

EAST COUNTY MSCP PLAN WILDFIRE ISSUE PAPER

Fire is an essential component of San Diego County's Mediterranean ecosystems. Unmanaged fires in wildlands pose a threat to human life and property. Catastrophic wind driven fires may also threaten animal and plant species, habitats, water supplies, public works, and recreational amenities. This report provides background information on wildfire issues applicable to the development of the East County MSCP (ECMSCP) Plan. The key issues include, but are not limited to, restoring fire to its natural place in the ecosystem as one of the tools in managing wildfire risk.

Wildland Fire Overview

Fires have been an integral part of shaping the local environment in the San Diego County for over 12,000 years. Prior to human occupation, lightning was responsible for starting fires. These fires burned primarily during the summer monsoon season and were limited when they encountered fire resistant young vegetation.

In the past, Native Americans used fire for many reasons including improving wildflower crop yields, improving acorn production, driving game, controlling insects and other pests, fireproofing campsites, and creating areas of resprouting young vegetation to attract game. Journals of early European explorers are filled with descriptions of open forests and fields of wildflowers. However, the annual Native American burning of fields to improve the next year's crops was interpreted by the Spanish as wanton destruction of feed for horses and cattle. In 1793, the governor of Alta and Baja California issued a proclamation prohibiting the burning of lands and directing the public to suppress all fires.

With the inclusion of California into the United States, the policy of fire exclusion for the protection of life and property was continued and reinforced. Over the last century, there has been a greater emphasis on wildfire prevention, suppression, and improvement of firefighting methods. Although these programs attempt to control wildfires for protection of human life and property, wildfires continue to shape the landscape. The fire regime has shifted from one of frequent small (1,000-5,000 acres) summertime fires to infrequent large fires occurring in the fall under Santa Ana wind conditions. The fires of 2003 and 2007 are recent examples, but similar large fires also occurred in 1928, 1944, 1956, 1967, and 1970.

Simultaneously, the effects of fire suppression to the ecosystem become more apparent. Cuyamaca Rancho State Park is in serious jeopardy of becoming a chaparral and oak woodland since the Cedar fire destroyed over 90% of the pines, cedars, and firs in this area. Without seed trees, conifers will need to be planted and chaparral controlled. Old growth sugar pines on Middle Peak, some over 800 years old, were killed in the recent wildfires and no seedlings have yet been observed.

In East County forest ecosystems, periodic fire clears weaker trees, forest litter, and brush from the forest floor with low intensity flames, preventing more destructive, larger future fires. Under optimum conditions, low intensity fire generally remains on the

ground, burning grasses and vegetation and causing little damage to trees. Fire also kills diseases and insects that harm trees. Some species are fire-dependent, requiring fire for regeneration. Occasional small crown fires can be beneficial, as they create openings on forest floors, allowing seedlings to prosper.

Under moderate weather and fuel conditions, fire promotes vegetation and wildlife diversity, releases nutrients to soil, creates structural diversity, provides new wildlife habitats, and eliminates heavy dead fuels that may lead to larger-scale fire events. Small mosaic burns provide ecotones or transition areas with high levels of biodiversity. Fire in grasslands maintains openness by limiting brush and tree encroachment and recycles nutrients back to the land. In addition, springtime fires can encourage wildflowers and limit non-native European annual grasses. In general, it is expected that some vegetation will burn each year, although the fire return interval for chaparral averages roughly 50 years.

Wildfire as a Threat

Fire season typically lasts from May to mid-December in San Diego County, but can persist into the winter months during dry years. Under the natural fire regime, most fires burned during the summer months with moderate weather conditions. Daily wildfire risk is correlated to weather conditions, such as high temperature, low humidity, and high wind velocity. Santa Ana winds are the major weather-related factor that increases the threat of wildfire, although high pressure generated heat waves in the summer have been a significant factor in many major fires. Topography also greatly influences fire spread and intensity. Wildfire spreads faster uphill as convective heat rises, preheating and drying vegetation ahead. The direction a slope faces determines vegetation type and moisture content, with south-facing slopes drier and supporting lighter vegetation than north-facing slopes. Canyons and saddles also funnel winds, increasing wind speed and fire spread.

The age of vegetation determines how susceptible it is to fire. Young chamise chaparral stands have actively growing leaves and space between plants. As they mature, their canopies merge and some branches die. Over time, more dead material is added to the stand, increasing its flammability. Fires in chaparral less than 20 years of age are rare. Fires in older chaparral are very resistant to control. For fires over 10,000 acres in San Diego County, the average vegetation age at the area of origin is 60 years. Conversely, fires have started under extreme weather conditions in four year old chaparral with only limited spread.

Maintaining a patchwork of different aged vegetation areas by integrating mechanical clearing, biological clearing, and prescribed burning can limit wildfire size and intensity, while improving biodiversity.

East County MSCP Study Area

In the ECMSCP region factors such as existing communities in the wildland urban interface (WUI), diversified responsibility for vegetation management and fire protection, and presence of dead, dying, and diseased trees create a challenging environment in

which to manage wildfire risk. In addition, approximately 73% of the 1.6 million acre Study Area is publicly owned and managed, with private land adjacent to or imbedded within this matrix. Large portions of land are managed by the Bureau of Land Management (BLM), United States Forest Service (USFS), United States Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), California State Parks(State Parks), City of San Diego, County of San Diego , and Indian tribes. Land management, including fuel modification, may be conducted by local, state, and federal agencies, tribes, and private landowners. Wildland fire suppression in the Study Area is the responsibility of the USFS on forest lands (e.g., Cleveland National Forest), USFWS on federal preserve lands, and California Department of Forestry and Fire Protection (CAL FIRE) on private, BLM, and tribal lands.

Role of Fire in Preserve Management

The overall approach to conservation for the ECMSCP may vary depending on wildfire management factors in various areas. The overall vigor of the ecosystem is dependent on a balance between climate and disturbance. Clearly, the amount and distribution of rainfall impacts the health and growth of vegetation. Similarly, the type and rate of disturbance profoundly influences the ecosystem. Fire that is too frequent can maintain vegetation in an early serial stage, while too much time between fires can change the make up of plant communities, impacting some species. Mechanical disturbances can mimic fire to some extent, but lack the heat and smoke necessary to germinate dormant seeds. Fire and other related disturbances must be allowed to play their natural roles in the ecosystem if vegetation communities are to remain viable.

Partnerships to Address Fire Management

Partnerships with key stakeholders can be effective in helping to manage fire in preserves, while simultaneously mitigating risk to adjacent properties. Property lines tend to be arbitrary, without regard to natural fire boundaries. Coordination between agencies managing public lands and private property owners can result in burns, which can benefit habitat at reduced cost. Through the ECMSCP, there is an opportunity to demonstrate leadership in returning fire in ecosystem management. Public and private landowners must work cooperatively and individually to maintain lands in a fire safe condition and provide the required defensible space around structures.

Pre-fire agreements regarding suppression response and tactics should be in place between preserve managers and fire management agencies. Limitations on bulldozer use, fire retardant placement, and avoidance of damage to sensitive species and habitats should be agreed upon by all parties.

Community Outreach, Public Awareness, and Education

Residents living in high wildfire risk areas should be fully informed about wildfire and actions that may minimize damage. Public education allows homeowners to appreciate the risk involved in living in the WUI, along with their role in creating fire safe communities, beginning with defensible space around homes. The County of San Diego provides a range of online information and materials to assist property owners in reducing fire risk, as along with extensive written information for those applying for

permits to develop property within the WUI. County staff will assist in educating the public about fire's role in the ecosystem and the need for more frequent, but less intense fires, on public lands.

Other Issues Following Wildfire

Natural vegetation has evolved with fire. However, large fires may result in post-fire issues, such as erosion. Limiting the size and intensity of fires through planned burning during moderate weather conditions will reduce such adverse effects following fire. In addition, burned areas may provide opportunities for non-native, invasive plant species to become established. A monitoring program will provide early warning regarding the presence of invasive species, so that prompt remedial action can be taken. Furthermore, acting in a timely manner to control such invasive species can eliminate the need for costly removal programs at a later date.

Conclusion

In the County of San Diego and surrounding regions, fire is a natural and essential part of the ecosystem. Learning to manage fire is essential in maintaining safe communities and a healthy ecosystem. Fire shed boundaries (like watershed boundaries) have no respect for artificial human property lines. Cooperation and collaboration with other public and private land managers can benefit the safety of the general public and health of the habitat.

APPENDIX

Fire Protection Responsibilities

In California, responsibility for wildfire prevention and suppression in unincorporated areas is vested in state (CAL FIRE) and federal agencies. In addition to prevention and suppression, federal agencies (USFS, BLM, USFWS, and Department of Defense) manage their lands. Federally owned and managed lands are designated as Federal Responsibility Areas (FRA).

The State of California has determined that non-federal lands outside of incorporated cities with watershed value are of statewide interest and has classified those lands as State Responsibility Areas (SRA). All non-watershed lands (primarily deserts) are classified as Local Responsibility Areas (LRA). Cities are responsible for all fire protection within their corporate boundaries. Local fire protection agencies, such as special districts and volunteer agencies, provide structural fire protection and assist wildland agencies with vegetation fires. Tribal governments also fund fire departments for structural fire protection on tribal lands. All fire agencies provide mutual aid to each other for large fires, as well.

Counties have no legal obligation to provide fire protection services. However, counties may provide assistance to local, state and federal fire agencies and include wildfire risk and mitigation in land use policies for land under their authority.

Wildland Urban Interface

Areas where wildlands abut, surround, or infiltrate developed areas are referred to as the wildland urban interface (WUI).¹ Potential loss of life, damage to private property, impacts to species and habitats, and wildfire suppression costs are high in the WUI. In 2000, an estimated 28,340 dwelling units were located in high, very high, or extreme fire threat areas. By 2020, it is estimated that a significant amount of the unincorporated County's population will be in rural regions, with over 60,000 units in high, very high, or extreme fire threat areas.² Increased development in the WUI creates conflicts between protecting property, human lives, biodiversity, and natural resources. In developing the ECMSCP, land use planning and wildfire management must be considered, to preserve biodiversity and reduce hazards to property and human life from wildfire.

Increased development in suburban and rural areas adjacent to or surrounded by fire-dependant forests, brush, and grassland vegetation has created significant risks to safety, property, and natural resources. Most communities in the East County backcountry (Cuyamaca, Descanso, Pine Valley, Julian, Boulevard, Jacumba, Campo, Lake Morena, Potrero, Palomar, Dulzura, and Jamul) and isolated houses in rural areas that meet or intermingle with undeveloped wildland vegetation are within the WUI. . An environment where fire may move readily between structures and vegetation fuels is

¹USDA and USDI. Federal Register 66:75 1-777.

² Fire Hazards and Emergency Services Background Report, Draft, page 7, October 2006.

created within the WUI. Population growth, increased fuels, lack of natural fire, lack of vegetation management, and increased costs associated with fire suppression complicate management in the WUI. As a result, local government may mitigate wildfire risk through site design, fire resistive building codes, and code enforcement. Defensible space, which provides firefighters an area to safely operate during normal fire conditions around structures and serves as a barrier between structures and wildfires, becomes increasingly important.

Vegetation Management

Vegetation management is a cost-effective tool to manage wildfire, protect species and habitats, preserve biodiversity, and mitigate for fire impacts. Fuel management includes selective thinning, prescribed burning, fuel breaks, and mechanical and biological treatment. Vegetation management, as it relates to wildfire, refers to total or partial removal of high fire hazard grasses, shrubs, or trees and thinning to reduce the amount of vegetation fuel to disrupt fire progress. In addition to reducing fire hazards, vegetation management may create access for recreational purposes, increase water yields, improve wildlife habitat, and reduce invasive species.

Defensible Space

In January 2005, California law extended defensible space requirements from 30 to 100 feet around homes, improving wildfire resistance and firefighter safety³. To create defensible space, combustible vegetation is managed within this 100-foot radius. Within this fuel modification zone, vegetation should be suitable and eliminate highly flammable and non-native, invasive species. Vegetation management should not be limited to only native vegetation but should also include combustible landscaping. To prevent erosion, vegetation should not be cleared to the bare ground and root systems should remain intact. Dead and dying vegetation should be removed, trees should be trimmed to avoid overhanging structures, and lower tree branches should be cut to reduce ladder fuel. Under certain circumstances, it may be advisable for brush clearance to be increased with agency approval (e.g., homes located at the top of a ridgeline, slope, or canyon; limited fire department access; limited or private water supply; or wood shake roofs). Public education, outreach, and assistance in clearing may be encouraged to improve understanding of fuel modification requirements and consistent enforcement facilitates compliance. As part of this public education effort, ignition resistant improvements need to be applied to existing and future structures.

Although severe wind-driven firestorms cannot be stopped, fuel management around homes and communities can substantially prevent or minimize damage and provide a defense against future wildfires. The recent 2007 wildfires illustrate the success of several programs, such as increased requirements for vegetation management, DDDT removal, and maintenance by homeowners associations of open space buffers in new major subdivisions, which have reduced fire damage. Although over 17,000 homes were located within the 2007 wildfire perimeter (up to ¼ mile from the fire), only 1,700 burned. As less than 10% of homes in the wildfire threat area burned, measures taken by the County in coordination with other agencies, communities, and residents are

³ California Department of Forestry and Fire Protection website September 2006.

evident, along with strong protection by firefighters.⁴ Fuel management needs to be applied not only to native vegetation, but also landscape vegetation and structures themselves.

Fuel Management Areas

Fuel management areas are comprised of strips of land where vegetation is reduced, although not necessarily removed completely. The fuel break system was envisioned as a grid to stop and control wildfires once they reached the fuel management area to reduce intensity, provide firefighters an opportunity to halt progress of wildfire, and to provide for more controlled prescribed burns. The international fuel management area along the United States and Mexico border near Otay Mountain completed in 2002 is an example of such a system. Although they may provide some benefits, fuel breaks require landowner permission to maintain, are labor intensive, are costly, can cause erosion, and can raise environmental concerns. Furthermore, they are not always successful in stopping wildfires, since embers may travel long distances and start spot fires. In the 2003 Cedar Fire, for example, flames crossed eight lanes of Interstate 15 (which serves as a fuel break) in three locations.

Dead, Dying, and Diseased Trees

Drought, insects, disease, and unnaturally high tree density have left thousands of trees (mainly conifers) dead and dying in areas such as Palomar Mountain, increasing wildfire risk and potential for complete burns (e.g., Cuyamaca in 2003). Various types of bark beetles kill trees already stressed by drought. In 2004, the County established a program in partnership with CAL FIRE, USFS, Natural Resources Conservation Service (NRCS), Forest Area Safety Task Force (FAST), BLM, CALTRANS, San Diego Gas & Electric, and other stakeholders to remove such trees. The county received nearly \$40 million in grants from NRCS and the USFS. Priority areas for tree removal were determined based on amount of dead trees, unburned fuel, forest conditions, evacuation corridors, community risk, and protection of structures. At the program's start, there were an estimated 250,000 to 300,000 dead, dying, and diseased trees. By 2007, over 500,000 trees were removed by partners in forested areas. Firefighters credit the tree removal program with providing the defensible space necessary for them to protect countless structures on Palomar Mountain during the 2007 Poomacha Fire. The County is seeking additional funding to continue the program due to its success in reducing fuel load and risks to human life, property, and resources.

Prescribed Burning

Prescribed or controlled burning is the intentional introduction of fire, under favorable weather conditions, to remove vegetation based on an approved plan to mimic the natural regeneration process. Prescribed fires are a cost-effective method to alter the age of large vegetation stands, but require biological, environmental, and archeological studies prior to the burn. In addition, prescribed burns must consider impacts from smoke and include public education. Forests may need more frequent fires than chaparral to maintain fewer but larger trees, reflecting a healthy ecosystem. In the East County region, the USFS and CAL FIRE undertake prescribed burns to remove

⁴ 2007 San Diego County Firestorms After Action Report, February 2007.

vegetation, maintain fuel breaks, and improve forest health. Some studies have found that more frequent, smaller, and less intense fires benefit species, by increasing ecotones and habitat diversity.

Biological Treatment

Since 1769, cattle have been grazing on grasslands in San Diego County. They may have played a significant role in limiting the size of fires by removing flammable grasses, thereby limiting the spread of fire. As cattle are being removed from historic rangelands, fire may be necessary to maintain grassland health. Most grasslands consist of non-native grasses that are adapted to grazing. Grazing animals, such as cattle and sheep, may be an economical and effective method of reducing annual grasses, although they do not eat chaparral. Browsing animals, such as goats, tend to eat all available vegetation, but leave root systems intact.

Chemical Treatments

Specific application of herbicides may be used to reduce highly flammable, invasive species or prevent regrowth of sprouting shrubs on fuelbreaks. Chemical use has proven to be the only feasible way to remove some non-native, invasive species, such as *Arundo donax*, pampas grass, and tamarisk.

Mechanical Treatment

Currently, mechanical methods of vegetation management involve thinning and chipping of shrubs in place through the use of a “masticator” machine. In general, such mechanical treatment is limited to small sites with gentle slopes. They have been used successfully on some slopes below residential areas on Palomar Mountain, Mount Laguna, and Carveacre.