Safeguard Native Grasses and Forbs for a More Wildfire Resilient California: *CNGA weighs in on big state vegetation treatment project affecting over 20 million acres*

by Jim Hanson[1], CNGA Conservation Committee Chair

There are times when society moves beyond awareness of an issue to "we've got to do something about this." Fifteen of the 20 most destructive wildfires in the state's recorded history have occurred since 2003 (Calfire, 2019). One of the ways California's state government is responding to this threat is with a massive "Vegetation Treatment Program" (the "CalVTP") administered through Calfire, the state's wildfire protection agency. Over 20 million acres, mostly in the coastal ranges, the foothills, and the mountains of California, would be subject to the proposed vegetation treatment approaches described in a Draft Programmatic Environmental Impact Report (Draft PEIR) that was released this summer.

Vegetation in natural areas is often seen as the primary "something we need to do something about" to reduce wildfire risk. CNGA's comments of the Calfire Draft PEIR focus on the important role of ground-level native and forb herbaceous vegetation. Areas with native species that provide more resiliency to wildfire and ecosystem services than weedy annuals need to be retained and managed to keep those benefits. Recent post-wildfire analyses from scientific studies and the state's major newspapers suggest that we also not lose sight of the importance of retrofitting our homes for increased fire resiliency.

Fire Reasons and Responses

Media accounts now regularly document the reasons why California is experiencing an increase in wildfire severity and size. The state's longer and warmer dry seasons are resulting in extensive forest tree loss from drought and disease. Past and current forest practices, such as excluding fire and logging for even-aged forest stands, have led to the buildup of forest floor litter and dense stands of small-diameter trees. Also, California's population continues to expand with more people living adjacent to or within natural areas.

For property owners, the responses put forward to reduce risk of fire loss and damage can include: knowing evacuation routes, home "hardening" (roofing materials, retrofitting vent openings), removing "ember catchers" such as flammable shrubs under eves or woodpiles near a house, and by maintaining a "defensible space" of very low fuels within the Home Ignition Zone (HIZ), particularly within 5 feet of house exterior walls. For government at all levels, wildfire prevention and response activities can include: improving evacuation routes, coordinating emergency communications, public education, forest thinning, landscape-scale prescribed burns, managing fires, various forms of fuel breaks, and choosing where development is approved.

Our image of wildfire from media footage may be of giant flames reaching into the sky above conifer treetops. However, post-fire evaluations from several sites across the west are pointing to the threat of firebrands and embers under differing weather conditions, rather than the proximity of flames.

A Forest Service study of a major western Wildland-Urban Interface (WUI) fire concluded that "home destruction and survival was the result of a home's specific flame and firebrand exposures (from) its flammable materials (e.g., siding, roof) and debris (e.g., grasses, shrubs, decorative bark)" and that "focusing on reducing home ignition potential is the key to preventing WUI fire disasters" (Graham et al, 2012). This study and other experts assert that embers, either as lofted firebrands or as surface-spreading fires that arise from ember "hot spots" after the main fire front has passed, cause over 80% of home destruction.

The *Sacramento Bee* reported that a significant percentage of newer single-family homes built in 2008 or later survived the Camp Fire that raged through Paradise. Of 350 single-family homes built after 2008, 51% were undamaged. By contrast, of 12,100 homes built before 2008, only 18% remained undamaged. In 2008, a revised building code required fire-resistant roofs, siding, and other measures for homes built in fire-prone areas (Kasler and Reese 2019).

Calli-Jane DeAnda, Butte County Fire Safe Council executive director, observed how the Paradise firestorm was not ignited by approaching flames, "it was embers landing on homes and eaves and vents." Former Forest Service research scientist, Jack Cohen, believes that "we do fuel breaks because the premise is we've got a wildfire containment problem." Instead, he argues, we largely have a home ignition problem (Boxall and Schleuss, L.A. Times, 2019).

Although fire-resistant home retrofits, community planning, and strategic wildland fuel reduction each contribute to preventing loss

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and damage from WUI fires, wildland vegetation reduction is getting the bulk of funding support from Sacramento. This spring, Governor Newsom funded 35 CEQA-exempt fuel management projects across the state as part of a larger expenditure for fuel reduction projects over the next several years (Kasler et al. 2019). A major bill to help retrofit homes to resist wildfires was recently signed but currently has no funding support.[2]

Fuel breaks — What they do, and don't do

Generally, unless the wind and weather conditions change, fuel breaks are largely ineffective during the extreme wind-driven fires (Calfire VTP Draft PEIR, Ch. 2). Their main purpose is to lessen the chance of a ground fire increasing in intensity and help fire responders contain a fire by providing accessible locations to control it.

In a study using 30 years of data from four Southern California National Forests, Syphard et al. (2011) found that fires generally don't stop at fuel breaks — they stop if there are enough firefighters to get to the fuel break and safely control the fire. Therefore, they conclude that there is a high probability that "constructing fuel breaks in remote, backcountry locations will do little to save homes during a wildfire because most firefighters will be needed to protect the wildland-urban interface…" Also, the study notes that ongoing fuel break maintenance, especially in strategic locations, "may be just as important as constructing new fuel breaks." (Note: at last check, the 35 emergency fuel break projects authorized this year had no funding for ongoing maintenance.)

The Calfire VTP proposes to construct three forms of fuel breaks in over one-half (55%) of the total project area of approximately 20.3 million acres. These include WUI fuel breaks adjacent to communities, "non-shaded fuel breaks" in mainly shrub, chaparral, and grassland areas, and "shaded fuel breaks" in forests and woodlands. The remaining program areas would receive ecological restoration treatments intended to return "appropriate fire frequencies to the landscape" and create "forest conditions more closely associated with pre-settlement conditions" (Calfire VTP Draft PEIR, Ch. 2).

Both fuel break and ecological restoration vegetation treatments would employ a combination of treatment methods: prescribed fire, mechanical treatment, manual treatment, prescribed grazing, and herbicide treatment. Mechanical treatment involves "mastication, chipping, brush raking, tilling, mowing, roller chopping, chaining, skidding and removal, and piling, often combined with pile burning." Pesticide applications are "ground-level applications only, such as paint-on stems, backpack hand-applicator, hypo-hatchet tree injection, or hand placement of pellets. No aerial spray is allowed." (Calfire VTP Draft PEIR, Ch. 2).

Bunchgrasses mowed to a height that enables both fuel reduction and plant retention during recent North Orinda fuel break work (estimated to be *Stipa pulchra* based on similar unmowed plants nearby). *Photo by Jim Hanson*

One thing is for certain, fuel breaks, many of which are miles long and designed to be 300 feet wide, can have significant and long-term effects — positive, benign, or destructive — within millions of acres of diverse and beneficial native vegetation. Therefore, the quantity, siting, design, and implementation of fuel breaks is important.

A better wildfire policy this time?

The policy of keeping fire out of the wildlands is attributed to the catastrophic fires in the early 1900s that burned millions of acres in Montana and Idaho, destroyed communities, and took lives (Aplet, 2006). California is experiencing that same tragedy today. However, if the policy of keeping fire out of forests and rapid-fire suppression was counter-productive in the long term, what's the better long-term approach to take now?

A policy paper on ecological forestry by The Nature Conservancy for the Sierra Nevada describes ecological thinning in forests as "prioritizing the removal of surface and ladder fuels that contribute most to wildfire hazard, *while minimizing ground disturbance and impacts to those trees and shrubs that will not be removed*" (Kelsey 2019, italics by author).

[2]Guides for home retrofitting are available through fire departments and online, such as at **https://www.firesafemarin.org/**.

Figure 1. (from left)

WUI treatment example: Draft PEIR Figure 2–3 (Calfire, 2019).

Non-shaded fuel break example: Draft PEIR Figure 2–5 (Calfire, 2019).

Shaded fuel break example: Draft PEIR Figure 2–6 (Calfire, 2019).

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A picture is worth a thousand words, and one of CNGA's concerns is that the CalVTP Draft PEIR only presents examples of vegetation fuel break treatments where no ground-level vegetation appears to remain (Figure 1).

The PEIR describes non-shaded fuel breaks as "typically created where there is a natural change in vegetation type, such as from forest or shrubland to grassland, and *all vegetation* is removed from the fuel break (Figure 2-5). Heavy equipment would be used to create these types of fuel breaks, except on slopes steeper than 65 percent or 50 percent in areas susceptible to erosion, where manual or prescribed burning treatments would be employed." (CalVTP Draft PEIR, Ch. 2, italics by author). The PEIR does not fully describe how ground-level vegetation is treated in the WUI and shaded fuel breaks, except through the photo examples in Figure 1.

While the PEIR considers fuel break construction impacts to native grasses and forbs that are federally or state-listed "special-status plants" or recognized as a rare "sensitive natural community,"[3] it does not adequately consider how to avoid or minimize impacts to other ground-level native herbaceous vegetation in various plant communities that can help to achieve the program objectives.

"Flashy" (quick to ignite) weedy fuels regularly fill in if predominantly herbaceous native, grass, and forb cover is removed or heavily disturbed within grassland, native shrub, and native woodland systems. Lambert et al. (2010) report on how the invasive annual grasses that colonize the disturbed edges of shrublands along roads, power lines, and fuel breaks when native shrubs are removed "dry out much earlier in the spring than the native shrubs, and with their high surface area to volume ratio, are more prone to ignition than the native vegetation." The study noted that "Mediterranean grasses such as *Bromus* species and slender oats (*Avena barbata*) are particularly implicated since they act as wicks, spreading fast-moving fire into the canopies of larger shrub vegetation" (Lambert et al. 2010)

Research from sage scrub, chaparral, oak woodland, and coniferous forest vegetation types indicates that non-native species cover and diversity (commonly nonnative annual grasses) are higher in fuel breaks than in surrounding wildlands (Merriam et al. 2007). The study noted that weed establishment could lead to more frequent fires and kill native plants not adapted to those fire frequencies. Also, fuel breaks created by bulldozers significantly increase nonnative plant abundance. The study concluded by saying that "fuel break construction and maintenance methods that leave some overstory canopy and minimize exposure of bare ground may be less likely to promote nonnative plants."

Lessons from some East Bay fuel breaks

The North Orinda Fuel Break, one of the 35 emergency vegetation reduction projects funded by Governor Newsom, began operations this summer just as the Calfire VTP Draft PEIR was released. The project covers over 19 miles of ridgeline and road edges from western Contra Costa County to the Berkeley hills.

Managed by the Moraga-Orinda Fire Department (MOFD), the work includes watershed land owned by the East Bay Municipal Utilities District (EBMUD), as well as parkland managed by the East Bay Regional Park District (EBRPD). As such, the fuel break work needs to comply with the environmental standards of the park and the water district (for more information see **www.mofd.org**)

Conserving plant diversity has long been an integral part of EBMUD's stated mission to protect the watershed. A major element of EBRPD's 2010 wildfire plan is to conserve and encourage lower fuel-risk native trees, shrubs, and grasses.

Lying within the northern Central Coast region, vegetation in Contra Costa and Alameda counties is comprised primarily of grasslands, coastal scrub, chaparral, oak woodlands, and forests. The photos in Figure 2 were taken during a Sunday morning field tour with members

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[3]Sensitive natural communities are listed by the California Department of Fish and Wildlife as state or globally-rare communities of plants, including rare native grass and forb communities, that need to be considered in projects subject to the California Environmental Quality Act.

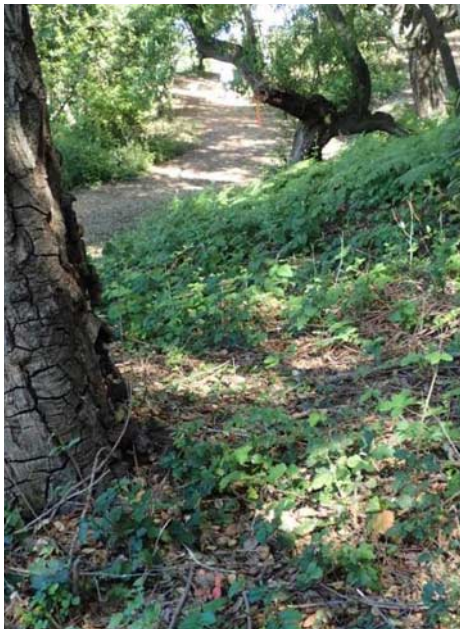

Figure 2. (from left)

WUI treatment example: Limbed-up oaks and moderately mowed native understory (California Native Plant Society, July 2019).

Non-shaded fuel break example: Moderately mowed mixed grass and coyote brush (*Baccharis pilularis*) shrub area. Blue wildrye (*Elymus glaucus*) re-emerging after mowing (CNGA, July 2019).

Shaded fuel break treatment: Limbed-up oaks. Ferns and low growing native grasses forbs, and sub-shrubs retained (CNGA, July 2019).

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of the East Bay Chapter of CNPS and represent work currently underway by the East Bay Regional Park District.

Compared to the photo representations in the draft PEIR, the ground-level herbaceous vegetation for the East Bay's WUI, non-shaded, and shaded fuel breaks is trimmed, moderately mowed, or left alone, and therefore remains intact.

Ground-level vegetation composition varies considerably across the state, but, as with these examples, it is an important part of the fabric of any plant community system. Among many other practical benefits, native perennial bunchgrasses, forbs, and sub-shrubs help to hold soils in place, increase rainwater infiltration, and provide habitat. Many remain green into summer and thus hold above-ground moisture in the leaves. Wildland vegetation treatments that lay too heavy a hand on the landscape can end up converting a mostly native ground-level plant system to a largely non-native plant system and exacerbate the fuel risk conditions the project was intended to address.

Herbaceous native grasses, forbs, and sub-shrubs need to be evaluated in each site and ecoregion as potential allies in the goal to reduce wildfire risks, such as by managing vegetation treatment practices to minimize ground disturbance and retain the cover of herbaceous native grasses and forbs by incorporating these practices in fuel management contracts, by assuring compliance during fieldwork, and by expanding the practical science of "restoring fire-adapted ecosystems that resist high-intensity fire and associated property and watershed damage" (Calfire Draft PEIR, Sec. 2, 2019).

Several post-fire scientific studies and media accounts call our attention to the importance of community fire response planning and making homes more resilient to fire. Likewise, vegetation treatments in natural areas over the next one hundred years need to be designed and carried out in ways that sustain ecological diversity and reduce vegetation fuels long term, especially since the two goals often complement each other.

What you can do

Calfire will be responding to the comments submitted on the Draft Programmatic Environmental Report. You can get involved through your Fire Safe Council, City Council, Board of Supervisors, and others. Californians deserve good answers to questions about any future nearby fuel vegetation work. Here are a few to consider:

Science-based, site-specific treatment plan — How will the project make sure that vegetation treatments safeguard beneficial native vegetation and prevent the expansion of dense, easy-to-ignite weedy species?

Local plant expertise — Does the project have an on-site botanist familiar with local plant species and plant communities to walk the treatment site to identify, mark, and monitor special-status plants, sensitive natural communities, and beneficial native flora that should remain?

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Clear, timely information to the public — How will the project provide the public with opportunities to ask questions and make comments on a specific local project, stay informed of the fuel treatment work, and be made aware of the schedule and location of future work?

Follow-up funding for succeeding years — Does program funding cover both initial work and essential follow-up monitoring and landscape maintenance?

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