

Laguna Forest Health Resilience Measures Review and Recommendations

Megan Jennings, Ph.D., San Diego State University

mjennings@sdsu.edu

Overall resilience goals

- Avoid creating feedback loops
- Avoid increasing vulnerability to fire, beetle attacks, and type conversion

Desired condition

- Coniferous forest in the WUI defense zone managed to have ~40% canopy cover and emulate 13-year historic FRI. Conifer stands in WUI threat zones managed to reduce surface and ladder fuels.
- In chaparral, treatments intended to improve effectiveness of fire suppression operations in key areas and strategic treatments to reduce risk of crown fires in conifer stands.
- Bring area *closer* to natural fire regime, reduce stand density to historic levels, improve forest health

Treatment Priorities

WUI threat – No treatments in chaparral within 15 yrs of past treatment (or natural fire).

Treatment Activities

Strategies to enhance resilience in chaparral systems

- Treatments in chaparral dominated ecosystem focused on hazardous fuels ONLY
- Avoid treating obligate reseeding shrub species (flag and avoid)
- No repeat treatments of chaparral within 15-year period to avoid type conversion
- Create untreated islands of shrubs, with a goal of protecting diversity of spp, to retain seed source, wildlife habitat, and protect obligate reseeders.
- Only burn 50-70% of veg in chaparral burn units
 - Limiting this further in future updates could be beneficial
- Multiple mastication treatments to limit expansion of vigorously resprouting species that can lead to feedback loop of increased fire intensity and type conversion (forest to *Ceanothus* dominated shrubland)

Strategies to enhance forest health and resilience

- Treatments in conifer dominated ecosystem focused on forest health and vegetative diversity
- Multiple entries to stage treatments so as not to damage remaining vegetation, to manage biomass, and to have a greater chance of achieving desired stand density

- Biomass management measures – burning or whole tree removal offsite to minimize continuous chip depth and limit fire intensity or persistent chip bed.
- Protect areas of young (seedlings) or vulnerable oaks during bud break during prescribed fire activities
- Preferentially attempt fall burning when bark beetles are dormant to avoid damaging trees in the spring when bark beetles are active and could more easily establish in fire-damaged stands
- Treat CASPO PACs to reduce stand density to improve prey habitat, facilitate foraging, and limit risk of stand-replacing fire
- Test treatments of *Horkelia clevelandii* (burn only) to determine if burning would be beneficial for plant establishment, growth, and habitat conditions for Laguna mountains skipper.

Adaptive Management

- Establish monitoring of treatment effectiveness – photo plots, etc.
 - Evaluate whether ALL proposed treatments are needed before retreating
 - All fuel reduction treatment activities throughout the project area will be monitored before and after implementation and documented within the unit folders on treatment effectiveness. All monitoring will include pre and post-photos, pre and post-ocular estimation of fuel loading, and if resource objectives have been met with regard to the overall change in surface fuel modification.
- Burn test plots where there's potential for regrowth of vigorously resprouting species (*Ceanothus* spp.) to avoid increasing ladder fuels, fire intensity, and potentially triggering type conversion from forest to shrub types
- Fire Prevention Technicians and other staff would monitor the project area for OHV trespass and if/when problem areas arise, remedial and preventative actions will be taken as appropriate. As funding and time allow, photo plots established in 2010 for this project will be revisited to monitor nonnative annual grass population status during the lifespan of the project.

Design Features

Avoiding weed spread and vegetation type conversion

BOT-4 When employee work plans and budgets allow, chaparral vegetation types in treatment units 45 through 53, scheduled for follow-up treatments after one growing season (e.g., mastication in spring followed by broadcast burn in the following fall or spring) will be surveyed for sensitive species. Based on survey results, the district biologist/botanist will work with fire staff to determine the appropriate return interval and method for retreatments.

WEED-4. In areas where nonnative annual grass cover may increase after soil disturbing treatment activities, wood chips should be used to inhibit spread of nonnative annual grass.

WEED-6. During the lifespan of the project, in years when budget and employee time allows, photo plots established in 2010 will be revisited to monitor nonnative annual grass population status.

VEG-1 To the extent possible, broadcast burning will be implemented within one year of mastication treatments in chaparral vegetation types. If burn prescription and environmental conditions are unfavorable to implementing prescribed fire within this time period (e.g., drought, sensitive plant species), treatment units will be evaluated prior to burning for obligate seeding species retention and site recovery by a qualified ecologist or botanist.

Protecting watersheds and riparian areas with treatments

HYD-2 Whenever feasible, plan prescribed fire (broadcast burning and slash piles) when soils are wetter and fuels are dry to decrease damage to soils. When the depth of masticated fuels exceeds three inches across greater than 25 percent of the burn area, adequate soil moisture (greater than 15 percent by volume soil water) should be present in the upper six inches of the soil profile.

HYD-4 Prescribed underburns would not be ignited within 30 feet of a streams bank-full edge unless 70 percent effective soil cover can be maintained. RCAs will be flagged and low intensity fire may be allowed to back into them. Firelines would not be constructed within RCAs. RCA widths are defined in table 5.

HYD-9 Masticators would not operate within 15 feet of stream channels but can reach to masticate material if necessary to achieve fuels objectives. Avoid travelling the masticator within 30 feet of stream channels that don't require treatment. Table 5 provides a summary of buffers required in RCA's.

Additional resilience measures to consider in future planning

- Integrating recent CWC data on risk of veg type conversion, herbaceous cover change, and post-fire drought vulnerability to evaluate if/where treatments are appropriate in chaparral
- Formalized drought response framework
 - Mapping areas of higher drought intensity or lower resilience
 - Creating go/no-go checklist for veg treatments and Rx burns to avoid further damage from treatments in drought years or during prolonged drought
- Plan to protect areas of refugia from multiple stressors
- Potentially prioritize treatments for resource benefits – spp at risk? ecotypes at risk of fire and climate change? Spp likely to be resilient to shifting climatic conditions?
- Formalizing a priority for treatments
 - Life and property
 - Areas close to desired density/condition
 - Areas very far from desired density/condition
- Mention of where restoration fits in, even if not part of proposed project

- o Where will it be necessary
- o How to make it resilient? Plant palettes?