

Upper Briggs Restoration Project Objection:

Merv George
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Attn: Objection for the Upper Briggs Restoration Project as per 36 CFR 218, Subparts A and B

- Project name: Upper Briggs Restoration Project
- Responsible Official: Forest Supervisor, Merv George Jr.
- Rogue River-Siskiyou National Forest Supervisor Office

Greetings,

Thank you for accepting this Objection pursuant to 36 CFR § 218 from the Siskiyou Field Office of Klamath Forest Alliance (KFA) regarding elements of the Upper Briggs Restoration Project Draft Decision Notice. For the purpose of this Objection the Siskiyou Field Office of Klamath Forest Alliance is lead objector. We would like to request a formal meeting to address these concerns with the Responsible Official and find resolution for significant Objection Points.

Scope of this Objection

As per 36 CFR § 218 this Objection applies to the draft decision to conduct commercial logging, “meadow restoration”, and road construction. These activities will significantly negatively impact post-fire ecological, botanical, hydrological, wildlife, fisheries, soil, fuel loading, and recreational values.

KFA’s principal objection to the Upper Briggs Restoration Project is that the project will damage important ecological, scenic and recreational values, as well as violate the Siskiyou National Forests Land and Resource Management Plan. The ironically named Upper Briggs Restoration Project as currently approved, will not only damage important ecological values and post-disturbance forest recovery and succession, but the project will also create additional hazardous fuel loads in a landscape that is currently relatively fire resistant due to recent characteristic fire activity.

The affects of the 2018 Taylor/Klondike Fire achieved the Purpose and Need to a high degree and negate the need for restoration and fuel reduction in the Briggs Creek Watershed. To implement this particular forest thinning project in the name of fuel reduction, is an unjustified waste of public resources and will increase, rather than decrease fuel/fire risks. The planning area includes no homes, no residences and no human communities, thus the project provides little to no fire protection for the residents of southern Oregon.

We strongly object to the proposal to implement post-fire, commercial, green tree logging in the Briggs Creek Watershed. The Taylor/Klondike Fire burned at characteristic fire severity, creating a complex mosaic of mixed severity fire. This is the fourth wildfire in the Briggs Creek

watershed in the last ten years (2009 Oak Flat Fire, 2011 Horse Fire, 2015 Onion Mountain and the 2018 Taylor/Klondike Fires) . Each of these fires burned within the range of variability for the mixed conifer forests of the Siskiyou Mountains and had ecologically beneficial and restorative effects.

We dispute the agencies claims that the Briggs Creek Watershed is unusually susceptible to unnatural proportions of high severity fire due to stands conditions and fuel loads. The Taylor/Klondike Fire positively influenced stand structure and fuel loading across a large landscape in 2018. The fuel reduction and stand structure/compositional benefits of the Taylor/Klondike Fire negate the need for additional maintenance at this time. Post-fire, green tree logging will reduce the positive effects of the Taylor/Klondike Fire on plant communities, fuel loads and watersheds. The best available science and regionally specific citations demonstrate that these forests are adapted to mixed severity fire as occurred in the Taylor/Klondike Fire and numerous other recent fires in the Briggs Creek Watershed.

We are also very concerned that fire resilient forests, which burned at predominantly low severity are being proposed for commercial logging that will increase fuel loading and fire risks by depositing logging slash, drying forest stands, increasing windspeeds, ambient air temperatures and understory growth. It is uniquely ironic to see forests recently affected by low severity fire logged in the name of “fuel reduction” and “restoration”.

The Rogue River-Siskiyou National Forest is now using low severity fire as an excuse for logging the post-fire environment. The specific forests targeted survived the fire and expressed significant fire resilience that was enhanced by wildfire effects. Forests that recently burned at low to moderate severity are simply not a priority for treatment and are not an effective use of limited fuel reduction funds.

It is extremely contradictory for the agency to state objectives in the Purpose and Need, promoting fire resilience, fuel reduction and the reintroduction of low to moderate severity fire, when the 2018 Taylor/Klondike Fire just achieved all these objectives to a high degree. 82% of the Upper Briggs Watershed burned at low severity less than one year ago (USDA. 2018e. P. 2) creating fire impermeable habitat across hundreds of thousands of acres. The exceptional fire resilience of this post-fire landscape will only be impacted by proposed project activities, The project will also impact the natural vegetative recovery, increase sedimentation and erosion on sensitive fire effected soils, spread noxious weeds, impact Special Wildlife Management Areas and degrade Northern spotted habitat.

There is simply no ecological or fire/fuel related benefit to implementation of commercial logging and fuel reduction treatments in the Briggs Creek Watershed, at this time. Furthermore, the conditions created by those logging and fuel reduction treatments will not restore characteristic habitat conditions and will instead create novel conditions with no historical precedence. It is a clear case of implementing the wrong treatments, at the wrong place, and in the wrong time. The Upper Briggs Restoration Project is not restorative and will waste a huge amount of tax dollars while providing little to no public benefit.

Objection Point #1: The Upper Briggs Restoration Project fails to meet the Purpose and Need in the Briggs Final EA. At the same time, the 2018 Taylor/Klondike Fire achieved the Purpose and Need to a high degree by reducing fuels, restoring natural process and naturally thinning vegetation. Implementation of the Upper Briggs project will reduce attainment of the Purpose and Need provided by the Taylor/Klondike Fire and is an ineffective use of limited federal fuel reduction dollars.

According to the Upper Briggs Restoration Project Final EA the Purpose and Need includes increasing the “*overall resiliency of the Upper Briggs Creek Watershed to short-term natural disturbance (fire, drought, storms) and long term climate change*” (USDA. 2019a. P. 9-10). The Draft Decision Notice (USDA 2019b. P. 3) also lists the following objectives for the proposed action:

1. Strategically manage fuels to reduce the risk of large stand-replacing fires and reintroduce controlled fire use to the landscape.
2. Maintain and restore structural and vegetation diversity (species composition and successional stages) as appropriate to abiotic and biotic site characteristics in upland areas (prolonging the persistence of legacy trees, accelerating development of later seral forest structure; restoring pine/oak, meadow habitats and rare plant populations).
3. Conserve and enhance habitat for the northern spotted owl and other wildlife species.
4. Maintain and restore the species composition and structural diversity of plant communities in riparian reserves and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface, bank erosion, and channel migration; supply amounts and distribution of coarse woody debris sufficient to sustain physical complexity and stability (Aquatic Conservation Strategy objective 8).
5. Re-establish more natural subsurface flow patterns and improve overall watershed function.

Fire Effects and the Purpose and Need:

Ironically, these objectives were achieved to a high degree by the short-term natural disturbance known as the 2018 Taylor/Klondike Fire. The Upper Briggs Creek Watershed burned in the 2018 Taylor/Klondike Fire and the forests in the area expressed significant fire resilience, burning at largely low to moderate severity, with some characteristic high severity mortality patches. The fire burned in a beneficial mosaic throughout the Upper Briggs Creek Watershed with 82% either unburned, or burned at low or very low severity, 10% burned at moderate severity and 8% burned with high severity fire effects (USDA. 2018e. P. 2). These numbers are not provided in the Final EA.

The Final EA describes the historic fire regime by stating, “*Historically, frequent low intensity fires would have consumed down fuels, killed small trees, reduced the presence of brush and hardwood tree vegetation, killed the lower branches on trees, stimulated or maintained grass/forbs in meadows and the forest understory, and generally reduced forest stand densities by killing individual or clumps of trees.*” (USDA. 2019a., P. 87). The Final EA fails to disclose that this description of historic fire effects, essentially describes the effects of the 2018 Taylor/Klondike Fire.

The Final EA does admit that “*the 2018 fires helped move toward desired conditions with regard to surface fuel loadings and consumed some small diameter conifer regeneration and brush*” (USDA. 2019a. P. 343). The EA also acknowledges that the fires “*reduced loading of surface fuels in the size class 0”-3” with less reduction in the 3”-9” diameter classes.*” (USDA. 2019a. P. 342). These diameter classes are the most fire available fuel during a wildfire event and contribute more to fire intensity than more coarse, larger diameter materials targeted for removal in the Upper Briggs project. The 2018 Taylor/Klondike Fire removed fire available fuel throughout all but 19% of the planning area (which did not burn). Thus, the 2018 Taylor/Klondike Fire effectively “treated” a much larger portion of the landscape than is proposed in the Upper Briggs project. Yet, the Final EA and Decision Record fail to adequately analyze or acknowledge the benefits of fuel reduction associated with the 2018 fires. The Final EA and Decision Record also failed to adequately compare the effectiveness of the Taylor/Klondike Fire with the proposed treatments in the Upper Briggs project. The literature and the current conditions in the Upper Briggs Watershed demonstrate that fire is more effective than thinning at reducing fuel loads and maintaining landscape resilience, especially low to moderate severity fire as occurred in the Briggs Creek Watershed.

The implementation of the Upper Briggs project will recruit significant fine fuel in the form of activity slash and when canopies are opened, fire available vegetation such as young trees, shrubs and herbaceous growth will increase on the forest floor. Vegetative response, the creation of activity slash, increased sunlight, increased windspeeds, and stand desiccation are common responses to canopy removal in the interior Siskiyou Mountains. These responses tend to increase fire risks and fire behavior. (Lesmeister. 2019). This impact will also negate the positive effects of the Taylor/Klondike Fire by depositing abundant small diameter fuels onto the forest floor. This increase in highly flammable activity slash directly following the fuel reduction effects of the Taylor/Klondike Fire which cleared out small diameter fuels and maintained beneficial forest conditions is counterproductive and unjustified.

Based on the effects of the Taylor/Klondike Fire the Upper Briggs Planning Area is no longer in need of fuel reduction treatments, making the Upper Briggs Project a poor use of federal fuel reduction funds. If the Purpose and Need has been largely achieved and fuel loading significantly reduced by the Taylor/Klondike Fire, the Rogue River-Siskiyou National Forest should be utilizing limited funds to more directly address dangerous fuel loading near communities at risk. The Upper Briggs project fails to address either dangerous fuel loading or communities at risk. It is a waste of public resources and will only make a currently non-existent fuel and fire risk in the Briggs Creek watershed, exponentially worse.

The effects of the 2018 Taylor/Klondike Fire significantly reduced understory and ladder fuels throughout the fire area, increasing resilience during the next wildfire event and resetting the biological clock. The effects of the 2018 Taylor/Klondike Fire achieved these results far more effectively and at a scale that the Upper Briggs Restoration Project simply could not achieve. The 2018 fires in the Upper Briggs Creek watershed were highly restorative, ecologically beneficial and provided comprehensive, watershed wide fuel reduction to 20,054 acres in the Briggs Creek area.

Although the agency claims that only some of the project objectives were achieved in the 2018 fires and *“the overall resiliency of the Upper Briggs Creek Watershed remains susceptible to short term natural disturbance and long-term climate change. The results of the 2018 fires did not always achieve desired conditions where needed. Therefore the strategic and active management of the Upper Briggs project would more successfully decrease stand residual tree development towards late successional conditions.”* (USDA. 2019a. p. 344-345). The agency provides no concrete evidence or science to support this claim and completely fail to acknowledge that the 2018 fires likely achieved the Purpose and Need to a higher degree within the planning area than proposed treatments will. This is because the 2018 fires affected the entire watershed and reduced fuels far more effectively and comprehensively than the proposed Upper Briggs project.

The Final EA and Draft Decision Record also fail to provide evidence or analysis that the Upper Briggs project will more effectively meet the Purpose and Need than the Taylor/Klondike Fire. The Taylor/Klondike Fire was a more comprehensive fuel reduction “treatment”, across larger landscape scales and reduced the need for so-called strategic treatments. Likewise, the agency failed to provide science or information supporting the claim the manual treatments will more *“successfully decrease stand residual tree development towards late successional conditions”*. The natural disturbance process and the biological legacies associated with mixed severity fire will more effectively produce late successional habitats than logging which removes snags, snag recruitment, downed log recruitment, and decadence features that are important as elements of late successional forest.

According to the Final EA, *“The desired condition from a fuels standpoint is for the landscape to have areas of lower fuel loadings; while continuing to provide habitat for wildlife species that are dependent upon late seral, old forest habitat with high fuel loading. “Fireproofing” the watershed is not reasonable and is not an objective of this project. Management of fuel loading would reduce the potential for large stand-replacing fires and allow for the reintroduction of controlled fire to the landscape, which in turn would promote development of successional habitat and create diverse landscape conditions.”* (USDA. 2019a. P. 14). The effects of the Taylor/Klondike Fire more effectively meet these desired conditions than the Upper Briggs project and on a much larger spatial scale.

It has been shown in many scientific studies that linear fuel breaks, isolated fuel treatments and scattered cut blocks do not effectively reduce fuel loading or fire behavior across the broader landscape. It has also been shown that individual fuel treatments are statistically unlikely to burn in a wildfire or contribute to fire management objectives during the window of time in which they are still effective. In fact, the probability of a fuel reduction unit burning in a wildfire during its window of effectiveness is between 2%-8% (Rhodes. 2008). In contrast, landscape scale wildfire can and will essentially fireproof the area for the next number of years, until fuel loads can again build enough to carry a wildfire. This was not acknowledged in the Final EA or Decision Record and was actually deemed unreasonable on page 14 of the Final EA. It is unreasonable, not because it is unattainable (the current condition in most of the fire area is “fireproof” until vegetation recovery occurs), but because thinning and manual treatments could never have this effect. Only fire as a natural process has the ability to so comprehensively reduce fuel loads and limit fire spread.

The current post-fire condition does provide a short-term fire proofing of the landscape because fire available fuels have been consumed and fuel continuity is nearly non-existent. Lightning strikes and human ignitions throughout the area will fail to ignite fires for the next few years as fine fuels recover from the Taylor/Klondike Fire. Chaparral stands burned in 2018 will not contain the necessary decadence or fuel beds to carry fire and areas burned at high severity fire in the Taylor/Klondike Fire will not maintain active fire until vegetative recover has taken place. The effects will be far more effective, comprehensive and long lasting than any manual treatment including those proposed in the Upper Briggs project.

These effect of fire proofing can be seen in numerous recent wildfires in our region, where the wildfire burned around recent fire footprints or were actively steered into recent fire footprints to aid containment. For example, portions of the 2018 Klondike Fire were effectively held with no suppression efforts at the 2017 Chetco Bar Fire footprint. Likewise, the 2018 Taylor/Klondike Fire burned around the 2015 Onion Mountain Fire. In some places this was due to active suppression and in other locations it was due to natural fire effects.

The 2017 Abney Fire in the Upper Applegate burned around 2012 Lick Fire footprint without any suppression efforts. Numerous fires on the Klamath River have been steered toward recent fire footprints to aid containment. These include the 2014 Happy Camp Fire, 2014 Beaver Fire, the 2014 Dillion Fire, the 2017 Abney Fire, and many others. Although an ephemeral effect, fireproofing from previous fire footprints is common in the Klamath-Siskiyou Mountains. It is also a benefit unique to large scale fire and unattainable by manual thinning treatments.

Simply put, thinning and other manual treatments do not compare to wildfire in terms of the moderation of fire behavior and resistance to wildfire ignitions. Clearly the fuel reduction objectives articulated in the Final EA have been achieved quite effectively by the 2018 fires and clearly, and they cannot be achieved as effectively by the manual treatments proposed in the Upper Briggs project. If logging is implemented, currently highly fire resilient stands will be littered in highly flammable activity slash, dramatically increasing fire risks and potentially allowing fires to burn in areas that are currently fuel limited and resistant to ignition or fire spread.

Overtime, the stands logged in the Upper Briggs Project will fill in with understory vegetation, making currently closed stands with minimal understory fuels exponentially more flammable and more difficult to maintain in reasonable fuel conditions. The benefits of the wildfire will be negated by implementing commercial thinning operations and generating abundant logging slash. These effects were not analyzed in the Final EA or Decision Record.

The Purpose and Need also mentions the use of controlled fire as a restoration tool. The 2018 fires also effectively reintroduced the controlled use of fire throughout the Briggs Creek Watershed. In fact, the fires reintroduced natural process on a far larger scale than was envisioned in the Upper Briggs Project and large portions of Briggs Creek burned in intentional or controlled firing operations, other portions burned without the effects of management, but at characteristic fire severities. According to Inciweb reports, fire progression maps and firing plans publicly discussed before and after the 2018 Taylor/Klondike Fire were merged with tactical ignitions, the controlled use of fire was implemented during the 2018 fires on the watershed

scale, providing far more benefit than proposed treatments in the Upper Briggs project. The combination of tactical ignitions and natural fire effects created mostly understory fire effects, while a few isolated locations burned with more intensity. The effects of the fire maintained structural and vegetative diversity and reduced the risk of future high severity fires more effectively than any manual treatment could. These effects were not analyzed or compared in the Final EA. These effects will also be negatively impacted by implementation of the Upper Briggs Project.

Fire Effects, Northern Spotted Owls and the Purpose and Need:

The Purpose and Need identified a need to maintain and restore habitat conditions for species such as the Northern spotted owl. Although, the 2018 fires also maintained much of the most important Northern spotted owl habitat in the Upper Briggs Watershed, some nesting, roosting and foraging (NRF) habitat and dispersal habitat was downgraded or removed by fire effects. Some of this habitat is now productive post-fire foraging habitat, but the loss of existing NRF habitat does make the remaining closed canopy stands and NRF habitats increasingly important to resident NSO. According to the RAT Assessment following the Taylor/Klondike Fire Briggs Creek is now “*an island of mature habitat*”. Removing or degrading more mature habitat through logging operations is undesirable and unnecessary.

The current conditions include snag patches remaining after the fire, creating complexity and heterogeneity. As vegetation recovery progresses fire affected stands will develop increased complexity due to fire killed snags, fire generated openings, downed wood and multi-layered canopy structure. Closed stands remaining after the fire will also become increasingly important for nesting and foraging and dispersal habitat. These habitats will also be degraded by implementation of the Upper Briggs project.

Fire Effects, Climate Resilience and the Purpose and Need:

Finally the cool, closed forests that burned at low severity in the 2018 are likely to provide important climate refugia, buffering against the effects of climate change and increased fire severity (Lesmeister 2019). These benefits will also be impacted by commercial logging treatments that further open forest canopies, increase fuel loading and reduce biological legacies.

Conclusion:

The 2018 Taylor/Klondike Fire achieved the Purpose and Need to a high degree, within the planning area and beyond. The agency failed to adequately analyze the effects of the Taylor/Klondike Fire, compare those effects to the Purpose and Need, or demonstrate with the best available science how the proposed project activities better meet the Purpose and Need as articulated in page 9 and 10 of the Final EA. The EA also failed to adequately assess the potential impacts of commercial logging within this highly productive, yet currently very sensitive post-fire project area. The Purpose and Need has been achieved and the Final EA fails to adequately demonstrate how current site conditions will be improved by the implementation of commercial logging operations, new temp. road construction, and other project impacts.

Proposed Resolution of Objection Point #1: The Final EA and Decision Record failed to acknowledge the benefits of the Taylor/Klondike Fire and the high degree by which the 2018 fires attained the Purpose and Need identified in the Final EA. Either supplemental analysis should be prepared comparing the effectiveness of the Taylor/Klondike Fire and the Upper Briggs Restoration Project in attaining the Purpose and Need throughout the planning area or the Upper Briggs Project should be withdrawn.

Objection Point #2: The Final EA and Decision Record Failed to adequately analyze or disclose the current or existing condition in the Upper Briggs Planning Area due to the effects of the Taylor/Klondike Fire.

The Final EA and Draft Decision Notice failed to adequately analyze or disclose the current condition in the planning area due to the effects of the Taylor/Klondike Fire. This includes dramatic fuel reduction effects and increased heterogeneity throughout the Upper Briggs Creek Watershed and Planning Area. The Taylor/Klondike Fire restored numerous landscape conditions identified in the Purpose and Need for this project, including the restoration of natural, short-term disturbance process, reduced fuel loading and minimizing the potential for future high severity fire.

According to the Final EA, *“The desired condition from a fuels standpoint is for the landscape to have areas of lower fuel loadings; while continuing to provide habitat for wildlife species that are dependent upon late seral, old forest habitat with high fuel loading. “Fireproofing” the watershed is not reasonable and is not an objective of this project. Management of fuel loading would reduce the potential for large stand-replacing fires and allow for the reintroduction of controlled fire to the landscape, which in turn would promote development of successional habitat and create diverse landscape conditions.”* (USDA. 2019a. P. 14). These desired conditions are the consistent with the current condition in the Upper Briggs Watershed following the Taylor/Klondike Fire.

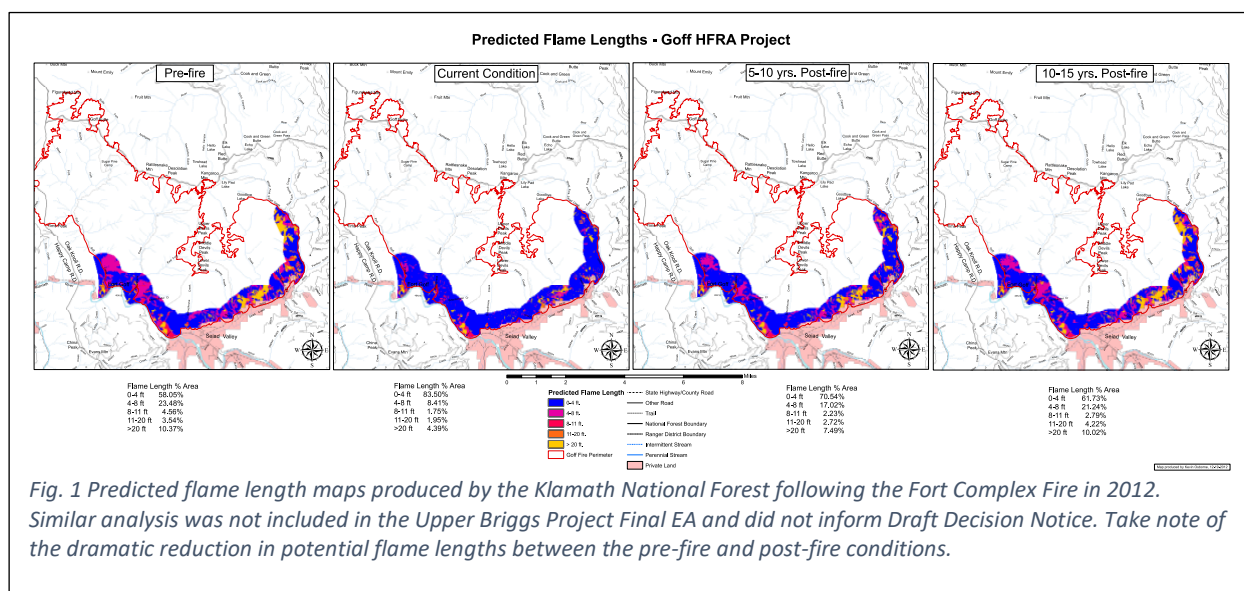
The Final EA and Draft Decision Notice failed to adequately analyze, disclose or compare the current condition to the desired condition. When doing so, it becomes clear that the restoration needed in the Upper Briggs Watershed was provided by the 2018 fires. It also becomes clear that the effects of the Taylor/Klondike Fire more effectively meet these desired conditions than the proposed treatments in the Upper Briggs project, and on a much larger spatial scale.

As discussed in Objection Point #1, the current condition in the Upper Briggs Watershed contains very fuel limited environments that have yet to sustained the level of vegetative recovery necessary to carry a wildland fire. The current condition is essentially “fire proof”, a condition which is entirely unattainable for manual treatments. For numerous years following the Taylor/Klondike Fire fuel loading will be insufficient to constitute a fire/fuel risk and will resist ignition due to a general lack of fire available fuels. This condition can be demonstrated in numerous regional wildfires, including those identified in Objection Point #1. This current conditions was not disclosed in the Final EA and did not inform the Draft Decision Notice.

The Final EA demonstrates that fire resilience and heterogeneity are key components of the proposed action, yet the EA failed to adequately analyze or disclose the post-fire vegetation

mosaics or fuel loading. The NEPA documents lack a thorough, accurate investigation of predicted flame lengths following the Taylor/Klondike Fire. Although the EA falsely claims that current fuel conditions would support 6-10' flame lengths and significant resistance to control (USDA. 2019a. P. 90). Fuel conditions simply do not exist within the fire area that would support this level of fire intensity and currently the fire footprint could not carry a fire until significant vegetation has recovered. It would likely take between a minimum of 3 to 5 years before a fire would carry in the Taylor/Klondike Fire Area. The Final EA falsely claims that within 5-10 years predicted flame lengths would be between 10 and 14'.

Analysis following the 2012 Fort Complex Fire on the Klamath National Forest demonstrates the fuel loading and predicted flame lengths following wildfire are expected to be quite minimal for many years. Only returning to pre-fire levels, 10-15 years following the most recent fire (Fig. 1). This ecosystem is quite comparable to the Upper Briggs Watershed and can be used as a relatively appropriate comparison of flammability following large wildfires in the Klamath-Siskiyou Mountains. The analysis of flame lengths in the Final EA is highly inaccurate and exaggerates the behavior of future wildland fires. Likewise, the analysis in the Final EA fails to compare the predicted flame lengths within the planning area with or without additional treatments in the Upper Briggs project.



To further demonstrate the inaccurate and unrealistic analysis of current fuel conditions in the Upper Briggs Watershed, we cite the following regional wildfires which either burned around recent fire footprints or utilized recent fire footprints to aid containment, without intensive suppression efforts. These fires include the 2018 Klondike Fire which burned to, but not through the 2017 Chetco Bar Fire footprint, the 2017 Abney Fire which burned all the way around the 2012 Lick Fire footprint and numerous fires on the Klamath River including the 2014 Dillion Fire, the 2014 Happy Camp Fire, 2016 Gap Fire and many others. These fires demonstrate the ephemeral, but real effects of fireproofing associated with recent fires and their consumption of

fire available fuels. The Final EA and Decision Record failed to consider these effects and inaccurately identified exaggerated flame lengths.

Importantly, it is clear that absolutely no analysis was conducted following the Taylor/Klondike Fire regarding the predicted flame lengths. To support this assertion we cite the Draft EA (USDA. 2018a. P. 95) which quotes the exact same “existing condition” and future predicted flame lengths as the Final EA (USDA. 2019a. P. 90), ignoring the fact that significant fuel reduction occurred during the Taylor/Klondike Fire. Both the Draft EA and the Final EA claim that the “existing conditions” consists of 6’-10’ flame lengths and a rate of spread between 12 and 30 chains per hour, claiming that *“Fires may be too intense for direct attack on the head by persons using hand tools. Hand line may not be relied on to hold the fire. Equipment such as dozers, engines, and retardant aircraft may be effective.”* (USDA 2018a. p. 95, USDA. 2019a. P. 90).

This analysis is physically impossible given the amount of fire available fuel consumed in the Taylor/Klondike Fire after release of the Draft EA. The current or existing condition simply could not sustain 6’-10’ flame lengths or the identified rate of spread. It is also impossible that flame lengths analysis would be the same both before and after the 2018 fires. Instead, the current condition would produce much smaller potential flame lengths.

The Final EA falsely identifies the following existing conditions in the Briggs Creek Watershed, *“Stand throughout the project area have accumulated surface and ladder fuels that under typical summer conditions create high severity fire effects. The shift in species composition from pine and hardwood to Douglas-fir and brush increases the risk of stand replacing fire. Historically periodic wildfires limited the species composition of dry sites to mainly pine and hardwood species that have developed with frequent fire. Douglas fir is more susceptible to fire-caused mortality than pine due to its branch characteristics and bark qualities.”* (USDA. 2019a. P. 87, USDA. 2019a. P. 85). This description of existing conditions is found in both the Final EA and Draft EA and again demonstrating that no new fuel analysis took place after the 2018 Taylor/Klondike Fire burned through the planning area and assumptions made in the Draft EA were not amended to reflect current conditions following the Taylor/Klondike Fire. Clearly after the Klondike Fire heavy accumulations of surface and ladder fuels have been reduced, species composition was shifted in many stands, and Douglas fir demonstrated no less fire resilience than pine species in the Taylor/Klondike Fire. The statements on page 87 of the Final EA and page 85 of the Draft EA were proven inaccurate in the Taylor/Klondike Fire.

The agency also claims that the no-action alternative analyze in the Final EA would sustain crown fire at levels *“well above the historic levels for the fire regime.”*(USDA. 2019a. P. 90). The actual results of the Taylor/Klondike Fire, which burned predominantly at low severity and in the understory throughout the Briggs Creek Watershed contradict this statement.

This over exaggeration is likely associated with inaccurate fuel modeling and the use of Landfire, which has been shown to overestimate fire risks in late successional and closed canopy stands. (Lesmester 2019, Cruz. 2010). Similarly, the Final EA claims that *“current fuel strata would generate fire behavior in excess of firefighter capabilities”* (USDA. 2019a. P. 90). This claims is also patently untrue and fails to consider the effects of the Taylor/Klondike Fire which

have significantly influenced the “current fuel strata” making it virtually fireproof for the next few years. It also contradicts the actual suppression actions utilized in the Taylor/Klondike Fire within the Briggs Creek Watershed, where the Taylor portion of the Taylor/Klondike Fire was suppressed utilizing ridgeline firelines and low severity tactical firing. Fire effects in the area were minimal during the Taylor/Klondike Fire and will be moderated in the future by the effects of the 2018 fires. Claims that canopy fire levels are well above historic levels for this fire regime and current fuel strata will generate high severity fire effects are inaccurate, misleading and completely fail to consider the effects of the 2018 fires. Analysis and decisions based on this faulty information are invalid and should be withdrawn.

When describing the existing condition, the Final EA and Draft EA also assume that *“From a fire and fuels standpoint, the general result [of fire suppression] has been development of dense understories and a heavy buildup of forest floor fuels, resulting in a dramatic increase in severe (stand-replacing) wildfires.”* (USDA. 2019a. P. 10 & USDA. 2018a. P. 10). This statement is inaccurate and misleading because the Taylor/Klondike Fire burned through that buildup of forest floor fuels, reducing fuel loads and continuity. The existing condition following the Taylor/Klondike Fire is inconsistent with the existing condition described in the EA. Clearly, Forest Service land managers once again failed to update statements and descriptions of the existing condition to reflect actual conditions on the ground following the Taylor/Klondike Fire.

It is also important to note that the Taylor/Klondike Fire burned at 82% unburned, low or very low severity in the Briggs Creek Watershed. Contradicting claims of increased high severity fire. Numerous recent fires within the watershed have also demonstrated fire resilience including the 2009 Oak Flat Fire, 2011 Horse Fire, 2015 Onion Mountain Fire and the 2018 Taylor/Klondike Fire, all of which burned in a characteristic fire mosaic. Analysis in the Final EA regularly assumes high severity fire effects unless thinning treatments occur. Yet the recent fires provide no evidence for an increase in fire severity in the Briggs Creek Watershed.

Analysis in the Final EA regarding existing fuel conditions, was simply cut and pasted from the Draft EA and is highly inaccurate. Instead of conducting accurate, reliable analysis in the Final EA, the cut and paste approach demonstrates a total lack of scientific analysis or re-evaluation of fuel conditions after the Taylor/Klondike Fire. Inaccurate fire/fuel analysis and the identification of inaccurate current conditions deems analysis in the Final EA invalid and demonstrates the Decision Record is not informed by the best available science.

Proposed Resolution of Objection Point #2: Supplemental analysis of fuel and fire risks in the Upper Briggs Planning area is necessary. This analysis must include an accurate depiction of current fuel conditions. The analysis of predicted flame lengths in the Final EA is also highly inaccurate and was based on inaccurate baseline information that was not adequately updated following the Taylor/Klondike Fire. NEPA requires specific and substantive analysis of existing conditions, project activities and the potential impacts or effects. This standard of analysis was not implemented in the Upper Briggs project and change circumstances were not incorporated into the NEPA documents.

Objection Point #3: The Final EA and Decision Record failed to adequately analyze or disclose the increase in fuel loading associated with commercial logging treatments in the Upper Briggs Restoration Project.

The Final EA and Decision Record failed to adequately analyze or disclose the increase in fuel loading associated with commercial logging treatments in the Upper Briggs Restoration Project. The problem starts with inaccurate descriptions of the existing condition and the fire/fuel risks currently existing within the Upper Briggs Creek Watershed. The baseline information on fuel loading is inaccurate and was not adequately updated to reflect current conditions in the aftermath of the Taylor/Klondike Fire (see Objection Point #2). Without accurate baseline information on existing conditions, all analysis of fire/fuel risks in the Final EA is invalid, inaccurate and misleading.

An inaccurate baseline, in turn leads to inaccurate analysis of change to those conditions associated with proposed Upper Briggs project treatments. If existing fuel loads are inaccurately inflated in the Final EA, then it is also likely that the supposed benefits from fuel reduction and logging treatments are overstated.

In fact, the Final EA fails to acknowledge the extremely low fire/fuel risks found in the area after the Taylor/Klondike Fire, which in turn justifies implementation of fuel reduction treatments that are not needed and potentially detrimental to the current condition, which is relatively inflammable and highly fire resistant.

According to the Final EA, the Taylor/Klondike Fire removed large amounts of fine fuel from the landscape, including the most fire available fuels in the 0"-3" diameter class and 3"-9" diameter class. The effect of fine fuel consumption in the Taylor/Klondike Fire is a massive reduction in predicted flame lengths and rate of spread. As identified in Objection Point #2, the analysis of predicted flame lengths and rate of spread in the Final EA is inaccurate and misleading. Proposed commercial logging treatments will create significant levels of fire available, activity slash, dramatically increasing fire risks in the currently relatively fireproof stands within the Taylor/Klondike Fire footprint. The accumulation of slash is a significant increase in fuel loading that went unanalyzed in the Final EA. The Final EA makes no mention of increased fuel loading after logging treatments, but the increase is undeniable. Fine fuel and logging slash deposited on freshly burned sites will most certainly increase fuel loading and flammability.

Numerous studies have shown that in the Klamath-Siskiyou Mountains, closed forest stands burn at lower levels of fire severity than open forest (Lemeister 2019, Thompson and Spies 2007, Odion 2014, & Odion 2014a.). Yet, in direct contradiction of the best available science, the agency is proposing to open affected stands by removing large diameter material with no appreciable influence on fire behavior or fire severity. The Final EA falsely claims that the removal of large diameter material will reduce fuel loading, stating, "*Harvest would reduce the volume of larger diameter merchantable material from the site, thereby reducing future high fuel loadings and ladder fuels which will lower fire intensities and flame lengths.*" (USDA. 2019a. P. 92). This statement is unsupported by the best available science which shows that large diameter material generally does not contribute to fire intensity, flame lengths, or fire severity. Small

diameter fuels consumed in the Taylor/Klondike Fire will have far more influence over fire behavior, including fire severity, intensity and potential flame lengths.

Applicable science shows that the removal of large, relatively fire resilient trees, the opening of forest canopies and the deposition of activity slash on the forest floor associated with commercial logging will increase fire risks in the short and long-term (Lesmeister 2019, Thompson and Spies 2007, Odion. 2014 a.). Following commercial logging operations, significant regeneration will fill in the understory, generating a fuel profile that when compounded by increased windspeeds, increase solar radiation, stand desiccation and the loss of relatively fire resilient large trees will only increase fire risks and increase resistance to control during future suppression efforts. (Lemeister 2019).

Proposed Resolution of Objection Point #3: Either all commercial logging units that proposed to remove large trees over 20” in diameter or reduce canopy cover below 60% should be canceled or a new EA produced that includes more rigorous scientific analysis regarding the effects of commercial logging activities on short and long-term fuel and fire risks. Analysis of fire/fuel risks in the new EA must include a analysis of commercial logging, large tree removal, canopy reduction, and their influence fuel loading, fuel moisture content, wind speeds, stand desiccation, potential flame lengths, and future fire severity.

Objection Point #4: Predicted Flame Length Analysis in the Final EA is inaccurate and misleading.

As indicated in Objection Point #1 & #2 the Predicted Flame Length information provided in the Final EA is inaccurate and was not updated to consider the current post-fire condition in the Upper Briggs Creek Watershed. It is physically impossible that predicted flame lengths were not affected by fire effects in the Taylor/Klondike Fire. The failure to update predicted flame length analysis in the Final EA provides decision makers with inaccurate, out-dated information, which in turn affects analysis in the Final EA in regard to fuel and fire risks. This inaccurate information was also used to inform the Draft Decision Notice. Both the Draft Decision Notice and Final EA are invalid due to the use of this faulty information.

Proposed Resolution of Objection Point #4: A new EA should be produced with accurate information regarding current fuel and fire risks. The use of outdated, inaccurate potential flame length analysis skews the findings of the Final EA and influences the Draft Decision Notice. Because this outdated information was used to identify current fuel and fire risks in the Final EA, a new EA including updated predicted flame length analysis and a re-evaluation of fuel/fire risks is necessary. Current analysis is not based on accurate information or the best available science and is invalid without updated fire/fuel analysis.

Objection Point #5: The Removal of live, green trees that survived the Taylor/Klondike Fire.

The Upper Briggs project proposes to log many live, green trees that survived the Taylor/Klondike Fire. Post-fire, green tree logging is extremely unusual and unprecedented in our region and has environmental effects more pronounced than either typical green tree logging

or post-fire logging, due to the unique combination of removing fire resilient trees and the sensitivity of the post-fire environment, the impacts associated with logging are extremely damaging. The effects of logging, yarding and hauling within this sensitive post-fire environment were not disclosed or adequately analyzed in the Final EA. Likewise, the precedent setting decision to conduct live, green tree logging in the post fire environment was not considered in NEPA analysis or by agency line officers.

According to the Final EA, *“The vast majority of proposed Upper Briggs units experienced low or very low soil burn severity, and acres that were unburned”*. (USDA. 2019a. , p. 338). In fact, 82% of the Upper Briggs Planning Area burned at low severity in the Klondike/Taylor Fire (USDA. 2018e. P. 2). Many of the proposed timber sale units received characteristic mixed severity fire effects in the 2018 fires, including large understory burns within and around proposed logging units. These units expressed significant fire resilience, yet are proposed for logging in the Upper Briggs project.

The approach is scientifically unjustified and the agency is focusing their “fire resilience” treatments on stands that have clearly expressed significant fire resilience during an August wildfire with extreme summer weather conditions, critical fuel moisture content and low relative humidity. According to the Final EA, fire effected stands will be included in the Upper Briggs project, specifically because they sustained low severity fire effects and expressed significant fire resilience. Stands with between 0% and 50% mortality are proposed for logging, while stands with higher levels of fire severity (over 50%) will be deferred from treatment. (USDA. 2019a. P. 304).

The live, green trees targeted for removal in the Upper Briggs project currently play a critical role in maintaining fire resilience. For example, numerous studies have shown that closed canopy conditions and late successional stands tend to burn at lower levels of fire severity than, stands with more open conditions (Lesmeister. 2019., Odion 2014.). The removal of living, fire resilient trees and stands will increase understory fuel loading in the long term, increase solar radiation, windspeeds, and air temperatures, extend fire seasons, and increase fire risks. Recent research conducted by the Forest Service, OSU and University of Colorado demonstrates that the retention of late successional habitats, NRF habitat and closed stand conditions can reduce fire severity and buffer against the effects of climate change (Lesmeister. 2019). The Upper Briggs Project is doing the exact opposite.

The Upper Briggs Project will damage the natural fire resilience and the beneficial fire effects associated with the 2018 Taylor/Klondike Fire by removing large, fire resilient trees that survived the 2018 fire season. The project will also damage natural fire and climate refugia.

Proposed Resolution of Objection Point #5: The Taylor/Klondike Fire burned at characteristic levels of fire severity, leaving a complex mosaic of open, closed, and fire killed stands. The process of fire represents restoration and currently no treatments are needed in the Upper Briggs Watershed. Live green trees that survived the fire should be maintained and all commercial logging units should be canceled within the Taylor/Klondike Fire Area.

Objection Point #6: The Upper Briggs Planning Area does not contain significant fire/fuel risks to justify public expenditure on “fuel reduction” treatments.

The Upper Briggs Planning Area received landscape scale, comprehensive fuel reduction during the 2018 fires. All fuels from the ground up were reduced throughout the Taylor/Klondike Fire Area. Much of the planning area is currently relatively fire proof, as described in Objection Point #1 & #2, and could be used as a large, naturally impermeable fire brake. The current condition is associated with recent fire effects and footprints, and will last from 3-5 years or more, following the Taylor/Klondike Fire. The potential for ignition and spread will be dramatically reduced in the short-term and severity will be reduced in the short and long term due to the natural 2018 fire effects. Neither the Final EA or Draft Decision Notice adequately considered the benefits of this post-fire condition.

Contrary to claims in the Final EA and Decision Notice, the current condition is “fuel limited” and does not constitute a significant fuel/fire risk. In fact, the effects of the Taylor/Klondike Fire will have a more lasting effect on fire behavior than the manual thinning proposed in the Upper Briggs Project. The current condition in the Upper Briggs Watershed is currently the most fire resilient and fire impermeable landscape possible in the dry forests of the Klamath-Siskiyou Mountains. Only at a later date, as vegetation and fuel accumulates, will the Taylor/Klondike Fire area again contain sufficient fuel to carry wildland fire and support active fire behavior.

If the agency was concerned with reducing fuel and fire risks and/or protecting communities from the risk of wildfire, they would be focusing on areas that had not recently burned, as well as locations near those communities at risk. The Upper Briggs Project fails to meet any strategic fuel management objectives and/or contributes to the protection of nearby communities.

According to the Final EA, “treatments proposed under Alternative 2 have been reduce where fire suppression effects have eliminated the need to treat in order to achieve desired objectives,” (USDA 2019a P. 334) this should apply to the entire Upper Briggs Planning Area, where fuels have been dramatically reduced, stands have been naturally thinned and the process of fire has been restored to nearly the entire Briggs Creek Watershed.

Proposed Resolution of Objection Point #6: The agency should cancel the Upper Briggs Project and put limited planning, implementation and fuel reduction funds into projects that will reduce fuel/fire risks near communities at risk. Current conditions and foreseeable future conditions do not warrant the allocation of limited fuel reduction funds on the Upper Briggs Project. The Upper Briggs project fails to protect communities at risk. The project treats the most resilient portions of the landscape far from homes or communities, rather than those that are currently the most susceptible to uncharacteristic fire, the most biologically altered and/or the most strategically located. The Upper Briggs project will reduce fire resilience and is a waste of limited public funds.

Objection Point #7: The chosen alternative (Alt. 2) will have unacceptable impacts on the Northern spotted owl. Analysis of impacts in the Final EA was inadequate and the agency failed to substantiate it claims to with the best available science .

The chosen alternative (Alt. 2) will have significant adverse effects to Northern Spotted Owl (NSO) habitat in the Upper Briggs Planning Area and the Klamath West Critical Habitat Unit (CHU). Likewise, treatments proposed in the Upper Briggs project would impact seven specific NSO home ranges including one site known to be occupied by a pair in the last five years. This site on Secret Creek burned at mostly low to moderate severity and I personally saw and reported seeing a Northern spotted owl in unit 23 of the Upper Briggs Project after the Taylor/Klondike Fire.

Following the Taylor/Klondike Fire Nesting, Roosting and Foraging (NRF) habitat makes up 18%-37% of these seven home ranges. Not one meets the minimum 40% threshold to support reproductive success. For example, the occupied Secret Creek site would be reduced to 27% after implementation of the Upper Briggs project (USDA. 2019a P. 325). In nest patches NRF ranges from between 20% and 59%, while nest cores contain 19%-46% NRF habitat. (USDA 2019a. P. 323). Yet, the agency has proposed to further reduce NRF habitat through commercial logging in the Upper Briggs project by 6% or 550 acres. (USDA 2019a. P. 183).

The entire watershed has been designated as a CHU with current and historical occupancy. According to the Final EA, *“many forested stands lack large trees > 30 inches DBH, decadence components, and desired multi-layered canopies”* that define high quality NRF habitat. Yet, the project proposes to remove *“large diameter merchantable material”* (USDA. 2019a. P. 92) from commercial timber sale units. The analysis provides no analysis of how many large diameter trees would be removed, including disclosure of large trees over 30” DBH proposed for removal. Although these large 30” + diameter trees and recruitment trees nearly that size are considered constituent elements for the NSO and were identified as lacking within the watershed, they are targeted for removal in the Upper Briggs Project. In some stands, meeting canopy cover and basal area targets will require the removal of large diameter trees over 30” DBH. The Final EA provides no information disclosing the number or location of trees 30” and over proposed for removal. Without this information neither the public or the agency can accurately identify the impacts of the Upper Briggs project on the NSO.

Other constituent elements would also be impacted through implementation of the Upper Briggs project. The constituent elements impacted will include snags, downed wood, decadence components, large trees, dense canopy and multi-layered canopy conditions. The Final EA provides inadequate analysis about the loss of these constituent elements. The Final EA also claims that although NRF habitat will be downgraded by 550 acres and impacted in the short-term, long term benefits associated with commercial thinning will occur. This position is inconsistent with both the best available science and long term project outcomes in our area. Analysis in the Final EA and the Biological Opinion for the project fail to support these claims and instead demonstrate significant impact will occur including the proposed “take” of four NSO and their associated offspring in the Upper Briggs Project. Following the effects of the 2018 fires and the expanding influence of barred owls in the area, take should not be allowed. In particular, the Secret Creek population, which is known to be occupied would be subjected to injury or death due to project activities (DOI 2017 P. 62).

Recent research from the Forest Service, OSU and the University of Colorado demonstrates that active management in closed canopy, NRF habitats may increase fire risk and degrade NSO habitat. (Lesmeister 2019). This same research found that no active management in closed canopy NRF habitats may be a better way to reduce fire severity and buffer against climate change, due to the important microclimate conditions and fire resilience found in closed canopy, NRF habitats (Lesmeister 2019).

Long term recruitment of decadence features will also be negatively affected by proposed commercial logging treatments. The removal of medium to large diameter trees will reduce the supply of snags and downed wood available in each unit, limiting important decadence features that are important components of NSO habitat. The issue of snag and downed wood recruitment was not analyzed in the Final EA.

Proposed Resolution of Objection Point #7: Land managers should either produce a new EA with complete and adequate analysis of impacts to NSO habitat associated with implementation of the Upper Briggs Project or cancel all units proposed to downgrade NRF habitat.

Additional or supplemental analysis must include disclosure of the number of trees proposed for removal over 20" DBH and over 30" DBH. This information should be provided for the entire timber sale and also mapped to spatially demonstrate the location and pattern of large tree removal in relation to NSO habitats. Analysis must also consider the findings of Lesmeister 2019 ,Odion. 2014). and others that warn of additional, compounding losses in NSO habitats due to an active management strategy which includes commercial thinning.

Due to inadequacies in NRF habitat with the seven home ranges found within the project area, all NRF habitat should be maintained and units containing NRF habitat that burned at low to moderate severity should be canceled to ensure that NSO habitat conditions are maintained and will benefit from recent wildfire effects. Stands lacking decadence, as identified in the Final EA should benefit from the effects of wildfire and should be deferred from treatment at this time.

Objection Point #8: The Upper Briggs project proposes logging in stands over 100 years old in violation of the SNF Forest Plan.

Logging stands over 100 years old is not recommended in the SNF Plan. Although the EA claims no trees over 120 years old will be logged, very little monitoring protocol is in place to ensure compliance. Likewise, the current prescriptions include canopy cover and basal area targets that will require the removal of large, old trees over 120 years of age.

Proposed Resolution of Objection Point #8: Cancel all proposed commercial logging units in stands over 100 years old.

Objection Point #9: Rare plant species in need of fire to sustain populations have been restored in the Taylor/Klondike Fire and no longer need "restoration" treatments as proposed in the Upper Briggs Project. The Taylor/Klondike Fire reintroduced wildfire

process and created favorable growing conditions, making restoration treatments unnecessary.

Treatments were proposed in the Upper Briggs Project to enhance rare plant populations of both *Sophria leachiana* and *Iliamna latibracteata*. Both species are dependent on disturbance to sustain viable habitat conditions and allow populations to persist, regenerate and expand. The disturbance necessary to provide for species persistence was facilitated by the 2018 Taylor/Klondike Fire. The fires created the specific conditions described in the Final EA without the need for further management.

Iliamna latibracteata (California globe mallow): The California globe mallow is found predominantly in southwestern Oregon and northwestern California from Humboldt County to Linn County in Western Oregon. A significant concentration of the Oregon population is located in the Briggs Creek Watershed.

According to the Final EA, “*California globe mallow is an early seral disturbance dependent species that needs somewhat open canopies to survive. Low to high burn severity fires are necessary for the species seeds to propagate. The optimum percent canopy cover necessary for the health of populations is site specific. Factors regulating populations vigor include slope, aspect, soil moisture, temperature, and others. The species is also dependent upon fire to germinate seeds within the populations seedbanks.*” (USDA. 2019a. P. 217). The 2018 Taylor/Klondike Fire created these conditions by burning at mixed severity, creating patches of mortality, thinning back competing woody vegetation, triggering seed germination, and encouraging healthy populations.

The Final EA described conditions similar to the effects of the 2018 Taylor/Klondike Fire as desired conditions and acknowledge that natural fire effects may be beneficial to this species by stating “*The no action alternative may be beneficial to the species providing wildland fire intensity is not too extreme as to eliminate seed banks, individuals and render habitat as unsuitable.*” (USDA. 2019a. P. 210). The 2018 Taylor/Klondike Fire was just such a fire, not too extreme to damage existing populations and with enough diversity in fire effects to create small openings, burn back brush, duff and ground fuels, reduce vegetative competition, trigger seed germination and prepare bare mineral seed beds without impacting existing plants or burning up seed load.

Restoration of California globe mallow in the Briggs Creek watershed has been achieved and no treatment is necessary to “restore” disturbance process and favorable growing conditions. The fires have done this naturally, negating any need to implement manual treatments. In fact, at this point manual treatments are highly likely to do more harm than good. Logging and the soil disturbance associated with yarding activities will now only damage plants in fire reinvigorated populations and provide an additional disturbance and opportunity for the spread of noxious weeds. Risks to the existing populations will only increase with implementation. The agency has no justification to continue unproven and ecologically risky treatments in protected rare plant populations, when natural process has achieved the desired results. The project has the potential for unforeseen impacts, while providing little additional benefit to the species in question.

The agency has no justification to continue unnecessary and ecologically unproven treatments in rare plant populations. The objective have been achieved naturally and ecological process should be allowed to rejuvenate these populations.

Finally, it is highly unlikely that previous plant surveys can adequately reflect the population of California globe mallow in the Briggs Creek Watershed. The known populations have likely expanded and previously unknown or new populations likely exist within the fire area. The species is “*disturbance loving*” and needs characteristic mixed severity fire effects for persistence. The Taylor/Klondike Fire provided the necessary habitat alterations to meet this species needs.



Fig. 2 Western sophora populations are expanding due to the effects of the Taylor/Klondike Fire. They are not currently in need of restoration and will only be harmed by proposed project activities.

Sophoria Leachiana (Western sophora):

The Western sophora is an endemic species found in a 20 x 6 mile area along the Illinois and Rogue River. Much of the world’s population is located on Briggs Creek and in the adjacent Taylor Creek Watershed. The species is dependent on disturbance such as mixed severity wildfire to persist and thrive. The need to restore habitat conditions and reintroduce disturbance within populations of Western sophora was satisfied by the 2018 Taylor/Klondike Fire which burned most of the world Western sophora populations. Essentially, the entire population of this disturbance dependent species received characteristic fire effects. It is expected that populations will grow and expand due to overstory mortality, the reduction of

competing woody vegetation, the burning of duff and leaf litter, and the creation of bare mineral soil for seed reproduction. Populations near the mouth of Briggs Creek along the Illinois River have expanded significantly since the 2002 Biscuit Fire, demonstrating a resilience to low, moderate and even high severity fire. The population near the mouth of Briggs Creek has expanded, produces far more flowering plants, far more flowers and much more seed each year since the 2002 Biscuit Fire. The effects of the 2018 Taylor/Klondike Fire in the Upper Briggs Watershed have been very similar with positive effects, expanding and reinvigorated populations throughout the fire footprint.

Restoration has been achieve in Western sophora populations and additional disturbance from logging and yarding activites has the potential to damage these important populations during this important period of vegetative recovery. The logging activities could damage plants and populations, while creating conditions conducive to noxious weed spread. No positive effect can be attributed to creating widespread logging and yarding disturbance during what will be the plants most natural period of abundance.

According to the Final EA, *“Individuals may receive direct impacts from crushing, burning, and killing individuals by skyline logging, felling trees, and prescribed fire. However, the projects short term direct impacts will be outweighed by the projects long-term beneficial effects.”*(USDA. 2019 a. P. 218). The long term beneficial effects have been achieved in the Taylor/Klondike Fire and the post-fire condition is restoration for this species, the logging activities serve only to increase the risk of detrimental effects and provides no additional benefit beyond the effects of the 2018 fires.



Fig. 3 Burn piles stacked on Sophora populations on Taylor Creek Road during hazard tree falling operations.



Fig.4 Log decks stacked on existing populations of Sophora during hazard tree operations on Taylor Creek Road.

For example, current post-fire hazard tree logging operations on Taylor Creek have heavily impacted otherwise strong, reinvigorated, post-fire populations of Western sophora (Fig. 3 & 4). Crews have made log decks and stacked large machine piles directly on populations of sophora. These populations will be heavily impacted by mechanical damage, pile burning and noxious weed spread. These impacts were not considered in the Final EA or Draft Decision Notice as part of the existing conditions or considered as impacts likely to occur during implementation of the Upper Briggs Project.

The Final EA discloses that, *“An extensive occurrence of western sophora within the footprint of the proposed project was located during project surveys. Populations are found in units 2, 3, 3S, 5, 9, 14, 15, 16, 35, 48, 240, 262, 503, 504, 505, 506, 510, and 652.”* (USDA. 2019a. P. 218). These populations will only be negatively impacted by project activities. The Final EA also discloses that, *“Sophora is also dependent on disturbance to colonize areas and the no action alternative may be beneficial to the species if there is a fire providing the fire intensity is not too extreme for the species.”* The agency continues by stating, *“Without fire this occurrence is at risk to be unable to germinate seeds to produce new individuals and may in time be extirpated. Fire will create habitat disturbance that is necessary to promote western sophora populations.”* (USDA. 2019a. P. 210). The Taylor/Klondike Fire was just the sort of disturbance described as beneficial and necessary in the Final EA. There is now no need to mimic that disturbance with manual treatments, it has been achieved naturally through wildfire effects.

According to the Final EA the intent of treatments in sophora habitat is *“to create disturbance for western sophora including adding fire to the landscape and canopy reduction.”* (USDA. 2019a. P. 301). These objectives were achieved to a high degree in the Taylor/Klondike Fire and the natural fire recovery following the necessary disturbance is highly important to these populations and should not be disturbed. The Final EA acknowledges impacts associated with commercial logging and skyline yarding, the impacts are unnecessary and unjustified in rare plant habitat that makes up a significant portion of this plant worldwide distribution and has already benefited from fire/natural disturbance based restoration. “Adding fire” is no longer needed at this time and all sophora units should be deferred. Manual treatments have only the potential to impact these important, endemic and significantly restricted populations of Western sophora.

It is also likely that surveyed and existing populations have expanded and new populations may have become established throughout the planning area due to the effects of the Taylor/Klondike Fire. The current survey and Final EA analysis are likely inaccurate because of restoration to sophora populations in the 2018 fire footprints.

Proposed Resolution of Objection Point #9: Cancel all proposed units within Sophoria leachiana and Illiamna lactibracteata habitat. Restoration has been achieved and natural process is the most proven form of enhancement for these rare plant species. Given the certainty of beneficial effects from the 2018 wildfires and the certainty of impacts associated with logging and yarding activities, all units within these rare plant populations should be canceled.

Objection Point #10: Cypripedium fasciculatum (Clustered lady slipper) populations in units 3, 21, 23A, 63, 508 and 509 should be canceled due to the compounding effects of wildfire and logging to population viability. The uncertainty surrounding this species response to the Taylor/Klondike Fire and the certainty of impacts associated with logging and yarding activities should require land managers to defer these units from treatment in the Upper Briggs Project.

Clustered lady slipper is found in numerous units within the Upper Briggs Project including units 3, 21, 23A, 63, 508 and 509. In particular, unit 21 had a very robust population before the Taylor/Klondike Fire.

Sensitive to both fire and logging, these species require late successional habitats and are generally found in areas with intact duff and leaf litter. They also require specific mycorrhizal associates to establish seedlings. It is likely that even low severity fire may have impacts to clustered lady slipper populations. The Final EA failed to consider the cumulative impact of fire and logging within such a short time span.

According to the Botany Report accompanying the Draft EA, *“Management activities such as canopy removal and prescribed fire may alter the species habitat causing detrimental impacts to populations. If the orchid’s new spring growth is damaged from frost, fire, browsing, or other reasons than the individual may not put on new growth till the following year and can possibly cause stress and extirpation of the individual.”* (USDA. 2018c. P. 29).

If populations are already stressed from fire, which could lead to “*stress and extirpation of the individual*” it seems highly likely that fire and logging will lead to unacceptable levels of extirpation. This affect was not analyzed in the Final EA or considered in the Decision Record. This failure to consider cumulative impacts creates faulty analysis, rendering the current decision invalid.

Tree and canopy removal in *Cypripedium fasciculatum* (Clustered Lady Slipper) populations has been widely documented to have negative consequences. The species although widespread is uncommon throughout its range and depends on complex, old forest habitats at low-elevations, these habitats are increasingly rare, due to habitat destruction.

Logging can often damage, disturb, or kill individual plants. It can also degrade habitat by removing canopy cover, downed wood recruitment and altering microclimate conditions. Clustered lady slipper is dependent on deep duff layers and complex conditions on the forest floor. Alteration of ambient air temperatures, humidity levels, duff layers, soil conditions and soil moisture retention levels have impacts on population viability.

Clustered lady slipper is also pollinated by wasps that are strongly associated with fungus gnats. The fungus gnats attract the pollinator who are more actively pursuing insects than lady slipper pollen. Fungus gnats are in turn often associated with high levels of humidity, moss habitats, deep duff layers and significant canopy cover. The cool, moist conditions in which fungus gnats thrive are important for the viability of clustered lady slipper populations. These conditions could be destroyed by proposed logging operations.

In particular, unit 21 contains a large source population of clustered lady slipper orchids. The population density in this area is unique and provides critical habitat for this sensitive plant species. The retention of this robust population and the habitat conditions supporting this population are better served by canceling the units than logging them.

Much of the stand contains mid to late successional forest dominated by Douglas fir, live oak and tanoak. The prescription proposed in Alternative 2 is pine-oak restoration, yet this is not a pine-oak plant association and clustered lady slipper is not associated with pine-oak habitats. Converting this habitat to pine-oak conditions will surely have detrimental impacts on clustered lady slipper populations.

Units 22 and 509 also contain significant populations of clustered lady slipper and lie adjacent to another large source population. This large concentration should be protected by reducing impacts in the adjacent area and encouraging conditions that allow population growth and expansion. This would mean cancelling units 21, 22 and 509.

Prescriptions call for canopy gaps up to $\frac{3}{4}$ acre in size and 40% canopy retention. These prescription perimeters will significantly impact the biological and microclimate conditions necessary for clustered lady slipper to thrive and survive. The impact of logging in these important sensitive species populations is profoundly damaging and will threaten population viability.

The EA failed to analyze the impact of altered biological and microclimate conditions on significant source populations of clustered lady slipper. Large source populations such as those found in unit 21 and adjacent to units 22 and 509, should be maintained and buffered from logging activities.

If adequately buffered the entire lower end of unit 21 will consist of rare plant buffers, creating issues of concern for species viability and economic viability if logged.

Proposed Resolution of Objection Point #10: Either cancel all units with *Cypripedium fasciculatum* populations or create supplemental analysis that assumes extirpation of populations subjected to fire and logging impacts. The cumulative impact of wildfire, followed by logging was not adequately analyzed in the Final EA and was not considered in the Draft Decision Notice.

Objection Point #11: Proposed logging will not accelerate late successional forest structure and will not conserve the northern Spotted Owl as identified in the Purpose & Need. Instead, logging treatments will create significant impacts to late successional habitat and NSO habitat.

The planning area contains Critical Habitat for the NSO and seven home ranges designated to protect and maintain nesting habitat. The project includes numerous units with late successional and NRF habitat. Many of these units propose NSO habitat downgrades and the removal of significant constituent habitat elements. The drastic canopy reduction and elimination of multi-layered canopy structure, along with the removal of large trees and snags, the disruption of snag and downed wood recruitment, and the loss of decadence in general will impact NSO habitat and population dynamics.

The Forest Service frequently claims that commercial logging operations in the Siskiyou Mountains will accelerate the development of late successional forest structure and benefit the NSO in the long-term. The agency also commonly claims that short-term impacts to the NSO from logging operations will be off-set by long term gains. Neither of these claims have been supported in the Final EA or Draft Decision Notice with citations or monitoring data from previous SNF projects.. The agency is instead managing important forest habitats based on unsubstantiated assumptions regarding stand response and stand development following commercial thinning operations.

In fact, despite these claims of benevolence, the Biological Opinion contradicts Final EA analysis stating that *“there is some uncertainty regarding the response of the spotted owls to these types of treatments, especially at the scale proposed, along with the combined additive effect of the presence of barred owls in this landscape. Additionally, there are varying effects to prey depending on pre-existing treatment stand conditions, adjacent stand conditions and prey species ecology”* (DOI 2017 p.40). Recent demographic information published in NW California supports increased protection for NSO habitat due to the presence and competition posed by the barred owl (Duggar. 2016).

Significant scientific uncertainty also surrounds live, green tree logging directly after a wildfire. The compounding effects of wildfire and logging were not adequately considered in the Final EA or Draft Decision Record.

The planning area currently contains only 18% late successional forest due largely to past timber harvest, the minimal effect of wildfire and the presence of serpentine soils that do not develop classic late successional habitat conditions. The EA claims that the desired future condition would include 45% late successional habitat. This increase in late successional forest will be most effectively facilitated by allowing decadence creation and natural process to transition currently mid-seral stands to a late successional condition. This is especially true after the Taylor/Klondike Fire which created snags and downed wood, while increasing heterogeneity and structural complexity.

The project would downgrade 550 acres of NRF habitat, 509 acres of which are in a Critical Habitat Unit for the NSO. The project will also include at least 4 NSO “take” permits, acknowledging the potential loss of four NSO’s and the associated young. The project also includes seven NSO home ranges within 1.3 miles of proposed treatments. These impacts will be particularly pronounced at NSO Site 55 and Secret Creek, where project implementation will impair habitat values and degrade habitat below minimum thresholds.

According to the Biological Opinion *“We estimate as proposed, the Project may affect northern spotted owls associated with six activity centers. Impacts from the action together with additive stressors in the action area may occur to the degree that they could significantly impair the feeding, breeding or sheltering of spotted owls associated with two activity centers (Site 55 and Secret Creek).”* (DOI 2017b p. 47-48).

The Biological Opinion admits that thinning intensity has an influence on NSO response stating *“Heavier thinning has a higher likelihood of negatively affecting spotted owls than does lighter thinning”* (DOI 2017b P. 40). The Biological Opinion also states that thinning that *“reduces canopy cover (typically below 60 percent) and significantly modifies other within stand features of spotted owl habitat, results in potential negative effects to spotted owls”* (DOI 2017 p.37). Thinning prescriptions in the Upper Briggs project will include treatments that drop stands well below 60% canopy cover and modifies important habitat features. These treatments will significantly impact NSO habitat for the long and short term by limiting decadence creation and removing structural diversity.

Other treatment effects are characterized in the Biological Opinion stating *“ some treatments may result in changes to stands potentially used by spotted owls or their prey that are not discountable. Some larger trees not meeting the criteria for legacy may be removed. Stand simplification can also result. Some treatments will reduce attributes of canopy cover below those of which are associated with spotted owl use (to less than 60 percent-average)...The reduction of multiple canopy layers that provide concealment cover, foraging perches and suitable microclimate conditions for spotted owls and their prey is likely to occur. Spotted owl foraging opportunities may potentially be reduced due to the habitat modification, requiring spotted owls to increase the distance travelled to secure prey. These impacts may be additive to other environmental stressors such as climate and barred owls. As a result, spotted owl*

reproduction could be affected or physical health impacted, leading to site abandonment or reduced survival” (DOI 2017b p.35). This level of impact is unacceptable given the current rate of NSO decline and barred owl population growth/expansion.

It is also important to note that since the Final EA was published, new research conducted by the Forest Service, OSU and University of Colorado demonstrates that NRF and closed canopy forest habitat has a tendency to burn at lower levels of fire severity in our region. This same research also shows that thinning and logging treatments often degrade NSO habitat and can dry and desiccate forest stands, increase fuel loading, and increase fire/fuel risks. The authors conclusion is that active management and commercial thinning is not required to maintain NSO habitat conditions and may in fact, reduce fire resilience, impact habitat values, and reduce resilience to the effects of climate change. (Lesmeister 2019).

According to Lesmeister 2019, “ Our results indicate that older forest in late-successional reserves (i.e., northern spotted owl nesting/roosting habitat) with no active management can serve as a buffer to the effects of climate change and associated increase in wildfire occurrence. These multi-storied old forests in these environments enhance biodiversity and have the highest probability to persist through fire even in weather conditions associated with high fire activity... In addition to the potential to mitigate negative effects of climate warming at local scales by creating refugia and enhancing biodiversity (Frey et al. 2016), we suggest that northern spotted owl nesting/roosting habitat also has the potential to function as fire refugia (i.e., areas with higher probability of escaping high-severity fire compared to other areas on landscape) in areas with mixed-severity fire regimes under most weather conditions. Thus, in these landscapes, management strategies to conserve old-growth characteristics may also reduce risk of high-severity wildfire (Bradley et al. 2016) and serve as buffer to negative effects of climate change (Betts et al. 2018).”

The Final EA and Decision Record fail to consider this important science and recent demographic information from NW California demonstrating the need to protect more habitat and broaden the pool of potential habitat, in part by deferring logging treatments (Duggar. 2016). Research in southern Oregon also recommends protecting closed canopy, NRF habitat (Lesmeister. 2019). In general, the analysis of both short and long term impacts to NSO habitat associated with project implementation was insufficiently analyzed in the Final EA and Decision Record.

Finally, the Klamath Forest Alliance recently conducted a large review of federal land management project throughout the Klamath-Siskiyou Mountains including the Medford District BLM, RR-SNF, Klamath National Forest Six Rivers, Mendocino and Shasta-Trinity National Forests. We reviewed all projects between 2013 and 2018. What we found was astonishing. Federal lands management projects accounted for:

- 211 take permits
- 5,684 acres NRF habitat removed
- 12,408 acres NRF downgrades
- 10,277 acres NRF degraded
- 7,615 acres of post-fire foraging habitat removed

- 10,263 acre of dispersal removed
- 5,270 acres of dispersal degraded
- A total of 51,517 acres of NSO habitat negatively affected by project activities.

This information was not included in the Final EA and demonstrates a significant decline in habitat associated with land management activities in the Klamath-Siskiyou Mountains. This decline should not be compounded by additional logging impacts in Critical Habitat.

Proposed Resolution of Objection Point #11: Cancel all timber sale units in NRF habitat.

Objection Point #12: Forest Service claim that Develop and Enhancing Late Successional Habitat (DELSH) treatment areas were identified based on simplified structural conditions is false.



Fig. 5 Stand conditions following the Taylor/Klondike Fire in unit 23 contain complex, fire-resilient, late successional habitat conditions.

According to the EA, units proposed for DELSH treatment “*were chosen for treatment because they lack many of these [late successional] characteristics and would benefit from thinning to accelerate development of complex late successional forest structure and decadence*” (USDA. 2019a. P. 182). The Biological Opinion restates this misleading information saying “*Proposed DELSH treatments avoid high quality NRF habitats and instead focus on forested stands with simplified canopies, minimal structural diversity or stands that possess a legacy overstory with a dense intermediate*

layer” (DOI 2017b p.38).

On-the-ground field monitoring contradicts these statements and demonstrates that many of the units proposed for DELSH and also for Pine-Oak Restoration contain significant late successional habitats, high quality NRF habitat and constituent elements for the NSO. These units include 2, 9, 21, 22, 23, 23B, 23C 55 & 70. The assertion that units proposed for treatment lack structural complexity and do not include late successional habitats is inaccurate, skewing agency analysis and ESA consultation.

Many of these units also recently benefitted from mixed severity fire, enhancing structural and spatial heterogeneity. Especially after the Taylor/Klondike Fire, many of these units contain significant structural and spatial complexity. Final EA analysis of stand conditions is inaccurate and the assumption that the stands proposed for DELSH treatments contain only simplified forest conditions is simply untrue.

Proposed Resolution of Objection Point #12: Either cancel all DELSH units because fire effects in the Taylor/Klondike Fire achieved the proposed treatment and restoration objectives for DELSH units or create detailed supplemental NEPA analysis documenting the post-fire condition in each unit proposed for DELSH treatments. Additional analysis should include a review of DELSH units to identify stands containing sufficient structural complexity.

Objection Point #13: Final EA analysis failed to adequately consider the largest single threat to NSO survival in the watershed; the barred owl. The EA inaccurately characterized potential loss of late successional habitat from wildfire as the largest threat. This characterization is inaccurate.

Although barred owls were located in the Upper Briggs Watershed in 2014-2015, the issue was not adequately considered in the Final EA analysis or the Draft Decision Notice. Currently, barred owls are the single largest threat to the survival of the Northern spotted owl and extinction rates dramatically increase when barred owls start competing for habitat. Recent demographic research in NW California demonstrates the potential threat of barred owl (Duggar. 2016), as does recent information from the Coast Range of Oregon where barred owl has taken over most of the NSOs habitat, leading to significant declines and predicted extinction (Duggar. 2016).

The Final EA repeatedly and inaccurately claims that wildfire is the single largest threat to NSO viability in the area. This statement is simply not true and does not reflect the best available science.

The biggest threat to the Northern spotted owl continues to be competition for the remaining available habitat with the Barred Owl. According to the 2011 Revised Recovery Plan *“experts identified past habitat loss, current habitat loss and competition from barred owls and the most pressing threats to the spotted owl.”* Despite the real and significant threat posed by barred owl competition, the issue was hardly analyzed in the Final EA, additional habitat is proposed for removal and “take” permits have been authorized, further favoring the competitive barred owls.

As available habitat is reduced by logging and wildfire, the competitive pressure between species continues to mount. Barred owl populations are actively expanding, while NSO are declining at alarming rates throughout the Northwest, especially in Western Washington and Oregon, where both habitat loss from logging and competition with the Barred owl are most pronounced. In the Klamath-Siskiyou Mountains, the NSO has also declined, but at slightly slower rates than in adjacent populations to the north. Unfortunately, the rate of decline is picking up in the Klamath-Siskiyou Mountains and barred owls have continued their expansion into former NSO habitats. At this time, no one knows why the Klamath-Siskiyou Mountains have maintain slightly slower rates of decline or why they are currently increasing. The situation requires a cautious and measured approach.

The Forest Service claims that wildfire is to blame in the Klamath-Siskiyou Mountains, yet recent fires in the area do not support this assumption. The 2009 Horse Mountain Fire, 2011 Oak Flat Fire, 2015 Onion Mountain Fire and the 2018 Taylor/Klondike Fire burned at largely low to moderate severity and did not create significant losses to NSO habitat in the Briggs Creek Watershed. The 2013 Big Windy Fire in the adjacent Rogue River watershed burned at 90% low

severity and enhanced many acres of NSO habitat. The Big Windy Fire was part of a recent research project finding considerable dampening effects to fire severity associated with unmanaged, closed canopy, NRF habitat. These portions of the landscape burned at 2-3 times lower severity than adjacent vegetation types. (Lesmeister 2019).

The agencies often cite information stating that fire has been converting mature forest structure at a higher rate than harvest. This may be true in some locations, but it is also true that fire burned forest is not a total loss of NSO habitat. Fire killed NRF is transformed by high severity fire to post-fire foraging. Recent science is showing that both the spotted owl and Pacific fisher utilize high severity burn patches for foraging (as long as they are not salvage logged) and have the ability to nest/den in nearby areas that burned at a lower fire severity. Thus, burned habitat, even high severity habitat does not equate to unoccupied or “lost” habitat.

The Forest Service and society at large, have the most direct impact on the NSO through habitat loss associated with logging activities. We simply cannot permanently control the movement of the Barred owl (by lethal means or otherwise) and currently do not understand the cause for its expansion. We also cannot control the weather that is largely responsible for high severity fire in our region. On the other hand, we can manage our forestry activities (particularly on public land) to limit their impacts, protect habitat, and perhaps, create more healthy habitat conditions in the future.

The EA for the BLM’s nearby Pickett West Project states, *“It has been established that activities that reduce the quantity of older forest adjacent to NSO activity centers reduce the probability of NSO occupancy, survival and reproduction.”* (DOI 2017a P.153). The only activity currently reducing the *“quantity of older forest adjacent to NSO activity centers,”* that we can positively affect are the logging practices we allow on federal land.

Particularly for the NSO, who is a habitat specialist, the quantity of **high quality** habitat is very important. Numerous habitat elements that support NRF habitat will be impacted by logging the Upper Briggs Restoration Project including moderate to high canopy (70-90 percent); a multistoried, multi-species canopy with large overstory trees (greater than 30 inches in diameter); a relatively high incidence of larger trees with various deformities, including mistletoe, large snags, large accumulations of fallen trees and wood on the ground; and flying space for hunting.

The Pickett West Project EA on nearby BLM lands states on Page 158 states that “reducing canopy cover below 60 percent would likely increase predation risk to NSOs in these stands, and introduce ecological edge effects to the affected stands as well as to adjacent stands of NRF habitat, extending the area of impact beyond the treated areas.” (DOI 2017a p. 158). NSO are preyed upon by Barred Owls, who are much larger and tend to either kill or out compete NSO for prime habitat. If we are reducing the quality of habitat in NRF or even dispersal habitat and increasing predation risks, it seems we would be favoring the Barred Owl (who preys on NSO and competes for habitat) with our logging prescriptions.

It is also well documented that *“the two species compete for resources and maintaining older, high quality forest habitat may help spotted owls persist, at least in the short-term.Removal or*

downgrade of habitat reduces the overall amount of available habitat and can therefore increase competition between these two species as habitat becomes increasingly limited.” (DOI 2017a P. 162). In this statement, the BLM admits that in the short-term, treatments proposed will serve to reduce the amount and the quality of habitat available for both the NSO and Barred Owl, increasing competitive stress. The same will be true in the Upper Briggs Restoration Project.

The agencies also claim that the short-term impacts will be followed by long-term gains to forest complexity and NSO habitat. This claim is unsubstantiated and dubious at best. Regardless of this claim and given the state of the current decline, the NSO may not have the time to realize the supposed benefits provided by commercial thinning operations. It is also highly questionable if the “long-term” gains will be achieved and likely that the short-term impacts many in some places be the final blow to the declining species. In this case, a death blow or “take permit” will be assured for at least 4 NSO in the Upper Briggs Restoration Project.

Current EA analysis does not adequately address the cumulative impact to the NSO or the impact to NSO competitiveness due to Barred Owl competition. The EA also does not adequately analyze the impact of habitat downgrades competitive stress between the two species.

Proposed Resolution of Objection Point #13: Create supplemental NEPA analysis considering the impact of barred owls within the planning area. Additional information should be disclosed and analyzed regarding the impact of removing 550 acres of NRF habitat and increasing competitive stress between NSO and barred owls. All NSO habitat removal should be canceled and all habitat maintained in the Upper Briggs Planning Area.

Objection Point #14: The analysis of impacts to Red Tree Vole from project activities was not adequately addressed in the Final EA or considered in the Draft Decision Notice. The Red Tree Vole Conservation Plan published in association with the Upper Briggs Project will impact viability of RTV nest sites and habitat by allowing the aggressive removal of large trees and even nest trees in “non-priority” habitat. .

According to the Final EA, *“Recent research indicates thinning reduces flying squirrel and red tree vole abundance, however small forest-floor mammal species such as mice, voles and shrews have shown early and positive responses to thinning and burning which are also prey species of spotted owls in the mixed conifer and mixed evergreen forests of the Klamath Province (Wilson and Forsman 2013, Ward et al. 1998). “ (USDA. 2019a. P. 183).*

Although commercial thinning creates impacts to some prey species and may benefit others, the overall impact to NSO habitat and prey base, will be negative. This is partially because species such as flying squirrel and red tree voles are dependent on higher quality habitat than other mice, shrews and voles. Likewise, the habitat conditions required for northern flying squirrels and red tree voles takes many, many years to recreate, while mice, shrews and voles tend to populate disturbed areas and relatively ephemeral early seral habitats. Without continued disturbance stands subjected to commercial logging may not sustain viable populations of mouse, shrews and voles into the future.

Following logging treatments NSO habitats will be either non-habitat, marginal dispersal habitat or NRF habitat incapable of supporting abundant populations of red tree voles and northern flying squirrels. In the long term, the effect of the Upper Briggs Project will reduce prey species for the NSO in treated stands, and the level of that effect is directly related to the intensity of overstory removal proposed. Red tree vole and flying squirrel populations will rebound very slowly, if at all and mouse, shrews and voles will decline as early seral habitat closes in. The long term result will be a downward trend in NSO prey species.

The Forest Service has proposed a Red Tree Vole Habitat Conservation Plan, which was published in connection with the Upper Briggs Restoration Project. This “conservation plan” would allow the agency to identify high priority sites designated through this NEPA process for Red Tree Vole (RTV) conservation. These sites would be temporarily removed from the area being considered for commercial logging or other activities that would trigger survey protocol. Areas designated as “Non-High Priority Areas” would be available for harvest with no protection for known RTV nesting sites. The usual 10 acre no-cut buffer would no longer be required due to Non-High Priority designation and old habitat trees and habitat element could be removed without regard for nest RTV. Our organization opposes the proposal to remove pre-disturbance RTV surveys and site protection buffers in Non-High Priority sites.

The Final EA discloses that:

The RTV Conservation Plan designates 1,362 acres for RTV conservation in the planning area and 17,371 acres as Non-High Priority sites available for harvest with no surveys and no site protection buffers. Thus, the vast majority of the landscape and many known RTV sites in the area are available for management that is incompatible with RTV conservation. The map on page 25 of the RTV Habitat Conservation Plan shows the small isolated patches in the Upper Briggs Creek watershed that will be managed for RTV conservation and late successional Douglas fir forest. Management based on the RTV Habitat Conservation Plan will create isolate, island populations and high levels of habitat fragmentation. The RTV Habitat Conservation Plan should be canceled and all known RTV nest sites adequately buffered.

The current RTV Habitat Conservation Plan should be abandoned for the following reasons.

A) The proposed RTV Conservation Plan provides no reasonable assurance for long term protection of RTV nest sites and habitat.

The proposed RTV Conservation Plan provides no reasonable assurance that currently identified RTV High Priority Sites will be protected in the longer term. Future NEPA analysis can modify and revise the configuration and location of RTV High Priority Sites meaning they could be shuffled around the landscape to accommodate timber harvest. This makes the entire RTV Conservation plans effectiveness and sustainability questionable and provides no reasonable assurance for long term population viability.

B) Many currently known RTV nest sites would lose significant protections.

The Final EA, identifies 169 documented nest trees which burned in areas with less than 50% basal area loss from the Taylor/Klondike Fire. A total of 27 nest trees were located in areas with over 50% basal area loss. The Forest Service assumes these tree are now unsuitable, yet

no surveys have been conducted and it is unknown if the actual nest tree was affected or if habitat around the nest tree still exists. Given the small range of a Red Tree Vole, small dense patches retained near a nest tree could maintain a viable population of Red Tree Vole.

Currently 70 of the documented nest trees in the Upper Briggs Watershed are within High Priority Sites and 28 in LUA-RTV sites. This leaves 71 documented nest trees in sites that are not protected in the RTV Conservation Plan and would be subjected to logging impacts. (USDA. 2019a. P. 351).

C) The RTV Conservation Plan provides no reasonable assurance that currently occupied sites will be buffered from damaging land management activities.

The RTV Habitat Conservation Plan allows land managers to log Non-High Priority Sites with documented occupancy in new NEPA analysis, while establishing new sites with unknown occupancy. Thus, the long-term viability of known RTV sites cannot be reasonably assured.

The agency also claims that the treatment units may impact RTV nest sites, but only in locations that support low habitat suitability. Ironically, many of these sites deemed as low habitat suitability, were suitable enough to maintain productive habitat conditions in the post-fire environment. Thus, the assumed impacts from fire to low habitat suitability sites were not validated by the actual effects of the Taylor/Klondike Fire. In effect, the projected fire related impacts to low habitat suitability did not occur and are far from certain.

On the other hand, the impacts associated with logging, if they were to be implemented are very certain. The overall effect on RTV nest sites and populations due to implementation of the Upper Briggs Project and the RTV Habitat Conservation Plan will be negative and does not represent true conservation of RTV habitat or populations. Impacts to existing sites that are known to be occupied will be certain if the RTV Habitat Conservation Plan is implemented, yet the purported benefits are much less certain.

D) The RTV Habitat Conservation Plan was not adequately field checked for accuracy.

The proposed RTV Habitat Conservation Plan was not adequately field checked for accuracy. For example, the proposed RTV Habitat Conservation Plan claims sites were located based on “GNN habitat mapping and aerial imagery” (USDA 2018b p. 10).

Although, the RTV Conservation Plan speaks to on-the-ground knowledge, no surveys were conducted within High Priority Sites (USDA. 2019a. P. 348) and no empirical data was presented to show the importance of many of the sites identified. In fact maps presented in the RTV Conservation Plan (USDA. 2019a. P. 360), show clearly that many of the High Priority Sites do not contain documented RTV nest trees. This level of analysis is unacceptable for a sensitive forest species and prey species for the NSO.

Proposed Resolution of Objection Point #14: The agency should withdraw the RTV Habitat Conservation Plan for Briggs Creek and protect all occupied RTV nest sites. Special emphasis should be in maintaining habitat conditions in occupied sites that burned at low to moderate

severity. No logging should take place in stands the demonstrated fire resistance in the Taylor/Klondike Fire.

Objection Point #15: Logging in Management Area 8 (MA 8)- Designated Wildlife is inconsistent with the SNF Plan.

Horse Creek Meadows, Sam Brown Meadows and the surrounding uplands and riparian areas have been administratively withdrawn and designated for wildlife habitat. The SNF Plan designated 1,242 acres surrounding Horse Creek Meadows for wildlife management. The area contains productive mountain meadows, old forest, oak woodlands, small wetlands, numerous riparian areas including Horse Creek, and a pond. The habitat is highly diverse and productive for a broad range of wildlife species. The Final EA fails to analyze the impacts of commercial logging in Special Wildlife Areas and Decision Notice failed to consider the inconsistency of managing Special Wildlife Areas with commercial logging

According to the Draft EA, the emphasis of MA-8 “*precludes scheduled timber harvest*” (USDA 2018a P. 9). The SNF Plan states that “*Timber harvest shall not be programmed and shall not normally occur*” (USDA 1989 IV-109). Also, according to the Final EA, Alternative 2 would log 188 acres in MA-8 lands.

Despite clear guidance in the SNF Plan to de-emphasize timber harvest as a restoration or land management tool, the Briggs Project proposes to log adjacent forests and trees in Meadow Restoration Treatments, DELSH Treatments, Pine-Oak Treatments, and Riparian Thinning Treatments. In all, ten separate units have been proposed within the administratively withdrawn Wildlife Management Area.

Although removal of encroaching conifers is allowed in meadow habitat within the MA-8 designation, “*large, live trees within meadow areas may be left as is or girdled, depending on individual circumstances. Dead trees (standing or down) should not be removed.*” (USDA 1989 p. IV-115 to IV-119).

The proposed logging prescriptions in the Meadow Restoration, DELSH, Pine-Oak and Riparian Treatments proposed in the Upper Briggs Project violate Standards & Guidelines for MA-8 lands. The EA fails to identify specific reasons that Forest Plan guidance is not being followed. Snags will likely be removed to meet OSHA standards and large live trees will be logged, rather than girdled or “left as is”. They are specifically not to be removed according to management objectives of MA-8. The Final EA and Decision Record also fail to identify specific reasons timber harvest is necessary to achieve the goals of the forest plan and the represents the most beneficial management of wildlife habitats in the Horse Creek Meadow Wildlife Area.

Proposed Resolution of Objection Point #15: The agency should withdraw proposed logging units in MA-8 and follow the management standards and guidelines identified in the SNF Plan.

Objection Point #16: 1940 aerial imagery of meadow habitats shows post-settlement conditions and do not accurately depict a reference ecosystem.

The Upper Briggs Project identifies reference conditions and desired future conditions, based on the meadow boundaries depicted in 1940 aerial imagery of the region. These so-called “reference” conditions actually depict post-settlement conditions in degraded habitats.

The meadow conditions depicted in the 1940 aerial imagery demonstrate a snapshot in time, they also represent the conditions following the settlement and mining era. The area was originally settled by miners who likely impacted the meadows with unregulated grazing. They also logged forests and meadow habitats to build flumes, cabins, fencing for livestock and the townsite of Briggs including hotels, bars, brothels and barber shops. This settlement existed in the area around Sam Brown Meadows and likely extended up Horse Creek Meadows as well.

According to the Draft EA, two settlers in the area were mentioned as early as 1884. By 1919, surveyors mention that Onion Mountain Road extended to Ferrin Guard Station (near the present-day Sam Brown Campground) providing access to local ranchers, loggers and recreationalists. In the southern half of Section 8, in Horse Creek Meadows, J. Smith had built a house, outbuilding and fenced in about 70 acres. He was raising hay, grain and grazing cattle in the meadows. In the western half of Section 5, in Sam Brown Meadows, John Felkner had also built a comparable homestead.

Well before 1940, these landscapes had been manipulated by ranching, mining, townsite development and homesteading activities. Material for housing, outbuildings, fencing and other infrastructure was likely built from lumber logged from the meadows, meadow margins or surrounding forests. Significant amounts of fire wood would have likely been cut within or adjacent to the meadows during the boomtown of Briggs or later during the homesteading era. Trees were also likely cleared from meadows and adjacent woodlands or forests to increase forage for livestock.

The Final EA appears to admit that homestead and anthropogenic use of the meadow habitat in the planning area were altered by 1940 and do not represent historic or “reference conditions”, yet fails to actually incorporate this information into the environmental analysis. The Final EA states, *“Historic air photos from 1040 show more extensive meadows than what currently exist in the watershed. (At one time an old homestead existed in Horse Creek Meadows.”* (USDA. 2019a. P. 106). This statement demonstrates the 1940 condition was influenced by farming and anthropogenic use and is not a reference or natural condition.

It also appears that a large, relatively high severity burn scar located in the area around Sam Brown Meadow and extending up Horse Creek is visible in the 1940 imagery. This burn scar exaggerates the extent of meadow habitat and non-forest habitat in the 1940 imagery (USDA 2018b p.22).

Meadow Restoration Treatments in the Upper Briggs Project, propose “restoring” the meadows to the extent documented in the 1940 imagery, yet this imagery depicts post-settlement conditions and cannot credibly or accurately be described as “reference” conditions.

Logging the forests surrounding the meadows and trees within both Sam Brown and Horse Creek Meadows to “restore” habitat conditions found in the 1940 imagery is arbitrary and capricious.

The justification for such widespread tree removal is based on faulty “reference” conditions, will not be restorative in nature and violates the SNF Plan mandates for MA-8 lands.

The Final EA failed to consider the impact of settlement, mining activity and ranching on the meadow habitats depicted in the 1940 aerial imagery. No analysis was conducted to explore the historical and natural ecology of the meadow systems proposed for treatment before settlement. The use of 1940 aerial imagery from settled areas as reference ecosystems is arbitrary and capricious and should not be used to identify natural habitat conditions.

Proposed Resolution of Objection Point #16: Cancel all meadow restoration units and instead implement a cycle of repeat prescribed fire in the meadows surrounding Sam Brown Campground and at Horse Creek Meadows. These prescribed fires would augment natural ignitions and maintain viable meadow habitats, rather than recreating novel, degraded ecosystem conditions as proposed in the Upper Briggs Decision Record in “Meadow Restoration” sites. Noxious weed removal and native plant sowing could also be implemented instead of clearcut logging at meadow margins. Such an approach is consistent with the SNF Plan for Special Wildlife Mangement Areas.

Objection Point #17: Proposed Meadow Restoration treatments will degrade meadow habitats and are inconsistent with the SNF Plan.



*Fig. 6 The post-fire conditions at Horse Meadow. The Taylor/Klondike Fire restored meadow habitats by introducing fire as a natural process, opening up meadow margins, increasing heterogeneity, and favoring open-grown specimens within and around meadow habitats. Brush species were burned favoring herbaceous growth including *Sophora leachiana*.*

Horse Creek Meadows and Sam Brown Meadows are being proposed for “Meadow Restoration” treatments in the Upper Briggs Project. The project area includes 188 acres of Meadow Restoration Treatments. These treatments include “restoring” the meadows to the area depicted in the 1940 aerial imagery by logging surrounding forest habitats and individual trees or groves of trees that have established within the meadow system.

Although in general, meadow restoration is often broadly supported, the treatments proposed in the Upper Briggs Project are

controversial, will degrade meadow habitats, reduce habitat complexity and are inconsistent with the SNF Plan.

Treatments will include the removal of “*all conifers within these [1940] boundaries but retaining legacy trees (greater than 120 years) and hardwoods > 10” diameter*” (USDA 2018d p. 6). This means that closed canopy forests will be clearcut, adjacent to the current meadow margin. It also means that all trees within the meadow and meadow margin will be logged, because few, if any, appear to meet the standards for legacy retention. The removal of trees within the meadow will reduce habitat complexity and eliminate tree recruitment that likely replaced open-grown trees logged for building material, firewood and to extend agricultural activities.

Current tree density within the meadows is minimal and is not degrading or suppressing the herbaceous plant community typical of dry and moist meadow habitats. This is especially true in the Horse Creek Meadow system where scattered groves of pine and oak grow among a few scattered Douglas fir. The trees found in Horse Creek Meadows cannot be characterized as encroachment, but are rather, reproduction, replacing trees felled by homesteaders, ranchers, miners and others in the settlement and mining area.

Some trees within Sam Brown Meadow could be considered to be “encroaching,” but the vast majority are non-merchantable and could be removed with non-commercial treatments.

Isolated, open groves of conifers and individual, open grown trees within the meadows provide important perching habitat for birds and raptors, the shade provides bedding and resting locations for ungulates, wildlife of all sorts utilize the vertical structure, cover, shade and high perches provided by these meadow-grown trees. These values should be promoted in Special Wildlife Areas such as Horse Creek Meadows and Sam Brown Meadows.

Trees, snags and downed wood found within meadow habitats provide important structural complexity, vertical complexity and wildlife habitat. Downed trees feed meadow soils, provide habitat and hold moisture. Trees, snags and downed trees also create heterogeneity and diverse microclimates for wildlife and plant species vitality and diversity. The vast majority, if not all these trees would be targeted for removal in the Horse Creek and Sam Brown Meadow systems. This level of tree removal will impact habitat values, hydrological values, nutrient cycling, plant species diversity, water holding capacity and other important ecological values.

The SNF Plan pages IV-115 to IV-119 identifies Standards and Guidelines for the Horse Creek and Sam Brown Wildlife Management Areas, these include retaining large, live trees or girdling live trees to reduce encroachment. The Standards & Guidelines state the “*Dead trees (standing or down) should not be removed.*” This direction is very clear and is being violated in the Upper Briggs Project and its misguided “meadow restoration” treatments. Standards & Guidelines also state that live trees that “*must be killed should be girdled and left standing unless realization of meadow management objectives would be hampered.*”(USDA 2018a p. 66). Despite these recommendations the Upper Briggs Project proposes to remove nearly all trees within the meadow and meadow margin, logging the trees rather than retaining snags and downed wood. The density of trees within the meadow will not hamper management objectives, instead they currently provide important functions in meadow habitats.

Standards & Guidelines also stress retaining complexity, unaltered vegetation at the meadow margin to maximize edge effects and biodiversity. These meadow buffers are described as extending up to 200' from meadow edges. Guidelines require that no more than 1/3 of the meadow margin should be removed in a 20 year period. (USDA 1989 p. IV-117). Meadow Restoration prescriptions will remove far more than 1/3 of the current meadow margin, they also propose logging the newly created "meadow edge" by implementing commercial pine-oak treatments on Doug fir sites.

The level of tree removal in existing meadow margins and the removal of all trees less than 120 years old within the meadow complex, violates the SNF Plan. Based on the SNF Plan we object to any proposed logging unit within the 200' meadow buffer. This pertains to both existing and "restored" meadow edges.

The Final EA failed to analyze potential impacts to meadow systems from proposed "Meadow Restoration" treatments. Significant habitat values and native plant communities will be negatively impacted and management guidelines in the SNF Plan are being totally ignored.

Proposed Resolution of Objection Point #17: Cancel all meadow restoration units and instead implement a cycle of repeat prescribed fire in the meadows surrounding Sam Brown Campground and at Horse Creek Meadows. These prescribed fires would augment natural ignitions and maintain viable meadow habitats, rather than recreating novel, degraded ecosystem conditions as proposed in the Upper Briggs Decision Record in "Meadow Restoration" sites. Noxious weed removal and native plant sowing could also be implemented instead of clearcut logging at meadow margins. Such an approach is consistent with the SNF Plan for Special Wildlife Management Areas.

Objection Point # 18: The level of disturbance associated with proposed Meadow Restoration Treatments will encourage noxious weed and non-native plant spread in high value meadow habitats.

The level of disturbance associated with the removal of nearly all conifers within meadow habitats and the clearcutting of meadow margins to "restore" the 1940 extent of meadows will create significant soil disturbance and increase the abundance of non-native or noxious weeds. The goal of meadow restoration should be to regain and restore a more native meadow plant community, yet the actual effects of "meadow restoration" in the Upper Briggs Project will have the opposite outcome due to extensive soil disturbance, heavy equipment use, log hauling and other timber sale related activities.

The impact of proposed logging activities including tree felling, yarding and hauling on soils and non-native plant establishment are well documented. Species like Scotch broom, teasel, bull thistle, Saint John's wort, mullein and others are commonly found in logging sites and can readily spread throughout the adjacent meadow system. Logging, yarding and roadbuilding are common vectors of noxious weed spread.

An established population of meadow knapweed already infests Horse Creek Meadows and will expand into freshly disturbed soils and artificially created meadow margins. The Final EA

provided no information on how native plant composition will be restored to meadow habitats and failed to adequately analyze the potential for noxious weed spread. He agency has apparently decided that the spatial extent of the meadow system is more important than the quality of native meadow habitat. This approach is not supported by the Standards and Guidelines for MA-8 in the SNF Forest Plan.

Proposed Resolution of Objection Point #18: Cancel all meadow restoration units and instead implement a cycle of repeat prescribed fire in the meadows surrounding Sam Brown Campground and at Horse Creek Meadows. These prescribed fires would augment natural ignitions and maintain viable meadow habitats, rather than recreating novel, degraded ecosystem conditions as proposed in the Upper Briggs Decision Record in “Meadow Restoration” sites. Noxious weed removal and native plant sowing could also be implemented instead of clearcut logging at meadow margins. Such an approach is consistent with the SNF Plan for Special Wildlife Management Areas.

Objection Point #19: The proposed logging activities will impact recreation and scenic values in the Briggs Valley and surrounding recreation areas.

Since the 1960’s, the Briggs Valley area has been a recreational destination in southern Oregon. Both Sam Brown Campground and Big Pine Campground (currently closed) and the associated day-use Picnic Areas have been consistently popular locations to camp and enjoy the Siskiyou National Forest. Nearby trails in Taylor Creek and Briggs Creek are also extremely popular and well connected, allowing recreational users to explore broad portions of the area.

Unfortunately, nearly all these recreational and scenic resources will be negatively impacted by logging activities. Sam Brown Campground will be treated with “Meadow Restoration” that may sound benign, but instead proposes to clearcut the current meadow margins, retaining only legacy trees over 120 years old. The stump field left behind will surely impact public enjoyment of the area. The noxious weeds and soil disturbance produced by logging, yarding and hauling will also impact the scenic and recreational qualities of the area.

Meadow Restoration treatments will also impact nearby and very popular Horse Creek Meadows, damaging the recreational experience, homogenizing the meadow and leaving it ringed in stump-fields and noxious weeds.

Many trails and trail miles will also be negatively affected by proposed logging activities. This will include old forest logging along the Onion Way and Secret Way Trails. These trails traverse forested country, traveling through groves of mid and late successional forest. The complex, natural forest habitat is the scenic and recreational attraction to these areas. Logging them will significantly impact the recreational experience and scenic qualities of the Onion Way and Secret Way Trails. The removal of large diameter trees and old forest characteristics along these spectacular trails is unacceptable. Units 21, 22, 23, 23 & 23B should be canceled from the Upper Briggs Restoration Project.

Impacts to the Taylor Creek Trail are also pronounced. Units 3, 14,15,16 & 35, adjacent to Horse Creek Meadow will log roughly 4 miles of trail drastically reducing canopy cover and forest

density across vast tracts of public land. Much of the area is proposed for Pine-Oak Restoration and heavy tree removal to 40% canopy. Yet, the plant associations are Douglas fir associations, not Pine-Oak habitats. Scattered populations of skinny, low vigor black oak can be found under a dense canopy of Douglas fir. Forcing these ecosystems into pine-oak habitat is a type conversion that will have negative environmental and recreational consequences. The currently pleasant, shaded, closed canopy, mid-seral forest found along large sections of the Taylor Creek Trail will be logged and recreational qualities significantly impacted.

Portions of the Taylor Camp and Dutch Creek Trails are also proposed for logging. The cumulative impact will extend to nearly every recreational opportunity in the area including campgrounds, wildlife areas, trails, day-use areas and scenic by-ways. The impact of logging these areas will make recreation less desirable in the region, impact the quality of life for local residents and the tourism/recreation-based economy of southern Oregon. The Final EA failed to consider the economic impact of logging in recreation areas and did not compare those impacts to the one-time economic boost associated with logging these recreation sites.

The Final EA also failed to adequately analyze and the Draft Decision Notice did not adequately consider the social, scenic and recreational impacts of logging in recreational areas including campgrounds, wildlife areas, day-use areas and trails.

Proposed Resolution of Objection Point #19: Cancel all meadow restoration treatments

Objection Point #20: Pine/Oak Restoration treatments are proposed in Douglas fir plant associations.

Numerous units proposed for Pine-Oak Restoration are located with Douglas fir plant associations such as California Mixed Evergreen and Mixed Conifer plant associations. Douglas fir is a naturally dominate species in these plant associations with black oak and pine found as only minor components. The natural dominance of Douglas fir in these units is desirable and as stands age will contribute to the recovery of the NSO as was envisioned in the SNF Plan (USDA 1989 p. IV-108).

In numerous units we recently monitored, the oak component of the stand had been completely shaded out by the more dominant Douglas fir canopy. In many situations, oak trees were either largely dead and downed or extremely low vigor. Many of the oak stands are beyond the point of “release” and will not reassert dominance. Given the Douglas fir dominated stands and plant associations it is highly likely that Douglas fir will quickly reseed into thinned areas and canopy gaps, quickly overwhelming oak and pine trees before they respond to thinning treatments. Many of the units are also located in old high severity fire areas. It appears that they are not oak/pine habitats, but rather early seral habitats that are transitioning due to succession towards a mixed conifer, Douglas fir dominated plant community. This is a natural post-fire successional process and rather than encroaching on pine/oak habitats, the Douglas fir is regaining its dominance, after a historic high severity fire event.

In these situations, the removal of Douglas fir to promote vigor in oak trees that are already dead or nearly dead is counterproductive and the proposed type conversion from mixed conifer and

mixed evergreen plant associations cannot be accurately characterized as restoration. Our organization does not support oak-pine treatments in mixed conifer and mixed evergreen plant associations.

For example, unit 35 is located on a south-facing slope above Horse Creek Meadows. The unit is clearly Douglas fir dominant and consists of mixed conifer and mixed evergreen plant associations. It is located in an area that was clearly affected by high severity fire in the 1940 aerial imagery. The treatments proposed would create degraded mixed conifer forest conditions rather than restored oak woodland.

Unit 21 is also mid-to-late seral mixed conifer forest with a large, robust population of *Cypripedium fasciculatum*, a rare plant species associated with moist, shaded habitats. This robust population would not have invaded a recently encroached habitat, but instead has evolved on this site, due to its ability to maintain relatively shaded, moist habitat conditions. This unit is also proposed for pine-oak treatments, which will significantly degrade habitat values, create novel ecosystem conditions and damage rare plant habitat.

The Final EA fails to disclose that many oak-pine treatments are intended to create type conversions from mixed evergreen and mixed conifer plant associations to oak/pine woodland. This is important because the plant communities created by thinning will be unstable, short lived, and will have a tendency to quickly convert back through succession to conifer dominated systems. Proposed oak-pine restoration is timber management disguised as restoration.

Proposed Resolution of Objection Point #20: Implement prescriptions that are consistent with the plant communities in which they exist or conduct supplemental NEPA analysis disclosing the proposed type conversions proposed in the Upper Briggs Project. These recovering mixed conifer forests should be managed to maintain forested habitat conditions and diversified with fires like the Taylor/Klondike Fire.

Objection Point #21: The EA has misapplied a high frequency, low severity fire regime in a region of mixed severity fire.

The agency claims that the planning area has historically been affected by a high frequency, low severity fire regime, but fails to cite any relevant scientific data or citations to back these assertions. They are merely assumptions and are not supported by the best available science.

The region's mixed severity regime and its extreme variability, is a significant contributing factor to the regional biodiversity and nearly always contains some level of stand replacing fire (Martin & Sapsis 1992). By attempting to create and maintain structural conditions associated with low severity, high frequency fire, we are creating novel ecosystems in the Klamath-Siskiyou Mountains. These highly unstable systems tend to respond with vigorous understory shrub response when canopies are opened, drastically increasing fuel loading in the long term.

According to the EA, *"Historically, frequent low intensity fires would have consumed down fuels, killed small trees, reduced the presence of brush and hardwood tree vegetation, killed the lower branches on trees, stimulated or maintained grass/forbs in meadows and the forest*

understory, and generally reduced forest stand densities by killing individual or clumps of trees. These fires likely tended to maintain forest stands that consisted of large diameter but relatively wide spaced trees (20- 50 trees per acre) with a relatively open understory with little ladder fuel. Large down logs were probably limited in number because of the frequent fire regime... Stands throughout the project area have accumulated surface and ladder fuels that under typical summer conditions create high severity fire effects. The shift in species composition from pine and hardwood to Douglas fir and brush increases the risk of stand replacing fire. Historically, periodic wildfires limited the species composition of dry sites to mainly pine and hardwood species that have developed with frequent fire.”(USDA a p. 85).

The conditions described do not reflect the best available science regarding mixed severity fire regimes, especially as far west as Briggs Creek. It is widely acknowledged that the fire regime of the western Klamath-Siskiyou Mountains is highly variable and includes both small and large patches of stand replacing fire (Donato et al 2009a,b, Perry et al. 2011, Halofsky et al 2011, Odion 2014).

The conditions described also do not reflect the actual burn severity in recent fires within the Briggs Creek watershed. These fires including the 2009 Horse Creek, 2011 Oak Flat, 2015 Onion Mountain and the 2018 Taylor/Klondike fires. All recent have fires burned during the summer months and did not create vast stand replacing fire effects, but rather a mixed severity fire mosaic with significant low severity, understory fire. This contradicts unsubstantiated claims in the EA that the current condition contains “*uncharacteristically severe fire on the landscape*” and encourage crown fire at levels “*well above historic levels for the fire regime*” (USDA 2018a p.88-89). These statements are not backed with citations or regionally specific monitoring data. These statements also contradict the actual outcome of the watersheds most recent wildfires and those in surrounding regions, like the 2013 Big Windy Fire. These fires burned at mixed severity, with large low severity, understory fire patches.

Historic photographs in the area also show a patchy mixed severity fire mosaic with stands of dense forest and open areas burned more severely in historic wildfires.

The use of Fire Regime Condition Classification (FRCC) in EA analysis grossly over-generalizes the region’s fire regime by creating three oversimplified condition classes. The use of FRCC demonstrates bias towards high frequency, low severity fire because landscapes are considered to have high levels of vegetative departure from historic conditions if they are likely to burn at moderate and high severity. The assumption built into FRCC is that low severity fire is beneficial and characteristic, while moderate and high severity fire is bad and uncharacteristic. This is not true for the Klamath-Siskiyou Mountains.

Researchers have also found such fuel modeling to significantly overstate the influence of high severity fire in mature, closed canopy and NRF habitats (Lesmeister 2019).

In the Klamath Siskiyou Mountains, mixed severity is the rule, not the exception. Many plant communities are associated with mixed severity fire effects and will benefit from some level of stand replacing fire. Those areas most likely to burn in stand replacing effects are often adapted to these fire effects. The proportion of stand replacing fire in recent fires represents a natural

range of variability, rather than an uncharacteristic natural disturbance, as the Forest Service assumes. Plant communities in the planning area that include the rare *Sophora leachiana* and *Illium lactibractiata* require periodic mixed severity fire to create and maintain habitat. In fact, the mixed conifer and mixed evergreen forest communities so prevalent in the planning area require mixed severity fire and some high severity fire effects to maintain structural complexity and species diversity.

The majority of the planning area (64%) is claimed to be in Fire Regime 1 and associated with high frequency, low severity fire, but the agency again provides no citations or data to support these claims. Because the landscape is assumed to have been largely affected by Fire Regime 1 in the past, those lands that are likely to burn at higher severity or even in a natural mixed severity pattern are considered to be have high levels of “vegetation departure”.

In reality, the landscape has evolved with mixed severity fire. Variable levels of weather and terrain driven, stand replacing fire are a natural part of the mixed severity regime. Some plant communities thrive in high severity fire patches, while others cling to fire refugia that dampens fire effects or refuse to burn at all. Characteristic fire effects and vegetative conditions can vary widely depending on fire history, soil conditions, slope position, slope exposure, and management history.

Plant communities consisting of mixed conifer and mixed evergreen plant associations, especially those higher on the slope, on south-facing slopes and with large populations of chaparral, live oak or fire dependent pine may be identified as FRCC 2 or 3, but support naturally elevated levels of fire severity. High and moderate severity fire will reset these plant communities. Current habitat structure, fuel loading and mosaics do not represent “vegetative departure” and are well within the range of variability.

The complex fire history and fire regime in the Siskiyou Mountains simply cannot be described using the simplistic FRCC model. The use of FRCC and the claim that high frequency, low severity fire regimes dominated the region are unsubstantiated and do not reflect the best available science.

Resolution of Objection Point #21: Supplemental analysis must be conducted acknowledging the natural mixed severity fire regime and the natural, mixed severity fire effects associated with recent wildfires. These fires were characteristic natural events and current closed stand conditions are in line with the variability and diversity created by mixed severity fire effects. Particularly after the recent fire, it is largely logging, road construction and mining that have altered habitat conditions in the Briggs Creek Watershed. Analysis including mixed severity fire effects is lacking the Final EA, and instead unsubstantiated assumptions regarding high frequency, low severity fire effects are used to identify characteristic forest structures and fuel conditions. Supplemental analysis should consider the positive, restorative effects of contemporary wildfire effects within the planning area and seriously consider a no-action alternative due to the beneficial impact of the 2018 fire season on vegetation, fuels, structure and composition.

Objection Point #22: Heavy commercial thinning proposed in the Upper Briggs Timber Sale will extend fire seasons, increase fuel loading, and future fire severity.

The Forest Service claims “benefits” from commercial logging to forest fuels, fire resilience, and fire risks. The agency also claims that fuel loading in the area almost guarantees increased high severity fire effects in future fire. Despite these claims, the four recent wildfire in the area, the 2009 Horse Creek Fire, 2011 Oak Flat Fire, 2015 Onion Mountain and 2018 Taylor/Klondike Fire demonstrate that significant low severity fire effects can and will occur in future fires. Weather and terrain have far more effect on fire severity than fuel loading and nearly every high severity fire event in the Klamath-Siskiyou Mountains is associated with the alignment of weather patterns and terrain.

Recent research conducted in the SW Oregon Siskiyou Mountains demonstrates that *“Management actions employed in dry forest types to reduce wildfire risk may not work equivalently in mixed-severity regimes. Active management actions that include mechanical treatments degrade suitability of forests for nesting and roosting by northern spotted owls and may not always decrease risk of high-severity fire.”* (Lesmeister 2019).

This same research found that, *“Thinned forests have more open conditions, which are associated with higher temperatures, lower relative humidity, higher wind speeds, and increasing fire intensity. Furthermore, live and dead fuels in young forest or thinned stands with dense saplings or shrub understory will be drier, making ignition and high heat more likely, and the rate of spread higher because of the relative lack of wind breaks provided by closed canopies with large tree...Our results indicate that older forest in late-successional reserves (i.e., northern spotted owl nesting/roosting habitat) with no active management can serve as a buffer to the effects of climate change and associated increase in wildfire occurrence. These multi-storied old forests in these environments enhance biodiversity and have the highest probability to persist through fire even in weather conditions associated with high fire activity.”* (Lesmeister 2019).

The claims that fuel reduction and commercial thinning will reduce fire severity is based on faulty analysis and overly optimistic assumptions. No significant long-term monitoring data in the region confirms the assumptions of analysis that commercial thinning will effectively reduce fuels, reduce future fire severity, encourage tree vigor and benefit late successional forest values over the long term.

The increase in fuel loading associated with commercial logging is associated with the following effects:

Shrub response:

The drastic canopy reductions proposed in the Upper Briggs Restoration Project would increase understory and ladder fuel by regenerating dense shrubby understory vegetation and young conifers. The phenomenon is known as “shrub response” and is associated with canopy thinning, especially in mixed conifer systems with significant shrub and hardwood associates, like those in southwestern Oregon (Franklin/Johnson 2009, Lesmeister 2019).

Interior forests in Southern Oregon are a dry mixed conifer ecosystem with a high potential for shrub response. Yet, especially in more mesic plant communities such as the Douglas fir/tanoak zone on Briggs Creek, shrub response from heavy canopy thinning can induce a

significant shrub response. In fact, the Douglas fir, mixed conifer-tanoak plant association is notorious for its shrubby growth following logging operations and canopy cover reduction.

The Briggs Creek drainage supports a clearly Mediterranean climate, but being located in the Western Siskiyou Mountains catches a fairly significant level of winter rainfall. According to the EA, the drainage averages between 50 and 90 inches of precipitation per year. This level of rainfall supports lush growth in trees and woody shrubs, but it dries out enough each summer to burn with intensity. The combination between relatively productive, high precipitation habitats and dry, fire susceptible summers creates a unique, transitional fire regime and the potential for a significant shrub response following canopy reduction.

In their paper titled, “Restoration of Federal Forests in the Pacific Northwest: Strategies and Management Implications” Jerry Franklin and Norm Johnson state that *“potential shrub responses to reduction in stand density must be considered. Some dry mixed-conifer plant associations have the potential to develop dense shrubby understories when light and moisture are made available by tree thinning; this is particularly the case in dry forests that exhibit more even-aged and dense structures.”* Many forests targeted for logging in the Upper Briggs Restoration Project support somewhat even-aged and dense structures.

Despite the winter rains, which tend to grow trees, the arid, rocky site conditions in adjacent areas grows abundant chaparral and hardwood which can also contribute to shrub response. The authors continue stating “the potential for developing undesirable levels of understory fuels need to be assessed on a stand-by-stand basis and prescriptions adjusted so as to reduce the risk of undesirable understory responses. Indeed, in some cases it may be desirable to maintain essentially full overstory cover, treating only ladder fuels, and leaving all dominant and co-dominant canopy trees in place rather than risk enhancing ground fuels.” (Johnson & Franklin 2009).

Increased sunlight and growing space triggers understory shrub and conifer regeneration. Likewise, soil disturbance associated with yarding activity often pierces through the soil surface triggering germination of woody species that in turn, create dense ladder and understory fuel as they mature.

In fact, on-the-ground monitoring has shown that shrub response is common in commercial logging treatments in the area. Shrub response tends to significantly increase fuels in the understory roughly 10 + years after commercial entry. The development of dense understory fuel continues unless further treatments are implemented (e.g. manual thinning or prescribed fire). The result is an increase in fuels and fire risk following logging treatments. Thus, areas with reduced canopies require more frequent maintenance treatments such a manual thinning or prescribed fire to keep fuels down. The cost to tax payers is substantially higher due to the need for frequent maintenance. The maintenance cost is directly proportional to the level of canopy cover reduction within a treatment area.

Citizen monitoring has documented shrub response over a broad geographic area in nearly every timber sale in the Applegate Valley over the last 25 years. Adequate maintenance is often not implemented before fuel loads become extreme. The result is a significant increase

in fuel loads following commercial logging treatments. A similar response is likely to be occurring on Rogue River Siskiyou National Forest lands west of highway 199, where abundant chaparral, lush understory growth and dry summers combine to create particularly acute conditions.

The EA did not adequately analyze the potential for “shrub response”, its influence on understory fuel and therefore fire severity in NEPA analysis for the Upper Briggs Restoration Project.

In an article about fire risks and forest structure, James Agee (1996) comments that “The effect of herb and shrub fuels on fireline intensity is not simply predicted. First of all, more herb and shrub fuels usually imply more open conditions which are associated with lower relative humidity and higher wind speeds. Dead fuels may be drier and the rate of spread may be higher because of the altered microclimate from more closed canopy forest with less understory. Secondly shrub fuels vary significantly in heat content. Waxy or oily shrubs like snowbrush (*Ceanothus velutinus*) or bearclover (*Chamaehotia foliolosa*) burn quite hot; others have lower heat contents.” (Agee, 1996).

In southwestern Oregon, less canopy general means dryer microclimates, increased exposure to winds and increased shrubby understory fuels. Many of the shrubby species that regenerate after heavy canopy reduction (below 50%) are extremely flammable, with waxes and volatile oils, they are often highly flammable when mature and flashy when young. These would include young incense cedar, doug fir, live oak, manzanita, and ceanothus, to name a few. This means that if typical species regenerate in the understory following commercial treatments, fuel loading will certainly increase in the long-term.

The following scientific studies have shown a correlation between thinning and understory shrub development:

Wilson et al. 2007, "Density Management and biodiversity in young Douglas-fir forests" Challenges of managing across scales."

Summary: This study found an increase in shrub density at 16 and 30 years following treatment.

Campbell 2008, “Carbon Dynamics of a ponderosa pine plantation following thinning treatment in the northern Sierra Nevada.”

Summary: This study found an increase in shrub cover following thinning treatments. 21 Shrub cover increased from 9% to 32% 3 years after treatment and maintained 22% shrub cover, 16 years after treatment.

Agee 1996, The influence of Forest Structure on Fire Behavior

Weatherspoon and Skinner 1995, An Assessment of factors associated with damage to tree crowns from the 1987 wildfires in Northern California

Odion et al. 2004, Patterns of Fire Severity and Forest Conditions in the Western Klamath Mountains

Lesmeister et al 2019 Mixed Severity Fire and an Old Forest Obligate

The Upper Briggs Restoration Project EA failed to adequately analyze the issue of “shrub response” and its association with heavy canopy thinning and canopy reduction below 60%. On-the-ground monitoring and ecosystem dynamics support the science behind “shrub response”, the Forest Service would be wise to incorporate this information into the planning process by retaining at least 60% canopy cover in all logging units and using prescribed fire to maintain understory shrub density every 10-20 years.

Stand desiccation:

The Forest Service provided no information or analysis regarding the effects of commercial thinning on stand desiccation, fuel moisture and future fire severity.

On BLM land, in the Applegate Valley while analyzing the Nedsbar Forest Management Project, the agency admitted that “Management of forest stands can result in altered micro climates (Agee 1996). Increasing spacing between the canopies of trees can contribute to increased wind speeds, increased temperatures, drying of topsoil and vegetation, and increased shrub and forb growth (Agee 1996). A more open stand allows more wind and solar radiation resulting in a drier microclimate compared to a closed stand. A drier microclimate generally contributes to more severe fire behavior.” (DOI 2016 p. 3-35).

Recent research in the Siskiyou Mountains demonstrates that, *“Thinned forests have more open conditions, which are associated with higher temperatures, lower relative humidity, higher wind speeds, and increasing fire intensity. Furthermore, live and dead fuels in young forest or thinned stands with dense saplings or shrub understory will be drier, making ignition and high heat more likely, and the rate of spread higher because of the relative lack of wind breaks provided by closed canopies with large trees.”*(Lesmeister 2019).

The Forest Service has proposed to open forested stands and significantly reduce canopy cover in all treated stands. Even currently fire resilient late successional forests are proposed for heavy canopy reduction and will be impacted by significant stand desiccation and increased ambient air temperatures. The altering of microclimate conditions associated with canopy reduction will desiccate forested stands, reduce fuel moisture, extend fire seasons and reduce resilience to drought and insect infestations.

It is clear that the level of canopy reduction is directly proportional to the level and seasonality of stand drying due to increased wind and solar exposure. Despite a clear connection between canopy reduction and stand drying, the Forest Service failed to address the issue with adequate analysis in the Upper Briggs Restoration Project EA.

Extended Fire Seasons:

Active fire season will be extended by logging treatments and canopy reduction; due to the drying of forest stands and forest fuels. The increased exposure to wind and sun, will dry stands and fuels earlier in the season. It will also increase evaporation, limiting the positive effects of rain or high relative humidity during the summer fire season. Increased exposure to wind and sunlight will extend active fire season on either end, in the spring or in the summer months. The effect is directly proportional to the level of canopy reduction proposed, with lower levels of canopy creating the most drastic effects.

Early in the fire season, non-forest plant communities and forest with minimal canopy have dried out sufficiently to carry fire, yet closed conifer stands act as fire breaks due to higher fuel moisture contents. Later in the fire season, dry, open areas tend to burn more actively, at a higher rate of spread and are more heavily influenced by wind or weather related fire events than closed canopy areas. The reason is largely due to shading and protection from forest canopy and its impact on fuel moisture and wind speeds.

The potential for ignition in any given fire season, or portion of the fire season, is directly related to fuel moisture content. Locations that dry out more readily have a longer fire season and a much higher chance of ignition. In this way, heavy commercial thinning and canopy reduction provides more time for either human or natural ignitions to lite wildfires, thus fire risks are increased through heavy commercial thinning operations.

Rate of spread will be more pronounced in areas with lower canopy cover retention levels due to stand drying and increased exposure to wind and sun. This will impact the ability of fire crews to conduct “initial attack” on wildfire ignitions, or to “go direct” on larger wildfires.

The result of commercial thinning and heavy canopy reduction as proposed in the Upper Briggs Restoration Project will be longer fire seasons with drier more explosive fuels. This will have a direct influence on containment of future fires and the safety of fire crews.

The commercial thinning proposed in the Upper Briggs Restoration Project will also make forests less resilient to fire, create fires that are harder to contain and more prone to high severity fire events. This impact is compounded on the landscape scale as the Forest Service implements large 4,000-acre logging projects and increases fuel hazards. As the percentage of the landscape treated with current commercial prescriptions increases, fire resilience on the landscape scale will be negatively impacted.

The potential of commercial thinning operations to extend fire seasons and increase fuel hazards was not adequately analyzed in the EA.

Proposed Resolution of Objection Point #22: Maintain all northern spotted owl habitat and a minimum of 60% canopy cover to retain and enhance fire resilience and resistance to the negative effects associated with climate change.

References:

Aber, J., N. Christensen, I. Fernandez, J. Franklin, L. Hiding, M. Hunter, J. MacMahan, D. Mladenoff, J. Pastor, D. Perry, R. Slangen, and H. van Miegroet. 2000. Applying ecological principles to management of U.S. national forests. *Issues in Ecology* No. 6. Ecological Society of America, Washington, D.C.

Agee 1996, The influence of Forest Structure on Fire Behavior

Black, S.H. 2005. *Logging to Control Insects: The Science and Myths Behind Managing Forest Insect "Pests."* A Synthesis of Independently Reviewed Research. The Xerces Society for Invertebrate Conservation, Portland, OR.
http://www.xerces.org/forest_Pest_Myths/Logging_to_Control_Insects.html

Campbell 2008, "Carbon Dynamics of a ponderosa pine plantation following thinning treatment in the northern Sierra Nevada."

Cruz, Miguel G. & Alexander, Martin E. 2010. Assessing crown fire potential in coniferous forests of western North America: a critique of current approaches and recent simulation studies. *International Journal of Wildland Fire* 2010, 19, 377-398.

Donato, D.C., Fontaine, J.B., Campbell, W.D. , Kauffman, J.B., Law, B.E. 2009a Conifer regeneration in stand replacing in stand replacing portions of a large mixed severity wildfire in the Klamath-Siskiyou Mountains. *Canadian Journal of Forest Research* 39:823-838

Donato 2009b. Donato, D.C., Fontain, J.B., Robinson, W.D., Kauffman, J.B., Law, B.E. 2009b. Vegetation response to a short interval between high severity wildfires in mixed evergreen forest. *Journal of Forestry*. 97: 142-154.

Duggar, K.M., et al. 2016. The Effects of Habitat, Climate, and Barred Owls on Long-Term Demography of Northern Spotted Owls. *Condor* 118:57-116.

DOI 2016. Nedsbar Forest Management Project Environmental Assessment. 2016. Medford District BLM. Medford, Oregon.

DOI 2017a. Pickett West Forest Management Project Environmental Assessment. July 2017. Medford District BLM. Medford, Oregon.

DOI 2017b. USFWS, Formal Consultation on the Rogue River-Siskiyou National Forest's Upper Briggs Restoration Project. June, 2017. Roseburg Field Office. Roseburg, Oregon.

Dugger, Catherine, Eric D. Forsman, Alan B. Franklin, Raymond J. Davis, Gary C. White, Carl J. Schwarz, Kenneth P. Burnham, James D. Nichols, James E. Hines, Charles B. Yackulic, Paul F. Doherty, Larissa Bailey, Darren A. Clark, Steven H. Ackers, Lawrence S. Andrews, Benjamin Augustine, Brian L. Biswell, Jennifer Blakesley, Peter C. Carlson, Matthew J. Clement, Lowell

V. Diller, Elizabeth M. Glenn, Adam Green, Scott A. Gremel, Dale R. Herter, J. Mark Higley, Jeremy Hobson, Rob B. Horn, Kathryn P. Huyvaert, Christopher McCafferty, Trent McDonald, Kevin McDonnell, Gail S. Olson, Janice A. Reid, Jeremy Rockweit, Viviana Ruiz, Jessica Saenz, and Stan G. Sovern. 2016. "The effects of habitat, climate, and Barred Owls on long-term demography of Northern Spotted Owls." *The Condor* 118(1), Cooper Ornithological Society, Coop Res Unit Seattle, WA: 57-116.

Franklin, J.F., D.A. Perry, T.D. Schowalter, M.E. Harmon, A. McKee, and T.A. Spies. 1989. Importance of ecological diversity in maintaining long-term site productivity. In *Maintaining the Long-Term Productivity of Pacific Northwest Forest Ecosystems*, ed. By D.A. Perry, pp 82-97. Timber Press, Portland Or.

Franklin, Jerry and Johnson, Norman. Restoration of Federal Forest in the Pacific Northwest: Strategies and Management Implications. August 15, 2009

Goyer, R.A., M.R. Wagner and T.D. Schowalter. 1998. Current and proposed technologies for bark beetle management. *Journal of Forestry* 96 (12):29–33.

Halofsky, et al. 2011. Mixed severity fire regimes: lessons and hypothesis from the Klamath-Siskiyou ecoregion. *Ecosphere* 2:1-19.

Hagle, S., and R. Schmitz. 1993. Managing root disease and bark beetles. In *Beetle- Pathogen Interactions in Conifer Forests*, T.D. Schowalter and G.M. Filip, eds. Pp. 209– 28. New York: Academic Press.

Hindmarch, T.D., and M.L. Reid. 2001. Forest thinning affects reproduction in pine engravers (Coleoptera: Scolytidae) breeding in felled lodgepole pine trees. *Environmental Entomology* 30(5):919–24.

Hughes, J., and R. Dreveri. 2001. *Salvaging Solutions: Science-based management of BC's pine beetle outbreak*. Report commissioned by the David Suzuki Foundation, Vancouver, B.C. ICS (Interagency Coordinating Subcommittee). 2013. Section 7 of the Endangered Species Act (Streamlining Agreement) for the effects of riparian forest management and restoration on salmonid fishes and their habitats for Northwest Oregon. Bureau of Land Management, Forest Service, Oregon Fish and Wildlife Service, and National Oceanic and Atmospheric Administration Fisheries Memorandum.

Lesmeister, D. B., S. G. Sovern, R. J. Davis, D. M. Bell, M. J. Gregory, and J. C. Vogeler. 2019. Mixed-severity wildfire and habitat of an old-forest obligate. *Ecosphere* 10(4):e02696. 10.1002/ecs2.2696

Martin, R.e., Sapsis, D.B. 1992. Fires as Agents of Biodiversity: Pyrodiversity Promotoes Biodiversity. In: Harris, R.R., Erman, D.E., Kerner, H.M. (Eds.), *Proceedings of the Symposium on Biodiversity of the Northwestern California*. University of California Berkeley, Ca Wildland Resources Center Report No. 29, pp. 150-157.

Odion et al. 2004, Patterns of Fire Severity and Forest Conditions in the Western Klamath Mountains.

Odion, D.C., Hanson, C.T., et al. 2014. Examining historical and current mixed severity fire regimes in ponderosa pine and mixed conifer forests of Western North America. PlosOne Feb. 2014 Vol. 9: 1-14.

Odion, D.C. et al. 2014a. The Effects of Fire and Commercial Thinning on Future Habitat of the Northern Spotted Owl. The Open Ecology Journal, 2014. 7, 37-51.

Paine, T.D., and F.A. Baker. 1993. Abiotic and biotic predisposition. In *Beetle Pathogen Interactions in Conifer Forests*, T.D. Schowalter and G.M. Filip, eds. Pp. 61–73. San Diego: Academic Press Inc.

Perry, D.A. et al. 2011. The ecology of mixed severity fire regimes in Washington, Oregon, and Northern California. *Forest Ecology & Management* 262: 703-717.

Rhodes, Jonathan., Baker, William., (2008) Fuel Treatment Effectiveness and Ecological Tradeoffs in Western US Public Forests. *The Open Forest Science Journal*, 2008, 1, 1-7

Sánchez-Martínez, G., and M.R. Wagner. 2002. Bark beetle community structure under four ponderosa pine forest stand conditions in northern Arizona. *Forest Ecology and Management* 170:145–60.

Santoro, A.E., M.J. Lombardero, M.P. Ayres and J.J. Ruel. 2001. Interactions between fire and bark beetles in an old growth pine forest. *Forest Ecology and Management* 144:245–54.

Schowater, T.D. 1995. Canopy arthropod communities in relation to forest age and alternative harvest practices in western Oregon. *Forest Ecology and Management* 78:

Schowater, T.D. 1990. Consequences of insects. In *Symposium Proceedings. Forests – Wild and Managed: Differences and Consequences*. January 19-20, 1990, pp. 91-106. University of British Columbia, Vancouver, BC.

Thompson, Jonathan R., Spies, Thomas A., Ganio, Lisa M., *Reburn Severity in Managed and Unmanaged Vegetation in a Large Wildfire*. *Proc Natl Acad Sci USA*. 2007 Jun 19; 104(25): 10743–10748. Published online 2007 Jun 11. doi: [10.1073/pnas.0700229104](https://doi.org/10.1073/pnas.0700229104) PMCID: PMC1965583 Sustainability Science

USDA 1989. Forest Service, Siskiyou National Forest. Land and Resource Management Plan. Siskiyou National Forest. Grants Pass, Oregon.

USDA 2018a. Forest Service, Upper Briggs Landscape Restoration, Draft Environmental Assessment. April 2018. Wild Rivers Ranger District, Rogue River-Siskiyou National Forest, Josephine County, Oregon.

USDA 2018b. Forest Service, Red Tree Vole Conservation Plan Briggs Creek Fifth-field Watershed. May 1, 2018. Wild Rivers Ranger District, Rogue River-Siskiyou National Forest, Josephine County, Oregon.

USDA 2018c. Forest Service, Upper Briggs Restoration Project, Botanical Reports. January 2018. Wild Rivers Ranger District, Rogue River-Siskiyou National Forest, Josephine County, Oregon.

USDA 2018d. Forest Service, Upper Briggs Restoration Project, Wildlife Report & Biological Evaluation. January 2018. Wild Rivers Ranger District, Rogue River-Siskiyou National Forest, Josephine County, Oregon.

USDA 2018e. Forest Service, Taylor Creek and Klondike Initial Burned Area Emergency Response Authorization. October 18, 2018. Rogue River-Siskiyou National Forest. Josephine and Curry County, Oregon.

USDA 2019a. Forest Service, Upper Briggs Landscape Restoration, Final Environmental Assessment. April 2019. Wild Rivers Ranger District, Rogue River-Siskiyou National Forest, Josephine County, Oregon.

USDA 2019b. Forest Service, Draft Decision Notice, Upper Briggs Landscape Restoration Project. April 2019. Wild Rivers Ranger District, Rogue River-Siskiyou National Forest, Josephine County, Oregon.

Weatherspoon and Skinner 1995, An Assessment of factors associated with damage to tree crowns from the 1987 wildfires in Northern California

Wilson et al. 2007, "Density Management and biodiversity in young Douglas-fir forests"

Sincerely,



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