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Comments: Please consider the attached comments on the Divide Project (#56803), submitted on behalf of Cascadia Wildlands. Thank you.

Dear Forest Service,

Please accept the following comments on the Divide Project from Cascadia Wildlands. Founded in 1998, Eugene-based Cascadia Wildlands represents approximately 15,000 members and supporters with a mission to defend and restore Cascadia's wild ecosystems in the forests, in the courts, and in the streets. Cascadia Wildlands envisions vast oldgrowth forests, rivers full of wild salmon, wolves howling in the backcountry, a stable climate, and vibrant communities sustained by the unique landscapes of the Cascadia bioregion.

Project Description

The Divide project area spans 10,362 acres in Marion County. The district proposes commercial harvest in 1,918 acres of managed and natural stands through a variety of logging prescriptions (regeneration harvest, gap creation up to three acres in size, dominant tree release, sugar pine habitat restoration, tree girdling, and riparian reserve thinning). Road work will occur on 94 miles of existing roads. The district estimates that approximately 34 million board feet would be removed from the project area. Treatment acreage estimates are below: EA at 11.

Public Engagement and Field Visits

Notice of the Divide project was first provided by the district in March 2020. During a field visit to a different project in the Detroit District in October 2023, the District Ranger alerted Cascadia Wildlands staff and other attendees that the district would resume the planning process for Divide, citing a need to find timber volume after fires in the district burned harvestable acres in the timber matrix. She flagged that this project could be "controversial" in that it targeted older forest stands for commercial treatment. After learning of the project's movement and potential logging in older forests, Cascadia Wildlands planned a field checking basecamp during summer of 2024 to gain insight into current forest conditions in the project area and later sent written comments to the agency describing the conditions of units visited. Over several days of field checking, we discovered that the project area contained units exhibiting a variety of stand conditions, including units that were indeed very dense and previously managed where thinning would not be as detrimental. However, many stands contemplated for treatment have never been logged before and exhibit the characteristics of mature and old-growth forest. For example, a stand at just under 4,000 feet in elevation consisted of large-diameter Douglas firs (ranging from 47.5-72.4" DBH), western hemlocks, and occasional western red cedars along with decadence features like sizeable snags and woody debris, natural gaps and spacing, lichen and fungi, and a variety of native understory plants. Bird calls, scat, and a bear sighting in the project area showed signs of wildlife use. Our main concerns with the project have revolved around logging in mature and old growth stands and potential impacts to imperiled species.

Cascadia Wildlands staff also attended meetings hosted by the district to learn more about the project, both in October 20241 and December 2025. We are very appreciative of the district's efforts to be transparent and informative throughout the planning process, especially considering the project was originally scoped in 2020 but paused due to the COVID pandemic and to prioritize post-fire recovery in the district. We note that the 2024 meeting was scheduled to include a field tour, which was canceled due to weather conditions. Did the district consider rescheduling? Visiting project areas with agency staff is incredibly helpful for project designs and envisioning impacts, so we encourage the district to offer public field tours for future projects.

We are most interested in seeing the Forest Service focus its treatments on younger plantations and unusually dense stands by thinning from below to increase diversity in spacing, layering, and species while still maintaining canopy cover beneficial to imperiled species like the northern spotted owl. Upon reviewing the draft EA, it appears that many of the units or portions of units that we found exhibited older forest characteristics and would be negatively impacted by logging and roadwork were dropped from the project proposal. We acknowledge that naturally regenerated stands in the project area do not exhibit old growth characteristics one would expect at their age.

The EA incorrectly lists Cascadia Wildlands as "Cascadia Wild" on page 12 (that's the title of a different organization). Please correct this in the district's records.

Project Concerns and Comments

We appreciate that the Forest Service has developed a project focusing largely on thinning young stands and unusually dense stands. We are generally supportive of this approach, as it avoids much of the ecological harm and controversy associated with logging older stands and/or more intensive regeneration harvest. That said, thinning still includes concerning trade-offs including: carbon emissions that exacerbate global climate change, soil impacts from heavy equipment, lasting impacts from road construction, impacts to imperiled northern spotted owls and their prey species, long-term impacts to future recruitment of snags and dead wood both in upland and riparian areas, increased weeds, potential for increased fire hazard due to modified microclimate and increased growth of surface & ladder fuels, and more. Commercial thinning and road building also have lasting impacts to surrounding older forests that must be considered and mitigated.

However, the district only prepared one action alternative. Alternatives are the heart of the NEPA process. Exploring and comparing alternatives helps shed light on trade-offs and helps the agency find ways of harmonizing competing objectives. The district could have considered various alternatives here, like an alternative without treatment in natural stands.

1. Roads

The district needs to take a hard look at impacts from roads, including temporary roads. The project includes 94 miles of road maintenance, reconstruction, rerouting or realignment. The project will also use 5.1 miles of existing temporary roads and construct 3.5 miles of new temporary roads. EA at 9. We support that temporary non-system roads would be closed, rehabilitated, and reseeded following the project. EA at 9. We encourage the district to utilize existing roads whenever possible and avoid constructing new temporary roads due to their lasting environmental impacts (sedimentation, habitat fragmentation, introduction of invasives).

Earlier project documents indicated the project would include road closures and decommissioning:

Close and store approximately 7 miles of road and decommission approximately 3 miles of road, taking into account the Willamette National Forest Road Investment Strategy regarding road disposition as well as resource specialist recommendations.

Scoping notice at 2.

The Forest Service's road network is already massive and there is a significant backlog of road maintenance costs. We are concerned about the district's ability to maintain existing roads given current resources and capacity. Roads fragment landscapes and modify wildlife behaviors, increase likelihood of erosion and risk of landslides, introduce sediment to waterways, spread invasive weeds, increase risk of fire starts, and introduce trash. Even temporary roads carry these environmental harms.

The EA states that the Divide project area has a high open road density, causing impaired function:

Road densities affect the overall health of the aquatic ecosystem in an area. Applying the Watershed Condition Framework, both the Upper Blowout Subwatershed and Divide project area are rated as having impaired functions due to the open road density exceeding 2.4 mi/mi2 (USFS 2011, Table 16) EA at 54.

Did the district analyze the need for road closure, storage, and decommissioning for the EA? What were the resource specialist recommendations? That analysis is not presented here, nor is the reason for dropping travel management from the project. We are aware of the Regional Forester's "Interim Guidance for Travel Management Proposals and Decisions" issued June 2025. While we find the interim guidance to be misguided in its speculative and anticipatory approach, we understand the district's need to comply with regional direction. However, the guidance set out a process to evaluate projects for which planning was underway, which applies here, and report to the Regional Forester reasons why travel management decisions should be maintained. Did the district do this for Divide? If so, what did that report look like? If not, why not? Either way, that reasoning needs to be explained in the EA.

2. Wildlife

We are concerned about impacts to imperiled species in the project area, including northern spotted owls. The agency must take a hard look at impacts to owls, as well as their habitat and prey.

Owl habitat is characterized by large trees, high canopy closure, abundant dead wood, welldeveloped understories. These qualities are more likely to be attained with variable density thinning and managing for decadence (dead wood as snags or down wood).

Spotted Owl Surveys

The project proposes to downgrade 29 acres of suitable habitat to dispersal habitat in owl site 0083 (units 58 and 66). EA at 78-79. The EA state that surveys showed the site as unoccupied, concluding no incidental take would occur. EA at 79. How was the northern spotted owl survey protocol applied here and how were those results interpreted? We are especially interested in seeing the Forest Service's analysis in more detail to be able compare with and inform our feedback on logging projects proposed by the Bureau of Land Management.

Spotted Owl Prey

The EA lacks analysis of proposed treatments on spotted owl prey. Flying squirrels are an important prey item for northern spotted owls in all parts of the owl's range. See Forsman, Anthony, Meslow, Zabel. 2004. Diets And Foraging Behavior Of Northern Spotted Owls In Oregon. Journal of Raptor Research 38(3):214-230. http://elibrary.unm.edu/sora/jrr/v038n03/p00214-p00230.pdf. Given the importance of flying squirrels to the diet of the spotted owl, managers must ensure that thinning does not significantly reduce the flying squirrel population, but recent evidence shows that thinning does in fact lead to a multi-decade decline in the number of flying squirrels. The agencies must leave significant untreated skips in order to mitigate for this significant adverse effect.

Manning et al (2012) found that the thinning is adverse to both flying squirrels and snags, and these effects may be related.

[bull] Flying squirrel density positively associated with snag density

[bull] Snags rare in thinned stands

[bull] Thinning causes decrease in density-dependent mortality [hellip]

[bull] Canopy gaps = exposure to predators

[bull] Tree trunks = safety Tom Manning, Joan Hagar, Brenda McComb 2012 spotted owl prey workshop. Flying Squirrel Response to Thinning in the Oregon Cascades. http://ecoshare.info/wpcontent/uploads/2012/08/Commercial-thinning_flying-squirrels.ppt;http://ecoshare.info/projects/central-cascade-adaptive-managementpartnership/workshops/spotted-owl/. See also, Tom Manning, Joan C. Hagar, and Brenda C. McComb. 2011. Thinning of Young Douglas-fir Forests Decreases Density of Northern Flying Squirrels in the Oregon Cascades, [FORECO9370, revised Aug 2011] https://andrewsforest.oregonstate.edu/sites/default/files/lter/pubs/pdf/pub4783.pdf

Wilson & Forsman 2013 state ("thinning reduces the abundance of some tree-dwelling rodents, especially Northern Flying Squirrels (Glaucomys sabrinus) and Red Tree Voles (Arborimus longicaudus), that are important prey species for Northern Spotted Owls (Strix occidentalis caurina)." Wilson, Todd M.; Forsman, Eric D. 2013. Thinning effects on spotted owl prey and other forest-dwelling small mammals. In: Anderson, Paul D.; Ronnenberg, Kathryn L., eds. Density management for the 21st Century: west side story. Gen. Tech. Rep. PNW-GTR-880. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station: 79-90. https://www.fs.usda.gov/pnw/pubs/pnw_gtr880/pnw_gtr880_009.pdf.

"Management strategies that involve tree removal, even ones designed to have positive long-term ecological effects, almost always result in reduced squirrel populations. A squirrel-predation connection explains this phenomena [hellip]" Wilson, T. 2010. Forest structure is a good indicator of flying squirrel habitat. In Mazza, Rhonda 2010. 2010 Science Accomplishments Report of the Pacific Northwest Research Station. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 88 p. https://web.archive.org/web/20170531140755/https://www.fs.fed.us/pnw/pubs/2010- science-accomplishments.pdf.

Red Tree Vole Surveys

The Forest Service must complete surveys for Survey and Manages Species for portions of the project area. We are concerned about impacts to these species, including the red tree vole. The EA indicated that a red tree vole survey would be completed in 2025 for unit 37: EA at 80 (emphasis added). Was that survey done? If so, when and what were the results? Unit 37 still appears on project maps presented with the EA - does that indicate red tree voles were not present? Please strive to retain canopy connectivity between stands that may provide suitable habitat for red tree voles, which are an important prey species for the northern spotted owl.

Barred Owls

The adverse effects of thinning on flying squirrels and spotted owls should be considered in the context of the competitive pressure that barred owls impose on populations of flying squirrels, which are the primary prey of both barred owls and spotted owls. The EA fails to consider the effects of barred owls in its analysis.

Maintain Habitat Function and Connectivity

A variety of thinning intensities are prescribed in this project. The EA states that the project will maintain at least 60% canopy cover in some areas to support habitat function:

Several stands were identified by the wildlife biologist as being important for spotted owl foraging. These were assigned prescriptions that would retain at least 60% canopy cover, typically 80-100 tpa remaining.

EA at 8.

New information indicates that spotted owl dispersal habitat should be managed for higher canopy cover, at least 80%. See Stan G. Sovern, Eric D. Forsman, Katie M. Dugger, Margaret Taylor. 2015. Roosting Habitat Use and Selection By Northern Spotted Owls During Natal Dispersal. The Journal of Wildlife Management 79(2):254-262; 2015; DOI: 10.1002/jwmg.834. https://osu-wams-blogsuploads.s3.amazonaws.com/blogs.dir/2742/files/2016/09/Sovern-et-al.-2015.pdf ("Roost Site Selection. In contrast to the assumption that stands with relatively open canopies provide suitable dispersal habitat for spotted owls, our results suggest that dispersing juveniles selected stands for roosting that had relatively high canopy closure (x = 66 + 2%). [hellip] Two hypotheses could explain why dispersing owls selected closed-canopy stands. First, several researchers (Barrows 1981, Forsman et al. 1984, Weathers et al. 2001) have shown that temperature and precipitation appear to influence selection for roost trees and attributes within a roost tree, such as perch height and percent overhead cover. [hellip] Second, juvenile northern spotted owls may have selected for closed-canopy forest because their preferred prey were most abundant [hellip] Landscape Scale Selection. [hellip] [O]ur mean estimate of canopy closure from plots at roosts (66%), which was likely an underestimate of canopy cover, was considerably higher than the minimum values recommended by Thomas et al. (1990) [i.e. 50-11-40]. [hellip] Management Implications. [hellip] Based on our study, we recommend that managers should pursue a strategy that exceeds the canopy cover guidelines recommended by Thomas et al. (1990) when managing dispersal habitat for spotted owls. Based on our estimate of mean canopy closure (66%), and our estimate of mean canopy cover from overlaying a dot grid on the same areas (approx. 14% larger), we recommend that the target for canopy cover in stands managed for dispersing spotted owls should be at least 80%.")

The district must take a hard look at these impacts. Please improve the analysis in the EA of spotted owls, habitat, and prey.

3. Managing for Variability

The Divide project involves variable density thinning with skips, gaps, and dominant tree release gaps.

Some benefits of variable density thinning compared to uniformly spaced thinning include: creating a patchy variety of conditions of light, heat, wind, moisture, competitive stress, and hiding cover within the stand and the landscape; setting up the stand so that there are future "winners" and "losers" (the winners become big trees and the losers become snags and coarse woody debris), etc. Andy Carey has found that:

"Conventional thinning alone produced few flying squirrels or Douglas' squirrels, but many chipmunks; high plant species diversity but dominated by clonal natives with many exotic species; relatively abundant winter birds, but few woodpeckers; abundant small mammals but in imbalanced communities; and diverse fungi, low in abundance." Carey, Andrew. THINKING AND THINNING ECOLOGICALLY, slideshow http://web.archive.org/web/20030427160424/http://www.fs.fed.us/pnw/olympia/efb/flash/thinking_&_thinning_ecologically.swf.

Conventional thinning in the Western Hemlock Zone may result in very low flying squirrel populations through negative effects on truffle production and arboreal travelways (Colgan et al. 1999, Carey 2000b) and reduced foraging by spotted owls (Meiman et al. 2003) for a long time while increasing numbers of forest-floor rodents (Wilson and Carey 2000). Conventional thinning, however, may result in uniform dense understories unfavorable to both flying squirrels and owl foraging in the midterm. Variable-density thinning, however, hold promise for acceleration of the development of spotted owl habitat and dense prey populations (Carey 1995, 2001, 2003a. Carey et al. 1999a,b; Carey and Wilson 2001; Muir et al. 2002) especially when appropriate attention is paid to decadence (snags, cavity trees, and coarse woody debris) (Bunnell et al. 1999; Carey et al. 1999a, b; Carey

2002). There may be a short-term impact on truffle production, flying squirrel abundance, and owl foraging, the ecosystem recovers more quickly and begins to develop more quickly and completely than following conventional thinning. Variable-density thinning has all the positive effects of conventional thinning, such and increased growth of trees, crown differentiation, development of understory, and increased flowering and fruiting of understory plants (Harrington et al. 2002, Wender et al. 2004) that provide important ancillary foods to spotted owl prey (Carey 2000a) without the same extent of negative mechanical impacts, loss of canopy connectivity, loss of spatial heterogeneity, loss of woody plant diversity (variable-density thinning stresses multi-species management). Carey, A. 2004 Relationship of Prey and Forest Management. Appendix 5 pp 3-24, 3-25 in Courtney, SP; J A Blakesley. 2004. Scientific evaluation of the status of the Northern Spotted Owl. http://web.archive.org/web/20120423191509/http://www.sei.org/owl/finalreport/Chap ter5HabitatAssociations.pdf.

Scientists recognize that "Historically, [dry forests] displayed much spatial heterogeneity, consisting of fine-scale, low contrast structural patchworks" and they recommend that projects like this [mdash] "Restore characteristic levels of within-stand spatial heterogeneity - this refers to a nonuniform distribution of forest structural elements, such as trees, snags, and canopy density. Such spatial heterogeneity is characteristic of older forest stands and landscapes in both Moist and Dry Forest regions (Franklin et al. 2002; Franklin and Van Pelt 2004). The practitioner of ecological forestry will typically look to the heterogeneity inherent in stands and landscapes as a beginning point or guide in incorporating heterogeneity in treatments. ...

The need for spatial heterogeneity

Spatial heterogeneity is an essential element in restoring and sustaining Dry Forests and landscapes. Restoration activities need to build upon and enhance existing residual spatial heterogeneity. Ecological restoration will rarely involve extensive areas of uniform treatments. A complex pattern of open and dense forest, meadows, and glades should result with:

1) Small dense patches of seedlings and saplings. Johnson et al. (2008) proposed at least 10% of these "skips";

2) Medium-sized dense patches (300+ acres in size) scattered over the landscape to help provide habitat for species such as the Northern Spotted Owl and its prey; and

3) Variability in landscape-level forest and non-forest patches. ...

Long-term management of Dry Forest sites in the Pacific Northwest can also be based on principles of ecological forestry. Initial silvicultural activities would be designed to restore ecological conditions that are both sustainable and provide for a full array of ecological values. These are sometimes referred to as "restoration" and include the following considerations: ...

3) silvicultural activity in harvest areas build upon and enhance the spatial heterogeneity (fine scale, low contrast structural mosaic) that is characteristic of the Dry Forest types, including provision for denser untreated patches; John & Franklin. 2009. Restoration of Federal Forests in the Pacific Northwest: Strategies and Management Implications. https://web.archive.org/web/20170221082525/http://www.blm.gov/or/districts/medfo rd/plans/files/FranklinJohnson.pdf.

Prescriptions should retain and enhance existing diversity - any treatment prescription that can accommodate already existing variability within the homogenous stands that are to be restored will likely be more efficient at increasing heterogeneity in that stand (Puettmann et al. 2016). For example, a goal to provide more broadleaf shrubs and trees may be achieved more easily with prescriptions that protect existing patches of broadleafs during harvesting than by creating open conditions that facilitate their development (Davis et al. 2007). Spies et al. 2018. Synthesis of science to inform land management within the Northwest Forest Plan area. Chapter 3: Old Growth, Disturbance, Forest Succession, and Management in the Area of the Northwest Forest Plan. GENERAL

TECHNICAL REPORT PNW-GTR-966. https://www.fs.usda.gov/pnw/pubs/pnw_gtr966_chapter3.pdf

A concern with evenly spaced thinnings is that the uniformly open canopy will encourage a homogenous understory dominated by a few species instead of a patchy and heterogeneous understory. Liane R. Davis, and Klaus J. Puettmann, Gabriel F. Tucker. 2007. Overstory Response to Alternative Thinning Treatments in Young Douglas-fir Forests of Western Oregon. Northwest Science 81(1). 2007.

Refer to the following resources to inform your implementation of variable density thinning:

* Duncan S. Wilson, and Klaus J. Puettmann. Density management and biodiversity in young Douglas-fir forests: challenges of managing across scales. DRAFT submitted to Forest Ecology and Management. August 2006. ("Spatially variable treatments provide for variable canopy structure and understory vegetation and results from the LSMEs suggest incorporating these into thinning prescriptions may be beneficial where biodiversity is of concern. The need for spatially variable treatments is highlighted by the hierarchical habitat-selection framework of various wildlife species. This framework provides a basis for matching spatial variability in forest structure and vegetation to the spatial scales that wildlife species perceive and respond to. Silvicultural prescriptions that increase within-stand variability can provide important habitat features across multiple scales and enhance habitat quality beyond that provided by stand-level prescriptions. [hellip] [M]anaging for biodiversity necessarily includes activities on several disturbance and spatial scales, which may include variable-density thinning, creating gaps and unthinned patches of different sizes, and creating two-storied stands through natural regeneration or underplanting (Carey et al., 1999; Hayes and Hagar, 2002; Puettmann et al., 2004). [hellip] The added objective of increasing understory vegetation for wildlife habitat and other ecological functions likely will require more intensive density management in order to ensure adequate resources for understory development (McComb et al., 1993; Hayes et al., 1997). [hellip] Complex vertical canopy structures are of interest when managing for biodiversity because they have been associated with increased songbird diversity and use (Carey, 1996). [hellip] Windstorms and disease that kill trees are common in young stands (Lutz and Halpern, 2006) and may result in natural gaps of widely varying sizes (from single trees to entire stands). [hellip] [M]anaging for understory vegetation and diverse habitat features will require either multiple, or heavy thinnings. Alternatively, variable density thinnings with areas of extremely low density or gap creation may provide long term openings. [hellip] Managing large deciduous tree patches to minimize overtopping by conifers will be advantageous for developing large crowns, large durable snags, and heavy seed production. Many songbird and bat species nest or roost in deciduous trees, and retention of these in thinning operations can provide vital features in otherwise suitable habitat (Hayes and Hagar, 2002). [hellip] Young stands with high understory vegetation cover and diverse composition will benefit many wildlife species especially where this habitat is rare, such as in dense unthinned stands (Hayes and Hagar, 2002; Beggs, 2005). [hellip] Providing within-stand heterogeneity of understory vegetation can further increase the odds that suitable habitat will be available at the correct spatial scales for multiple species. [hellip] Understory deciduous trees and shrubs are especially important habitat, as they provide berries and seeds (Wender et al., 2004), small mammal cover (Martin and McComb, 2002), contribute to foliage height diversity, and are an important substrate for lichen growth. Abundance of arthropods, an important food source for most neotropical songbirds, has been linked to the deciduous shrub component (Schowalter, 1995; Muir et al., 2002). A diverse understory composition is also beneficial, as deciduous shrubs, grasses and forbs are generally more palatable than evergreen plants and thus serve as an important food source for small mammals and invertebrates (Muir et al., 2002). [hellip] Density management tends to homogenize shrub cover slightly when pre-treatment cover is relatively high. In contrast, thinning tends to increase shrub cover and greatly increase within-stand variability where shrub cover is absent before treatment (Harrington et al., 2005). High uniform shrub cover of a few species might reduce diversity of function, and treatments such as variable-density thinning or gap creation have been proposed to increase spatial variability in shrub cover and thus stand diversity. [hellip] In contrast to early thinning results, retrospective studies, which documented conditions 10-30 13 years postharvest, generally showed no effect or a strong increase in tall and short shrub cover. [hellip] The distinction between early and late responses to thinning also needs to consider trends in stand dynamics where stands develop higher shrub and herb cover as they move from the stem

exclusion to the understory initiation and old-growth stages (Spies, 1991; Wender et al., 2004). [hellip] Herb cover generally responds either neutrally or slightly negatively to thinning [hellip] competition from rapidly increasing shrub cover may have confounded the impacts of overstory removal (Beggs, 2005). [hellip] Ten to thirty years after thinning, herb cover was higher in thinned than unthinned stands (Bailey et al., 1998; Thysell and Carey, 2001). Herb response to thinning, however, may be negatively correlated with the response of the competing shrub and tree layers (He and Barclay, 2000). [hellip] Unthinned patches have been proposed to promote diversity and better mimic natural stand development patterns, especially patterns of spatial diversity in overstory cover and species composition (Carey et al. 1999). [hellip] Small patches that were 36 and 50-m in diameter (0.1 and 0.2 ha, respectively) at the DMS study were compositionally similar to the thinned stand (200 tph residual density), whereas the interiors of 71- m diameter patches (0.4 ha) were compositionally similar to the unthinned stands (Wessell, 2006). Unthinned patches of any size supported several species not present in the thinned stands, suggesting the value of these patches to within-stand heterogeneity and potential for propagation into adjacent areas. [hellip] Thinning disturbs existing vegetation and frees up resources, compounding the risk that interfering species will expand and dominate understory vegetation. [hellip] Too much regeneration, however, especially of shade-tolerant species, can provide a "secondary stem exclusion" that results in nearly complete loss of shrub and herb cover (Alaback and Herman, 1988; Bailey and Tappeiner, 1998). Although none of the short-term results of the LSMEs documented this response [hellip] In areas where tall shrub cover is of special concern, harvesting activities may be designed to protect shrub patches. [hellip]
* Kevin W. Zobrist. 2005. A literature review of management practices to support increased biodiversity in intensively managed Douglas-fir plantations. Final Technical Report to the National Commission on Science for Sustainable Forestry (NCSSF). http://www.ruraltech.org/pubs/working/ncssf/tech_a/tech_report_a.pdf ("To meet the needs of a broad range of species, structural diversity is needed to provide a variety of habitat elements (Helgerson and Bottorff 2003, Muir et al. 2002). This requires complex three-dimensional canopy attributes and spatial relationships [hellip] Structural manipulations [hellip] should greatly shorten the time necessary for occupancy [by late-seral dependent species]. [hellip] Stem exclusion stage [hellip] supports few wildlife species. [hellip] the positive effects of thinning [is to] allow light to reach the forest floor. This provides better developed understories [hellip] Studies have found direct links between thinning and wildlife abundance [hellip] more winter birds [hellip] abundance of small mammals [hellip] Old forest conditions [are] most lacking on the 14 landscape and difficult to replace [hellip] Instead of traditional, uniform thinning, irregular thinning with different densities, unthinned areas, and openings can greatly enhance structural diversity (Curtis et al. 1998, Helgerson and Bottorff 2003). This is also called variable density thinning, which treats alternating areas of usually around 0.25 to 0.5 acres leaving two or more different levels of residual density (Carey and Curtis 1996, Carey and Johnson 1995, Carey et al. 1999b, Carey and Wilson 2001). Variable density thinning is intended to mimic natural forest processes of suppression and mortality to create a structural mosaic and maintain wind stability (Carey et al. 1999b). [hellip] Another important way to increase stand-level structural diversity is to retain biological legacies [hellip] such as large, live trees, snags, and downed wood can better mimic natural disturbances and give plantations a structure more similar to natural stands (Franklin et al. 2002, Hansen et al. 1991). [hellip] The practices described above can be combined to create "biodiversity pathways" for forest management. Biodiversity pathways begin with legacy retention at the time of harvest, less intensive site preparation to conserve downed wood and other forest floor substrates, and planting at wider spacing. Successive variable density thinnings are done over longer rotations. These thinnings are heavier than traditional commercial thinnings and favor multiple species. The goal of biodiversity pathways is to minimize the dense stem-exclusion stage and accelerate the development of old forest structure and function to support increased biodiversity (Carey and Curtis 1996, Carey et al. 1996).")
* Poage, Nathan, J. 2005, Variability in Older Forest Structure in Western Oregon. U.S. Geological Survey, Open-file Report 2005-1385, 28 p. http://fresc.usgs.gov/products/papers/1445_Poage.pdf (Vegetation patterns are highly variable within and between stands. Patch size and density generally decreased with increasing stand diameter class. Observed patterns and trends "are most likely reflection of the normal processes of tree mortality and snag production and decay within stands. As the trees in a patch increase in size, self-thinning reduces patch density and[mdash]by creating gaps within a patch[mdash]can divide the original patch into two smaller ones. Similarly, tree growth and mortality lead to fewer but larger snags in a patch. Decay also decreases the

patch density of snags and can lead to the formation of gaps within patches of snags. The formation of gaps within patches appears somewhat random [hellip] "

* SA NDOR BARTHA et al. 2004. On the Importance of Fine-Scale Spatial Complexity in Vegetation Restoration Studies. International Journal of Ecology and Environmental Sciences 30: 101-116, 2004 https://www.researchgate.net/profile/GiandiegoCampetella/publication/46734299_On_the_importance_of_finescale_spatial_complexity_in_vegetation_restoration_studies/links/09e41508705779 1a8e000000/On-the-importance-of-fine-scale-spatial-complexity-in-vegetationrestoration-studies.pdf ("Effective restoration should start from an understanding 15 of the spontaneous processes of vegetation succession and utilize the natural "selfrepair" mechanisms.... This context dependence of local vegetation dynamics is emphasized by the non-equilibrium ecological paradigm. This paradigm views the developing plant community as a complex dissipative system, which involve a methodology with explicit representation of spatiotemporal patterns. [hellip]. Descriptive and experimental evidences on natural succession (especially the accumulating data from long-term permanent plots and paleo-pollen spectra) revealed that succession is highly stochastic and the related mechanisms are far more complex than expected. [hellip] The variability of succession trajectories and the individualistic nature of local community dynamics can be understood by considering the effects from the spatiotemporal neighbourhoods at various scales. By temporal neighbourhood effects we mean the long lasting influence of initial conditions and the accumulating effects of specific events experienced during the site history [hellip] The neighbourhood relationships enfold along a hierarchy of scales. This means that history and spatial context are of vital at finer scales as well. Since restoration is the reassembly of community through human intervention (MacMahon and Hall 2001), understanding the community's assembly rules is of considerable importance (Wilson 1999). Finescale contingencies are probably more significant in plant communities where individuals are sessile and interactions are local (Cza ra n and Bartha 1992). [hellip] [W]e propose a simple and quick method appropriate for monitoring the finescale structural complexity of developing vegetation, and well able to collect additional information relevant for manipulating both rates and directions of processes. [hellip] The under-estimated complexity of natural systems implies that we might restore oversimplified versions of target communities. [hellip] [W]e showed that ignoring the finescale, within-stand community patterns, complexity would be underestimated again, and the resulting limited knowledge might lead to wrong restoration decisions. [hellip] Our case studies illustrated that the number of realized species combinations (as a measure of fine-scale structural complexity) is a better indicator of the early stage of degradation and the optimum disturbance regimes, than the stand-scale aggregated averages[hellip]. We argue that non-equilibrium conditions require specific methodology which ables [sic] to represent the spatiotemporal variation and dependence at multiple scales.")

* Franklin J.F.; Van Pelt R. 2004. Spatial Aspects of Structural Complexity in OldGrowth Forests. Journal of Forestry, Volume 102, Number 3, April/May 2004, pp. 22- 28(7). ("We find a gradual evolution of (1) canopies from simple, top-loaded, singlelayered canopies in young stands to the vertically continuous, bottom-loaded canopies in older forests; and (2) spatial heterogeneity from uniform young stands that are initially dominated by competitive processes to the fine-scale structural patchwork of old-growth forests. [hellip] Old temperate forests can be viewed as finescale structural mosaics that are developed and maintained as a consequence of 16 chronic disturbances. Forests subject to stand replacement disturbances evolve through an even-aged cohort that is initially homogenized by competitive-based mortality before arriving at the developmental stage where chronic disturbances become the dominant influence on stand structure. [hellip] [T]he functional old-growth forest consists of a fine-scale structural mosaic in which all elements of the structural mosaic are needed to achieve a complete old-growth forest.")

* Competitive mortality tends to homogenize. Episodic intermediate disturbances act on the homogeneous forest to create spatial heterogeneity.

* Non-competitive mortality (insects, disease, wind, low to mixed-severity fire) tends to be contagious, creates canopy gaps and decadence, and tends toward heterogeneity.

* Chronic low- to moderate-intensity disturbance maintains fine scale structural mosaic until an uncommon stand replacing event occurs.

* This fine scale mosaic is characteristic of old forests in both stand-replacing and gap-replacing disturbance regimes.

* Natural canopy gaps tend to be 1/4 to 1/2 acres, a scale that is smaller than those proposed for group selection, so group selection may not be consistent with HRV.
* Spatial patterns exist at multiple scales. [Perhaps ~1/f distribution of habitat patchiness. With many small and a few large patches, but most habitat represented in the large patches. Fractal edge dimensions. Contagious disturbance takes long path. See e.g. Gisiger, T. 2001. Scale invariance in biology: coincidence or footprint of universal mechanism? Bio. Rev. (2001) 76 pp 161- 209. http://www3.sympatico.ca/thomas.gisiger/Gisiger_2001.pdf and Manrubia, S. C., Sole , R. V. (1997) On forest spatial dynamics with gap formation. Journal of Theoretical Biology 187, 159-164. Sole and Manrubia http://www.sciencedirect.com/science/article/pii/S0022519397904094.
* Epicormic branches are excellent habitat platforms for birds, mammals, and epiphytes.
* Older stands have higher leaf areas.
* All stand development process are simultaneously present within the stand, so new definition of forest "stand" may be need to account for the wide range of processes and conditions present concurrently within an otherwise "uniform" distinguishable stand.

* NOTE: Franklin and Van Pelt may have over-simplified the range of processes in operation within young stands. See: Lutz. J.A. 2005. The Contribution of Mortality to Early Coniferous Forest Development. MS Thesis. University of Washington. http://faculty.washington.edu/chalpern/Lutz_2005.pdf.This MS Thesis looked at long-term transect data from young forests in Western Oregon and found that noncompetitive mortality and gap forming processes are very much in operation in 17 young stands. A major conclusion of this study is the homogenizing influence of stand growth and competitive mortality in young stands is significantly counterbalanced by non-competitive mortality that tends toward heterogeneity and structural diversification. This means that if young stand management is to effectively mimic natural patterns and processes, that variable density treatments must be the rule, and the scale of the mosaic must be very fine scale. See also Lutz & Halpern 2006. Tree Mortality During Early Forest Development: A Long-Term Study Of Rates, Causes, And Consequences. Ecological Monographs, 76(2), 2006, pp. 257- 275. http://cfr501.jamesalutz.com/Lutz_Halpern_Mortality_EM_2006.pdf
* Carey, Andrew B., Janet Kershner, Brian Biswell, and Laura Dominguez de Toledo. 1999. Ecological Scale and Forest Development: Squirrels, Dietary Fungi, and Vascular Plants in Managed and Unmanaged Forests. Wildlife Monographs, No 142, Supplement to the Journal of Wildlife Management, Vol. 63 No. 1, January 1999. http://www.fs.usda.gov/pnw/pubs/journals/pnw_1999_carey003.pdf. ("[S]ilviculture can contribute to simplification or to diversification of the ecosystem. ... It is our contention that aggradation and redistribution of biomass, living and dead, results in niche diversification, an expansion of the niche hyperspace of the ecosystem and the community it contains....It is this expansion that may result in emergent properties through symbiosis and synergy.... Thus we hypothesize that conservation of biodiversity could be achieved in managed forests through planned human-caused disturbances and gradual change that create a multidimensional space of particular dimensions; it is those dimensions we seek to describe here. ... Crown-class differentiation accounted for more variance in our data set than any other factor. Similarly, Carey et al. (1991b) reported that dbh alone could separate age classes in their sample, and Spies and Franklin (19901) reported that most variance among age classes across the Pacific Northwest could be reduced to a single canonical variate related to the standard deviation of dbh and the density of large trees. ... In our study, crown-class differentiation accounted for 25% of variance in vegetation structure, but proved to be a major dimension of the realized habitat of chipmunk abundance. ... Crown-class differentiation is perhaps the factor of forest development most amenable to management: (1) species composition can be determined managerially at initiation of a new stand by legacy retention, planting, and precommercial thinning, (2) management of stem density and growth rates is well founded (Curtis and Carey 1996), and (3) spacing can be varied tree to tree or patch to patch within 18 stands (Carey 1995, Carey et al. 1996a,b). Growth of large trees and time lead to disease, injury, decay, and death of trees and consequent expansion of multidimensional niche space. Decay processes seem less deterministic; management of decadence is more problematic. ... Of all the habitat elements we measured, coarse woody debris proved to be the best predictor of the realized habitat space, activity; and carrying capacity of northern flying squirrels and carrying capacity for Townsend's chipmunk. ... If catastrophic disturbance sets the stage, it is

small-scale disturbances in the canopy that determines the pace of the ecosystem development. Whitmore (1989) claimed that gaps drive the forest cycle in all forests; but the ecological process of tree death (Franklin et al. 1987) is particularly important in expansion of niche space. ... ... biodiversity is suppressed in competitive exclusion (which historically was rare in many landscapes; Tappeiner et al. 1997a) and there is expansion of niche space and increased biodiversity in understory-reinitiation and niche-diversification stands. ... ... Ecosystem dynamics... suggest active ecosystem management would be more effective than passive management (withdrawals or reserves) for conservation of biodiversity in second-growth forests. ... Thinnings, active promotion of decadence, and legacy retention hold potential in managing forests for biodiversity, but spatial scale of management is important. ...

Thinning

In the Pacific northwest, the best opportunities for conservation of biodiversity through ecosystem management lie in the millions of hectares of second growth forest <50 years old. (DeBell et al 1997, Hayes et al 1997). Crown class differentiation, canopy stratification, understory development, and habitat breadth can be enhanced through thinning, but spatial patterning is important.... Traditional, light commercial thinning will not preclude or move a stand out of competitive exclusion and will not increase habitat breadth. Heavy thinning with even spacing can cause stands to become drier through increase wind and sunlight, could result in salal brushfields (simple structure with low habitat breadth), and if applied in a dense stand) could disrupt mycorrhizal links and increase probability of massive windthrow (Carey et al 1996b).

...

Variable-density thinning on a 0.1-0.5 ha scale that removes subordinate or codominant trees appears to have potential for increasing crown-class 19 differentiation, canopy stratification, understory development, and habitat breadth.... [W]e suggest that maintaining relative densities of 0.5 and 0.35 in a ratio of 2:1 over the stand could result in accelerating the development of stand structure and heterogeneity characteristic of late-seral, natural forests. Hagar et al. (1996) recommended variable-density thinning with relative densities of 0.2 -0.7. Actual choice of relative densities should entail consideration of risk of windthrow, potential for creation of salal or salmonberry (Rubus spectabilis) brushfields, the silvics of the species being managed, and site conditions. Multiple thinnings would be necessary to (1) keep the disturbance intermediate to small scale, (2) avoid disrupting connectivity among tree crowns (3) prevent excessive drying of the forest floor, (4) avoid development of a sparse overstory with a dense salal brushfield underneath, and (5) keep the canopy from closing into a stage of competitive exclusion.

...

... Traditional commercial thinning with systematic spacing allowed quick (ca. 10 yr) canopy closure and return to competitive exclusion; biodiversity targets were not met.... In forests being restored for late-seral wildlife, biodiversity thinnings appeared to have substantial value in creating late-seral forest relatively quickly. In forest managed for economic values....

...

Managing for decadence

Managing decadence is the most challenging aspect of intentional ecosystem management. Our research shows that decadence is more than snags and logs; it is a process that is influential in multiple aspects of ecosystem development from providing cavities for wildlife, to creating gaps in the canopy, to altering forest floor microclimate and structure.")

* "To simulate this type of natural disturbance [openings created by beetles], logging in medium-aged mixed montane stands should aim to create gaps with retention of a part of the dead wood. Planting after logging should be delayed, to lengthen this important phase of sunlit conditions otherwise rarely found in a landscape of young and dense commercial forests." Jorg Muller, Heinz Butler, Martin Go[szlig]ner, Thomas Rettelbach, Peter Duelli, 2008. The European spruce bark beetle Ips typographus in a national park: from pest to keystone species. Biodivers Conserv (2008) 17:2979-3001. https://link.springer.com/article/10.1007/s10531-008-9409-1.
* There may be value in varying the shape(s) of harvest units and the harvest and nonharvest areas within units so they are less blocky and more sinuous with a greater ratio of edge-to-area. This has proven beneficial for pollinators, and may benefit other wildlife as well. Parmentier, L., Kerckvoorde, A. V., Couckuyt, J., Calster, H. V., Smagghe, G., & Haesaert, G. (2025). Sinus 20 management: Meandering mowing as a novel method to improve pollinator biodiversity and habitat heterogeneity in mesic grasslands. Agriculture, Ecosystems & Environment, 382, 109478. https://doi.org/10.1016/j.agee.2025.109478.

Dominant Tree Release

The project involves dominant tree release, which was described generally by staff as selecting the biggest tree in a portion of a unit to retain then removing smaller diameter trees within 15 feet or so around that tree. Natural forests are clumpy. Did the district consider dominant tree release that retains 5 or more trees, not just a single isolated tree? DTR trees are more vulnerable to blowdown, and retaining multiple trees helps spread the risk and retain some structure if one or two trees blow down.

Skips and Gaps

The EA states that skips and gaps will be intentionally placed throughout treated units to maintain habitat connectivity and preserve special habitats and structures, such as large remnant live and dead trees. EA at 12.

How many acres of gaps are proposed? The EA says 38 acres on page 11 but page 26 says:

Gaps are proposed to contribute to the quality early seral habitat as described above as well as adding species and structural complexity at both the stand and landscape level. Approximately eight trees per acre of larger residual trees would be left in each gap to increase stand diversity and for future snag and down woody recruitment. Gaps of one to three acres in size, are proposed to be created in six units (Units 8, 44, 46, 52, 130, and 360) for approximately 20 acres total.

Please clarify. Gaps that function as mini-clearcuts do not mimic natural processes. Variability is fine, but do not place gaps in places that have existing ecological features that should be retained, such as snag patches, large or legacy trees, rock piles, well-developed understory, etc. Will gaps be allowed to regenerate naturally?

4. Logging in Riparian Reserves

The district proposes commercial and noncommercial riparian thinning treatments:

21 Approximately 488 acres of Riparian Reserves would be commercially thinned to accelerate the attainment of ACSOs, in alignment with the FP (detailed description of the proposed actions are provided in Appendix E).

...

Riparian Reserves: Approximately 38 acres of Riparian Reserves within treatment units will be treated by falling and leaving conifers on the ground, adjacent to or into stream channels (Appendix E). Canopy cover, post treatment, would not be reduced below 70%and the felled trees would be left on site. This would be accomplished post-harvest of the rest of the stand. Units proposed for this treatment include: 25, 32, 33, 36, 55, 60, 68, 83, 86, 95, 98, 100, 280, 310, and 340 (approximately 37.3 acres).

EA at 8. The EA states that logging could occur as close as 30 feet from streams, which raises concerns about both shade and wood recruitment. EA at 96 (Appendix B, Aquatics 24).

Removing trees near streams risks degrading water quality. Riparian vegetation is important in several ways: (a) it shades the water surface from direct solar insolation, (b) it shades soils and shallow groundwater before it is discharged to surface streams; (c) it reduces wind penetration and air mass mixing over the water surface, insulating the stream from summer daytime warming or winter night time cooling, and (d) it stabilizes streambanks and floodplain surfaces and provides a supply of downed wood that helps keep channels narrow and establishes and maintains internal hydrologic complexity (vertical and lateral flow exchange between surface water and hyporheic waters) that buffers stream temperature against the effects of solar insolation and airmass mixing.

Thinning in riparian reserves raises ambient air temperatures that the microclimate effects must be accounted for. Anderson, Paul D.; Larson, David J.; Chan, Samuel S. 2007. Riparian Buffer and Density Management Influences on Microclimate of Young Headwater Forests of Western Oregon. Forest Science, Volume 53, Number 2, April 2007 , pp. 254-269(16).
http://www.ingentaconnect.com/content/saf/fs/2007/00000053/00000002/art00012.

... concern about cumulative effects of thinning, which involves an understanding of the spatial and temporal dimensions of the issue in whole-stream networks. To address these cumulative effects we are studying experimental riparian thinning treatments in adjacent stream networks and forests managed by the Green Diamond Resource Company and the National Park Service (Redwood National Park) in northern California. Thinning was implemented in multiple locations, allowing us to evaluate effects of these local treatments in the context of larger stream networks. To track local treatments, we followed a before-after-control-impact approach to 22 quantify spatial and temporal patterns of riparian shade, light, and stream temperatures as possible responses to riparian thinning. To evaluate how the potential effects of these local treatments resonate at broader extents, we have quantified shade, light, and stream temperatures across entire networks. Spatial statistical models were applied to these data to determine the spatial extent to which localized thinning propagated through stream networks. Preliminary results from tracking local treatments indicate an immediate response in stream temperature associated with the reductions in shade and increases in light associated with riparian thinning. At the network extent this resulted in variable downstream propagation of the effects of upstream thinning. David Roon, Jason Dunham. 2018. Spatial Patterns of Riparian Shade, Light, and Stream Temperature in Response to Riparian Thinning in Redwood Headwater Streams. Speed Talks. 2018 Oregon Chapter of the American Fisheries Society 54th Annual Meeting. http://orafs.org/wp-content/uploads/2017/10/2018-Annual-Meeting-Abstracts.pdf

Climate change is expected to increase stream temperatures and reduce fish habitat quality and quantity. "Riparian vegetation can potentially off-set future increases in water temperature [related to global climate change]." Gordy Reeves, 4-22-2020 Presentation to the Oregon Board of Forestry.
https://www.oregon.gov/odf/board/bof/20200422-bofhandouts.pdf (p 63/132).

Please provide us with consultation documents upon completion of ESA consultation with the National Marine Fisheries Service regarding Upper Willamette River spring Chinook salmon, anticipated January 2026. EA at 91.

5. Invasives

The EA includes a table showing invasives in the project area. EA at 32 (Table 6). Thank you for providing this analysis. We are concerned the project will exacerbate existing conditions. Does the district have the capacity and resources needed to address current infestations? How do invasives impact fire risk and hazard in the planning area? We urge the district to take proactive steps to avoid the spread of weeds. Use canopy cover to suppress weeds. Avoid soil disturbance and road construction. Scarify landings and temporary roads and plant with native seeds.

6. Cumulative Effects

The EA states that 87 acres of commercial thinning with two DTRs from the Dry Beard EA overlaps the Divide EA. EA at 27. A visual would help us understand combined impacts - provide a map that shows the two projects.

7. Climate Change and Carbon

The EA's analysis should more fully acknowledge how this project contributes to global climate change by emitting carbon. The EA suggests that logging is a climate adaptation action, but the EA does not fully disclose that logging accelerates the transfer of carbon from the forest to the atmosphere and emits greenhouse gas and makes global climate change worse (for this project area and the rest of the planet). The EA makes little attempt to harmonize the potentially competing goals of climate change adaptation and climate change mitigation. Please improve this analysis in the EA.

Conclusion

Each substantive issue discussed in these comments should be (i) incorporated into the purpose and need for the project, (ii) used to develop NEPA alternatives that balance tradeoffs in different ways, (iii) carefully analyzed and documented as part of the EA, and (iv) considered for mitigation.

We thank the district for its public engagement process for this project. Please keep us informed of any additional subsequent NEPA documents, decisions, and engagement opportunities for this project as it is finalized. Thank you for taking our input into consideration.