

ATTN: Daniel Fenstermacher Salmon/Scott River Ranger District 11263 North Highway 3 Fort Jones, CA 96032

Dear Mr. Fenstermacher,

The California Deer Association (CDA) is a wildlife conservation nonprofit dedicated to supporting California deer and other wildlife species through habitat restoration projects. Since its inception in 1996, CDA has developed diverse partnerships with federal, state, local, and private entities to increase the pace and scale at which landscape-level restoration projects that benefit habitat resilience, ecosystem services, biodiversity, and public safety are implemented. CDA works throughout California on a variety of critical landscape projects that enhance and restore forests, watersheds, meadows, native vegetation, wildlife migratory routes, and culturally significant sites.

CDA is proud to support the River Complex Risk Reduction Project proposed by our federal partner, Klamath National Forest (KNF) Salmon/Scott River Ranger District. CDA agrees that the proposed action by KNF in the River Complex project is essential to restoring the affected environment to the desired condition for the benefit of the communities and wildlife that depend on them. In the sections below, we highlight specific actions proposed for this project and the evidence-based reasoning behind our support. The literature cited will be listed in Attachment A.

Affected Environment

The River Complex Risk Reduction Project is located within the Salmon/Scott River Ranger District of KNF in Siskiyou County, less than 20 miles south of the low-income community of Etna. The project is within the Klamath Mountains ecoregion, which is regarded as an important biodiversity hotspot for plant and animal species (Sleeter and Calzia 2011) due to its unique geological assemblages, large altitudinal gradients, and successional heterogeneity. Eleven federally threatened and endangered species are found within the forest and wetland habitats of KNF, including coho salmon, marbled murrelet, northern spotted owl, gray wolf, and Yreka phlox.

In addition to wildlife habitat, the landscapes of KNF provide critical ecosystem services including erosion control, watershed recharge, carbon storage, and nutrient cycling. The forests of KNF sequester .06 million Metric Tons of Carbon (MMTC) annually and store an estimated 165 MMTC (USDA 2020). Furthermore, KNF produces approximately 995 million gallons of water annually, enough to supply 7.5 million homes (USDA 2020). The scenic vistas and recreational opportunities of KNF, including the Pacific Crest Trail, draw over 130,000 visitors annually and provide over \$5.2 million to the local economy during their trips.

In January 2023, the Department of Agriculture named the Klamath River Basin, a priority landscape for wildfire risk reduction. This decision was informed by the extreme wildfire hazard the landscapes pose to the valuable natural and developed resources within the region. Taylor and Skinner (1998) state that the median fire return interval for late-successional habitats within the Klamath Mountains historically ranged from 8 to 38 years, meaning wildfire suppression over the last century has resulted in as many as twelve missed fire events. As a result, many of the forests of the Klamath River Basin demonstrate suboptimal canopy spacing and fuel loading. The subsequent extreme wildfire hazard posed by these conditions was demonstrated by the 2021 River Complex Fire.

The River Complex Fire was caused by lightning strikes which burned over 199,000 acres including 96,763 acres of the Salmon/Scott River Ranger District. The United States Geologic Survey Rapid Assessment of Vegetation Condition after Wildfire (RAVG) program produces data demonstrating post-fire conditions, such as basal area and canopy cover loss, on National Forest System lands. The RAVG maps for the River



Complex Fire reveal that it did not burn in a way consistent with the historic fire regime, which would create patches of early seral habitat among in-tact late-successional habitat. Rather it created large contiguous swaths of denuded habitat. One quarter of the area impacted by the River Complex Fire in the Salmon/Scott River Ranger District burned at high severity and demonstrates between 75-100% vegetation loss. Studies have shown that high-severity fires significantly decrease critical ecosystem services provided by forests, meadows, and grasslands and that habitats will further degrade if post-fire impacts to the landscape are not mitigated. Subsequently, the direct and indirect impacts of this fire should not be considered a natural and benign continuation of the ecology of the affected habitats, nor should a hands-off approach be considered the appropriate action for managing the post-fire landscapes.

Salvage Harvest & Planting

The River Complex Risk Reduction Project includes salvage harvest as a minor component of the proposed action across only 1,177 acres (17%) of the total treatment area. KNF demonstrates thoughtful consideration for the post-fire ecology of the landscape, limiting salvage harvest and replanting to areas that burned at high burn severity across large contiguous swaths where likelihood of natural regeneration is low and high-intensity reburn is high. Standing dead trees with a diameter at breast height (DBH) of 14 inches or greater that demonstrate a 70% chance of mortality within the next 3 to 5 years per the robust "Marking Guidelines for Fire-Injured Trees in California" (Smith and Cluck 2011) will be evaluated for salvage harvest. Project design features and protection measures, including snag retention for wildlife habitat, equipment exclusion zones, and minimally ground disturbing logging systems, are in place to ensure the many plant, wildlife, soil, hydrology, and scenic resources of the project area will be protected throughout implementation.

Following salvage operations, strategic reforestation efforts in the harvest areas will enhance natural regeneration, restore forest habitat function, and minimize invasion of non-native plant species. Planting will occur only in the footprint of existing plantations comprised of standing dead trees under 15 inches DBH and salvage harvest units. Tree species and spacing will be determined by site-specific environmental factors, including slope, aspect, soil productivity, and elevation. Natural regeneration will be prioritized in areas demonstrating a viable seed source, and planting will be excluded from areas with a dominant hardwood component. The reforestation treatments will result in a mosaic of species and stocking densities across the affected landscape to emulate natural regeneration.

Salvage harvest coupled with reforestation is a widely practiced forest management strategy that is demonstrated to confer many benefits to a post-fire landscape when applied conservatively with site-specific considerations. Studies indicate that implementing post-fire logging has a positive effect on tree regeneration in high severity burn areas. For example, Prichard et al. (2020) found that salvage and reforestation resulted in higher seedling survival rates and post-fire stand densities than any other treatment regime in high severity burn areas. This is because salvage with reforestation reduces seedling resource competition with regenerating shrubs, disrupts hydrophobic soils (McIver and Starr 2001), and reveals mineral soils (Greene et al. 2006). Additionally, Bowman et al. (2021) found that forested areas that have burned at high severity have a considerable increase in carbon emissions and are at high risk of converting to shrubland, which significantly reduces capacity for long-term carbon storage. If post-fire restoration efforts are executed, active management will greatly reduce the carbon emissions and accelerate the ability for the forest to sequester carbon.

CDA supports the salvage and reforestation actions proposed in this project and applauds KNF for the consideration and effort put into this project to restore valuable habitats lost in the River Complex Fire. KNF's commitment to ecosystem health, public safety, and stakeholder interests is demonstrated by the prescriptions, protection measures, public comment responses, and impacts analyses of this proposed action described in the Environmental Assessment.



Long Term Monitoring

A thoughtful addition to the River Complex project by KNF is the proposal to establish long-term monitoring plots to quantify the effects of salvage logging on forest recovery. While salvage harvest and reforestation are standard management practices with a wealth of literature demonstrating their benefits for forest regeneration, controversy remains regarding its impact to specific resources or the overall landscape ecology. By providing empirical data on the effects of salvage and reforestation in the River Complex project, KNF will contribute to our understanding of post-fire strategies to restore ecosystems within the Klamath Basin and across the western United States. CDA is in support of this proposed action by KNF, which exceeds the industry standard for post-fire forest management.

Fuels Reduction Treatments

Proactive fuels reduction treatments are critical to effectively conserve forest landscapes and protect communities in the face of the wildfire crisis across the western United States. KNF is proposing to implement fuels reduction across 1,588 acres of landscapes that demonstrate significant wildfire hazard to adjacent communities or forest stands, including Callahan Wildland Urban Interface (WUI) and existing plantations that demonstrate extreme post-fire fuel loading. Studies including Tubbesing et al. (2019) demonstrate that strategically placed landscape area treatments (fuel breaks) were found to significantly decrease fire intensity and basal area mortality when compared to an untreated landscape and are subsequently crucial when managing for public safety in the WUI.

Furthermore, KNF will perform fuels reduction in areas with strategic wildfire control features, such as roadways and ridgetops, to fortify existing fuel breaks and aid with future fire management. KNF utilized Potential Operational Delineations (PODs) in the early stages of the planning process for strategically managing fire in the landscape. PODs are a Forest Service fire suppression concept that create fire management units bounded by potential control features, such as roads, rivers, or ridges. These management units are utilized as contingency lines for wildland fire containment and as boundaries for prescribed fire, which will manage fuel loads and improve forest ecosystem health and resilience.

CDA supports this proposed action and believes it was designed with thoughtful consideration of the landscape. In addition to effectively mitigating future fire hazard to natural and developed resources, CDA believes this treatment will also restore structure, function, and resilience to the habitats of this landscape.

Prescribed Fire

KNF is proposing to reintroduce fire to the landscape through prescribed burning across 580 acres of the project area to fortify fire management control features and to maintain safe fuel loading across the project area over the long term. The prescribed burning treatments proposed by KNF have been designed to emulate the natural fire regime and will help to maintain surface fuel loading, stand density, and heterogeneity across the landscape over the long term. Studies have demonstrated that prescribed burning is a crucial part of active forest management to promote species and structural diversity across a forest while maintaining safe fuel loads. In the Bootleg Fire that burned in southern Oregon in 2021, forest stands that had been treated with mechanical thinning in combination with prescribed burning demonstrated far better canopy survival than in the no-treatment control stands and mechanical thin only stands (The Nature Conservancy 2022). This case study and others like it illustrate the need to return fire to the landscape.

CDA endorses KNF's proposal to return prescribed fire to the Klamath Mountains at regular intervals. The benefits of this proposed action will include restored critical wildlife habitat, improved public health and safety during fire emergencies, and enhanced forest resilience.



Roadside Hazard Tree Removal

KNF proposes to implement hazard tree removal along public Forest Service system roads and facilities to alleviate imminent and future threats to residents of adjacent communities, forest visitors, and staff. Hazard trees will be identified in accordance with the "Hazard Tree Guidelines for Forest Service Facilities and Roads in the Pacific Southwest Region," (Angwin et al. 2012) a robust guide incorporating species-specific metrics to quantify probability of mortality and threat to public safety. In areas of moderate- to high- burn severity, a significant number of trees often succumb to storm events, high winds, disease, and beetle kill, creating unsafe conditions for visitors and increasing fuel loading within the forest. KNF receives over 144,000 recreational visitors each year and hazard trees present an immediate danger to forest visitors accessing lakes, rivers, trails, and campgrounds via falling trees and limbs.

CDA supports the KNF proposal to perform hazard tree removal and believes this action will effectively mitigate the risk to public safety that the current post-fire landscape poses to public safety and will confer additional benefits. Roadside hazard tree removal will create a de facto fuel break, maximizing future firefighting efforts and civilian evacuation in the event of future wildfire ignition. Furthermore, increased visibility along roads will allow for more opportunities to view wildlife and avoid vehicle-wildlife collisions.

Conclusion

CDA agrees with the intent of the proposed action for the River Complex Risk Reduction Project to restore structure, function, and resilience to the landscapes affected by the fire. We also agree that the methodologies and prescriptions proposed to achieve these objectives exceed industry standards, incorporate empirical evidence into their design, and thoroughly consider the needs of multiple resources, including public safety, water quality, and biodiversity found within the project area. The project will perform active management critical to restore the affected habitats that support the native species of the region, to facilitate the reintroduction of fire to the landscape in a way that is beneficial for humans and wildlife, and to enhance public safety from the imminent and future hazards posed by the post-fire conditions.

CDA thanks you for the opportunity to comment on the proposed River Complex Risk Reduction Project.

Sincerely,

Dale Macheupon

Dale MacDougall, State Wildlife Project Director



Attachment A – Literature Cited

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