of Santa Ana fires reconstructed from charcoal deposited in the Santa Barbara Basin, California. Quaternary Research. Vol. 51:295-305.

#3 Moritz, M.A., J.E. Keeley, E.A. Johnson, and A.A. Schaffner. 2004. Testing a basic assumption of shrubland fire management: Does the hazard of burning increase with the age of fuels? Frontiers in Ecology and the Enviroment. 2:67-72.

#4 Zedler, P.H., Seiger, L.A. 2000. Age Mosaics and Fire Size in Chaparral: A Simulation Study. In 2nd Interface Between Ecology and Land Development in California. USGS Open-File Report 00-02, pp. 9-18.

#5 Keeley, J.E. 2002. Fire management of California shrubland landscapes. Environmental Management 29: 395-408.

**Below are the four seminal papers dealing with the entire Baja California fuel mosaic model. The original paper describing the model in 1983 is listed first. Then a detailed analysis with responses published in the December 2001 issue of Conservation Biology. Dr. Minnich has not responded to the final analysis and response in paper #4.**

#1 Original Baja-Southern California Fire Model paper by R. Minnich. Fire Mosaics in Southern California and Baja California (1983).

#2 Analysis of Baja-So. Cal Fire Model. Historical Fire Regimes in Southern California Shrublands. J.E. Keeley and C.J. Fotheringham (2001).

#3 Minnich: An integrated model of 2 fire regimes (response to Keeley/Fotheringham from paper #2).

#4 Keeley and Fotheringham: History and Management of crown-fire ecosystems: a summary and response (to Minnich).

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ABOUT US FACTS MYTHS BOOK EXCERPTS EDUCATION

FIRE & NATURE FIRE & SCIENCE FIRE & PEOPLE FIRE & POLITICS

THREATS VERNAL POOLS

WILDNESS WITHIN CONTACT & LINKS SITE MAP MEMBERSHIP EMAIL

# EXHIBIT 2

# CANYON POLICY PORTFOLIO

## Pre-Release

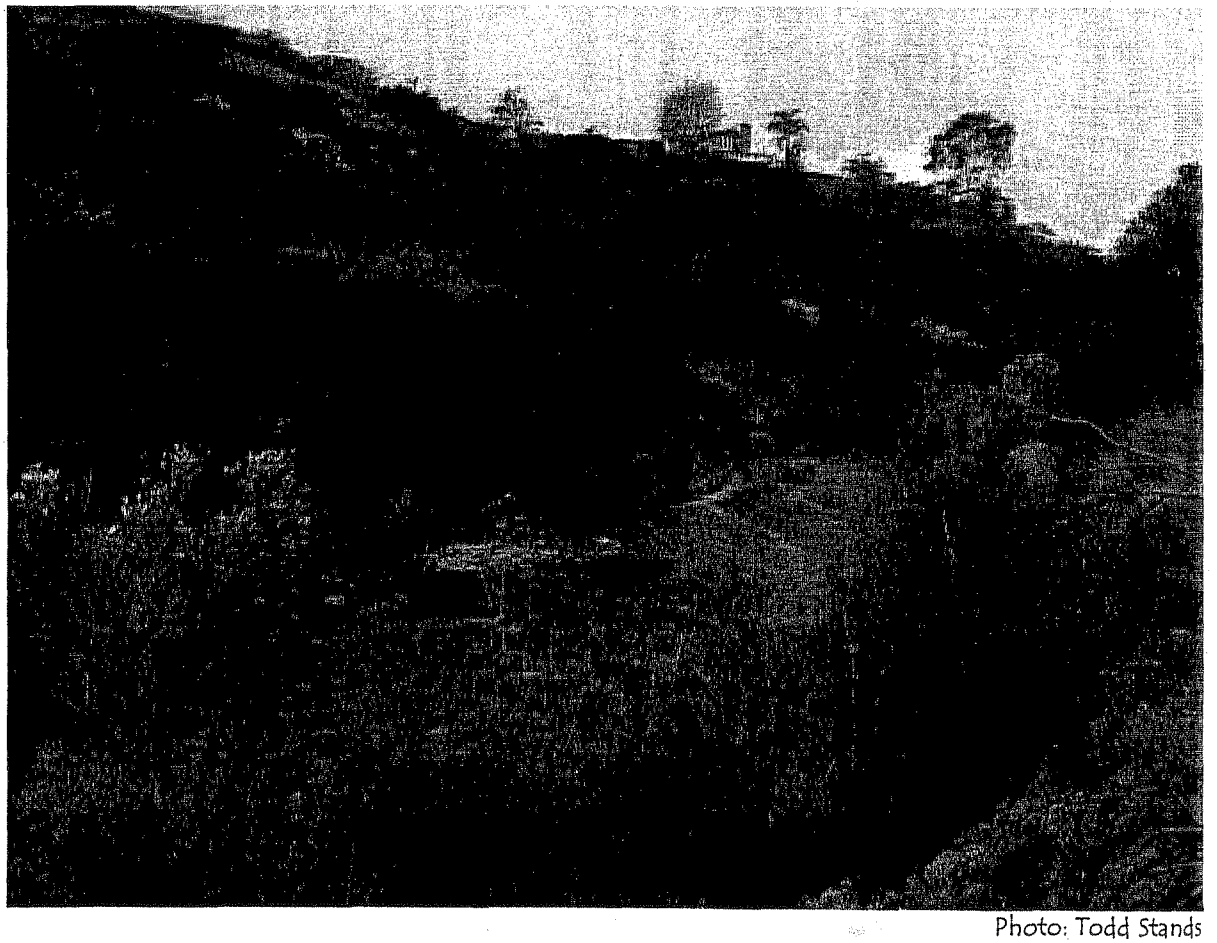

Photo: Todd Stands

## Our Financially Rewarding Natural Wildlands

**BUILDING INCENTIVE FOR BETTER CANYON STEWARDSHIP**

*For in the end, we will conserve only what we love.*
*We will love only what we understand.*
*We will understand only what we are taught.*
– Senegalese environmentalist Baba Dioum

For
The Citizens of San Diego

With generous funding from

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Compiled by

The 32nd Street Task Force

with enormous assistance from

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# TABLE OF CONTENTS

Canyon Policy Portfolio

Part I

# Wildfires and Brush Management Practices in the City of San Diego

An Analysis

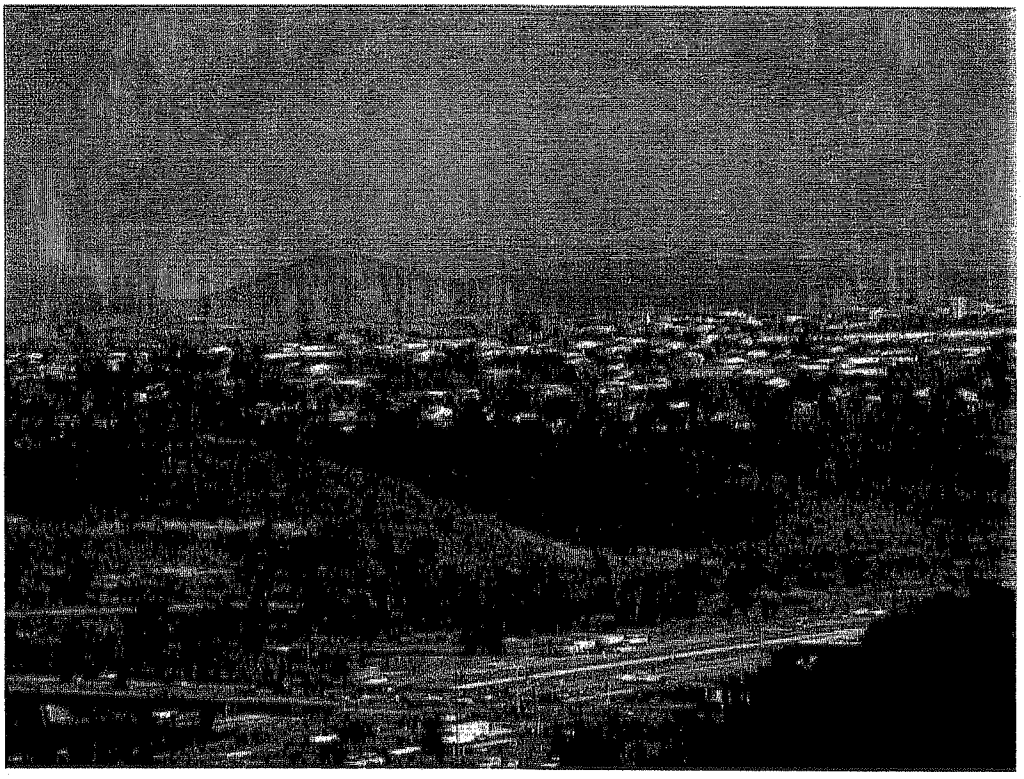
by the

32nd Street Canyon Task Force

in cooperation with Kay Stewart, The San Diego Fire Recovery Network, California Native Plant Society/San Diego, Jenny Nimnual and staff from the City of San Diego

# Table of Contents





## Introduction

Over the millennia, San Diego's native landscape evolved to thrive with an average of ten inches of rain per year, and intermittent wildfire. This tough natural vegetation sheltered and fed upland wildlife. It produced fresh air, and sustained wetlands. It held down the soil and kept out the weeds. Filtered through canyons, stormwater runoff fed bountiful marine resources with organic nutrients.

Well, no more, because urbanization interrupted this balance and we humans have yet to establish our equilibrium with nature.

Unrestrained by sustainability regulations, people have imposed new contours, landscape and uses on land without weighing the consequences. As a result, we have urban ills with which we are all familiar. These include increasing air and water pollution, dwindling wildlife, dying marine environments, loss of recreation and quiet...*and dangerously frequent wildfires*.

California's exploding population growth has put exponentially more homes and workplaces next to wild landscapes, often called "wildlands." Urbanized lands in the city of San Diego expanded 39% between 1985 and 2002, jamming 30,977 acres of development on flat mesas or valleys, right up against sloping canyons that are too steep