

Leading from behind: the role of agency fire managers in enabling widespread change.

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Abstract

In many states, prescribed fire is a permitted practice that involves agency fire managers. In California, the state Department of Forestry and Fire Protection (CAL FIRE) has the authority to permit burning, conduct burns, and take enforcement action when burns escape control, and much of this authority is held by leaders at the local (Unit) level. In September 2016, the Director of CAL FIRE challenged the local Units to increase the acreage treated by prescribed burning, either by the agency through its Vegetation Management Program, or through cooperation with agency and non-agency burners. In the Humboldt-Del Norte Unit, prescribed fire acres saw significant increases in FY 2016-17, FY 2017-2018 and FY 2018-19. However, it was CAL FIRE's support for other burners—rather than major changes in their own programs—that allowed for those opportunities. Support was increased for burns by other agencies, resulting in an increase in treated acres. Non-agency burning support is an approach that also produces more than just treated acres. The Unit is host to two prescribed fire training exchanges (TREXs), which bring participants of various skill levels from across the country and throughout the world to burn and train together on private and public lands. These events were spearheaded by the Northern California Prescribed Fire Council and other partners. The Humboldt County Prescribed Burn Association (HCPBA) formed more recently and is the first prescribed burn association in the West. Its grassroots, volunteer-based structure provides flexibility for year-round, objective-driven burning throughout the county. These efforts are collectively responsible for increases in prescribed fire acres. As CAL FIRE continues to set new prescribed fire targets and invest state dollars in local strategies, the Humboldt-Del Norte Unit approach can serve as a model for agency fire managers who wish to effect real change—not by treating all the acres themselves, but by empowering and supporting their local partners.

Introduction

Wildfires pose a serious threat to communities built in wildland areas, and there is a wide range of tools that managers can use to reduce risks. Treatments including vegetative clearing, shaded fuel breaks, and prescribed burning can alter the behavior and effects of wildfires.

Fire agencies have been using prescribed fire for several decades, but mostly at a small scale. Their use has been highly variable, often depending upon the social and political response during destructive fire years and damaging prescribed burn escapes, and to the commitment of individual fire managers. The number and size of burns are constrained by many factors. One of the primary limiting factors is the burn window, which is dictated by burn objectives and

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developed during the burn planning process. In addition, in California, an agency-conducted burn is considered a government project and necessitates an environmental review.

The California Department of Forestry and Fire Protection (CAL FIRE) uses its Vegetation Management Program (VMP) to conduct prescribed burns with private landowners in its 21 (often multi-county) units across the state. This program has limited use, and has seen declines in acres treated over the last several decades.

An increase in fuel treatments, including prescribed burns, was directed by CAL FIRE management in September 2016. This research evaluates the Unit-level response to expand prescribed fire use for CAL FIRE at the Region level, and the methods used in the Humboldt – Del Norte Unit to achieve that response. The benefits and challenges of this approach are also discussed.

Methods

The CAL FIRE Units are required to report their completed prescribed burn acreages annually. Burn perimeters are documented in a geographic information system geodatabase (2019 FRAP).



Figure 1 – CAL FIRE study areas.

We evaluated the acreage of mapped burn perimeters of CAL FIRE conducted prescribed fires 1979 through 2017 for Northern and Southern Regions (Figure 1). In most cases, these burns were a product of CAL FIRE's Vegetation Management Program (VMP).

The number of burns and burn acreage for 2013 – 2018 was compiled from the Humboldt – Del Norte Unit's Pre-fire Management Battalion, and cooperators reports. This data set includes both VMP burns, as well as work done by cooperators where CAL FIRE was not the lead agency, but a key participant. Not all of these burns are in the rxfire17_1 geodatabase.

Results

For CAL FIRE, prescribed burning has been highly variable annually in both Northern and Southern Regions. Total annual prescribed burn acres reported for CAL FIRE projects in the Northern and Southern Regions are displayed in Figure 2. The CAL FIRE Vegetation Management Program was established in 1981. Burns prior to 1981 had very limited reporting. Burning by CAL FIRE's Northern Region Units averaged 15,387 acres (standard deviation 6,325.18) per year from 1982 – 1996. Burned acres declined to an average of 3,631 acres (standard deviation 2,226.64) per year from 1997 – 2016. CAL FIRE's Southern Region averaged 7,842 acres (standard deviation 3,000.71) per year from 1982 – 1996. Burned acres in

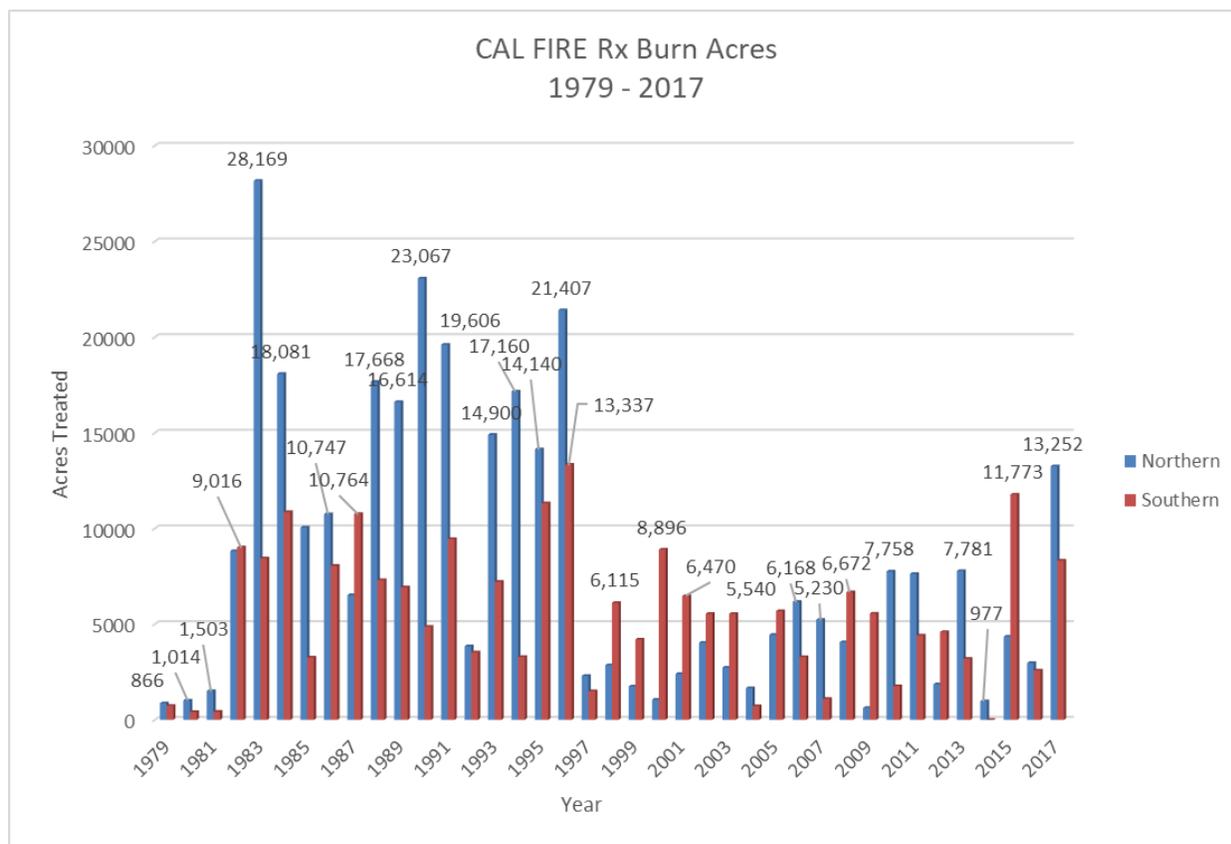


Figure 2 – Annual prescribed fire acres burned by Region for CAL FIRE projects, 1979 – 2017.

the south also declined, but to a lesser extent, for a mean of 4,663 acres (standard deviation 2,859.936) per year from 1997 – 2016. The agency burn total for 2017 increased to 13,252 acres in the Northern Region, and 8,325 in the Southern Region, approaching the means from the first 15 years of the department’s Vegetation Management Program.

The CAL FIRE Unit is the local reporting area, and often covers several counties. Prescribed burning is often conducted with CAL FIRE assistance, but doesn’t necessarily report as VMP project acres treated. For the period of 2013 to 2018, burn projects and acres treated in the

Table 1 – HUU prescribed burn treatments 2013-2018

Year	CAL FIRE VMPs		Agency Assists		Non-gov agency assists		Totals	
	Projects	Acres	Projects	Acres	Projects	Acres	Projects	Acres
2018	3	770	8	968	7	746	18	2484
2017	1	395	8	1321	16	568	25	2284
2016	1	350	4	2165	24	344	29	2859
2015	0	0	5	495	20	400	25	895
2014	0	0	2	400	17	240	19	640
2013	1	51	4	1021	9	140	14	1212
Mean	1	261	5.17	1061.67	15.5	406.3	21.67	1729

Humboldt-Del Norte Unit (HUU) were tracked by VMP Project, assists to other agencies (primarily CA State Parks and Redwood National Park), and non-government organizations such as Training Exchange (TREX) sponsored burns and prescribed burn associations. Table 1 is derived from reported acres treated from CAL FIRE, Redwood National Park, CA State Parks, and the Mid-Klamath Watershed Council (a TREX host).

A graphic of annual treated acres by classification in HUU is shown in Figure 3. The CAL FIRE Unit had few VMP agreements in place from 2013 – 2015, so limited to no activity was conducted under that program. Following the September 2016 directive, VMP acres and projects both increased to above the mean. Agency assist treatments averaged 1,062 acres per year, with a slight increase during the 2016 – 2018 period.

Treated acres in non-governmental organization assists generally increased over the period, but the number of projects varied. In overall totals, the 2016-2018 treated acres were well above the mean of 1,729 acres. The 2013-2015 treated acres were well below this mean.

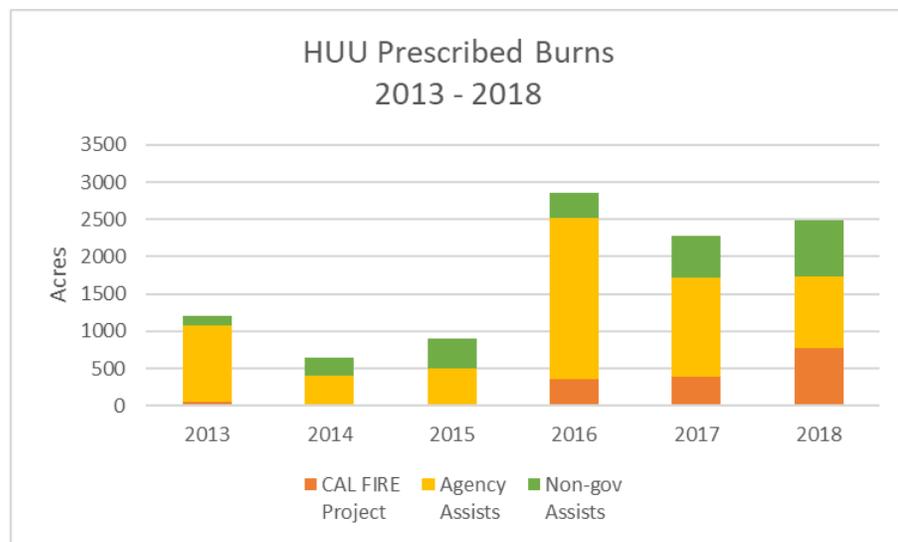


Figure 3 – CAL FIRE Humboldt – Del Norte Unit annual prescribed burn acres 2013 – 2018.

Discussion

During the initial fifteen years of the Vegetation Management Program, CAL FIRE's Northern Region treated an average of nearly 15,000 acres per year and the Southern Region burned a mean of 7,842 acres annually. A significant decline in reported burning began in 1997, with an annual mean of 3,631 acres and 4,663 acres, respectively for 1997-2016. The reason for these declines is not clear.

The number of prescribed burns and acres treated are affected by many factors. Burn project planning and development is necessary—determining the when, where, and how of the burn. After development, implementation depends on getting the pre-burn preparation done. Permitting and resource availability to conduct burning is highly dependent on wildfire activity. A mild fire year may provide a much larger burn window for prescribed fires. Periods of large, destructive wildfire activity will often have few prescribed burns completed.

Management direction is also an important consideration in the success of prescribed burning. When higher risk activity, such as prescribed fire, is not supported by managers, treated acres tend to decline. Conversely, strong support for the burn program increases treated acres. This strong support was clearly detailed in a letter from the CAL FIRE Director in September 2016. Units were instructed to increase the number of treated acres in prescribed fire and fuels treatments, and to increase the number of defensible space home inspections. These goals were reinforced in 2017 and 2018.

Statewide, the top-down direction is reflected in increases in CAL FIRE's VMP project acres. VMP projects can take several months to prepare, so direction in 2016 would begin to show results in subsequent years. The 2016 acres treated were reported as 2,973 in the north and 2,588 in the south. The treated acres increased in 2017 to 13,252 in the north, and 8,325 in the south – a substantial increase over the 1997 – 2016 period mean. It is important to note that 2017 was a significant fire year in California, with major, damaging fires in both regions in October. This fire activity occurred during the period when prescribed burning is most active, restricting prescribed burning opportunities.

In response to statewide direction, the Humboldt – Del Norte Unit was able to double the total burned acres in 2016 – 2018 over the previous three years. Critical to this trend was the recognition that CAL FIRE could facilitate successful burning by others. HUU had few VMPs under contract when the new direction was issued. The Unit has always been a key player in burns with Redwood National Park, both in doing much of the pre-burn control line construction and providing equipment and crews for the burns. CAL FIRE has also maintained a close relationship with CA State Parks, and serves as the primary operational resource for both line construction and prescribed burning, under State Parks direction. These "Agency Assist" burns were not consistently reported as CAL FIRE burn activity; however, they likely would not have been completed (or would have been reduced) without CAL FIRE participation. The acres treated have remained relatively steady in this category across the 6-year evaluation period.

An important change in getting acres treated is in the "non-government assist" category. In 2016, CAL FIRE Unit leaders provided direction that CAL FIRE would support these burners to the extent necessary for success. The Unit would have personnel and equipment, if available, on-site to stand-by and assist as needed. This resulted in an increase in prescribed burn acres with a minimum investment of agency resources. It also increased the trust between the burners and CAL FIRE, which also serves as a regulatory agency for burning. The non-government assist acres were modest in 2013 and 2014, were higher in 2015 and 2016, and showed a marked increase in 2017 and 2018. This category was a major contributor to the overall increase in HUU treated acres in the study period.

The Humboldt-Del Norte Unit provides an example of the importance of non-government burning, and the role that agencies can play in supporting private partners. The Northern California Prescribed Fire Council brought diverse interests together to work on and overcome prescribed fire barriers starting in 2009. The group had its roots in the community-based burning

efforts in Humboldt and Trinity counties, and in connections to the Southeastern U.S., where multi-agency cooperation on prescribed fire is common. The top-down changes that have occurred in CAL FIRE over the last five years are a direct reflection of the Council's efforts, which has fostered impressive interagency action around prescribed fire, tackled policy issues at the state and national levels, and—perhaps most importantly—brought a sense of social license to prescribed fire practitioners in California, including CAL FIRE.

While the Northern California Prescribed Fire Council has fostered change at regional and state levels, several community-based efforts in Humboldt County have forced change from a more grassroots level. California's first Prescribed Fire Training Exchange (TRES) event started off in Humboldt County in 2013, bringing practitioners from across the country to learn about and burn in northern California ecosystems. TRES programs have spread to other California counties. The local University of California Cooperative Extension office has also added a Fire Advisor position - the first of its kind in California - which has been important in prescribed fire outreach to ranchers and other landowners. This position supported the formation of the Humboldt County Prescribed Burn Association (HCPBA), which began actively burning in 2017. The HCPBA brings together landowners, volunteer fire departments, non-governmental organizations, and other community members to plan and implement burns, providing grant funds, shared tools and equipment, and assistance with permits and smoke management planning. This model has brought prescribed fire back into the private lands toolbox, enabling low-cost treatments that address a wide range of resource objectives, and building local capacity for year-round burning.

Conclusions

The deep relationships and cooperation that CAL FIRE and UC Cooperative Extension has with its non-government partners has allowed burning to flourish in the Humboldt-Del Norte Unit, setting a strong example and motivating other areas throughout the state. As CAL FIRE continues to set new prescribed fire targets and invest state dollars in local strategies, the Humboldt-Del Norte Unit approach can serve as a model for agency fire managers who wish to effect real change—not by treating all the acres themselves, but by empowering and supporting their local partners.

Fire agencies cannot match the scale of treatment needed, and can “lead from behind” by helping others work toward common goals. Agencies can increase the number of treated acres by getting out of the way of local people working to accomplish controlled burns. Landowners can be less constrained in preparing burns than government agencies. Fire agencies should pursue their regular treatment schemes. Providing staff support to local burners can increase the acreage treated while building trust.

References

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