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Siuslaw - Please accept the following comments on the North Fork Smith River Restoration Project:

Logging exacerbates climate change.

Commercial logging is the single greatest source of greenhouse gas emissions in Oregon. In implementation, thousands of gallons of polluting fossil fuels are consumed. After logging, transporting, slash burning, and processing, the net retention of carbon in wood products is as low as fifteen percent. Living trees not only retain carbon, they can continue absorbing carbon for hundreds of years, while wood frame buildings rarely last more than a hundred years. Even trees killed in a wildfire retain as much as eighty five percent of their carbon.

A recent publication by Mark Harmon (2019) indicates that the carbon retention gains through substituting wood for concrete and steel in construction are overestimated by a factor of 2 to 100, due to 1) potential future reductions in the energy consumption required to produce concrete or steel, 2) potential increases in energy consumption to create wood products (laminated beams, etc.), 3) energy consumed through the replacement of short-lived wood structures, and 4) leakage, or the use of fossil fuels by other economies.

Climate change is here and now, and the effects are disproportionate on socially vulnerable populations.

We cannot afford to wait thirty to forty years for forests to reabsorb the carbon lost during logging. We must do everything within our power to offset the damaging effects of warming. Considering the escalating rate of human caused climate change, it would be democratic of our public agencies to greatly reduce the scale of commercial logging projects in our publicly owned forests. Simply put, there is no justification for crippling the carbon storage potential of our forests through the millions of board feet and thousands of acres megaprojects currently in planning. The Forest Service would be prudent to conduct an extensive analysis of the carbon sequestration and climate mitigation potential of our forests, rather than logging them.

Depending on the severity of the prescription, thinning affects forest ecosystem health negatively. With climate effects increasing, some forests may never recover.

At logging sites, some of the impacts of aggressive thinning and canopy removal are less moisture absorption through fog drip, drying from exposure to the sun, and summer temperatures up to ten degrees higher than adjacent stands with intact canopies. Shade tolerant plant societies are decimated and can take years to recover. Without adequate ground cover, topsoil and duff dry rapidly and contribute fuel for wildfires.

Special attention should be given to conserving red tree vole habitat. If harvest units are adjacent to old growth stands, buffers between harvest areas and old growth should retain full canopy, and consideration given to

establishing unlogged corridors through harvest units between proximate old growth stands, allowing red tree voles to disperse and exchange genetics (see Swingle below). If harvest unit trees contain structural defects (forked tops, brokentops, mistletoe blooms, cavities), those units should be deferred.

Red tree voles are an indicator species for the health of forest ecosystems. The Forest Service finds suitable habitat for red tree voles analogous to habitat for northern spotted owls. Although the population decline for red tree voles may not be as precipitous as for the northern spotted owl, vole populations are diminishing every year, mostly due to a steady decrease in habitat. Besides fire, climate change, and predation by burgeoning barred owl populations, there are six more reasons red tree voles may not persist:

- 1) Zero protection on private lands.
- 2) The BLM is no longer required to survey for red tree voles before logging.
- 3) Both the Forest Service and the BLM routinely apply non-high priority status for voles in sixteen different watersheds in Oregon, in order to log their habitat.
- 4) Before logging, the Forest Service and BLM protect red tree vole nest sites only if harvest stands meet certain criteria (survey protocol). Otherwise they are logged even though voles may be present.
- 5) Red tree vole habitat is severely fragmented across the species' range. According to a recent study by leading scientists Forsman and Swingle, the average size of a red tree vole habitat block is just two percent of what it was one hundred years ago. This is particularly relevant in the Coast Range, where a patchwork of old FS clearcuts are interspersed with native forest over a large area.
- 6) Even in islands of suitable habitat, vole populations may be spotty or nonexistent. In a survey effort by citizen surveyors in the Highway 46 sale near Breitenbush Hot Springs, 71 old growth trees were climbed and only one inactive nest was found. In a 2019 survey of a 173 acre unit of the Quartzville Middle Santiam project, out of 42 brokentops with cavities that were climbed, only three active nests were detected. In the Flat Country project, 40 trees were climbed before one inactive nest was discovered (personal communication). Thirteen harvest units were either transect surveyed or targeted for climbing, and surveyors eventually detected active nests in only two units.

Although red tree vole surveys indicate the presence of voles across much of their range, it must be recalled that surveys have only been required for a few decades, and are not reliable indicators of the rate of decline. Red tree vole habitat is virtually nonexistent on industrial forest lands. At the rate the Forest Service and BLM are eliminating red tree vole habitat on public lands, conditions across Western Oregon will eventually approach the level of rarity of suitable habitat that led USFWS to designate red tree voles as candidates for listing in Oregon's North Coast.

The Forest Service persists in violating the ESA by logging habitat for northern spotted owls and their prey species. Consultation with Fish and Wildlife does not guarantee the avoidance of harm. Any harvest unit offering suitable spotted owl habitat, or adjacent to suitable habitat, should retain at least sixty percent canopy.

Decimating prey species populations through the commercial thinning of viable habitat will not contribute to the recovery of spotted owl populations, as required by the Endangered Species Act. The term "take" is defined as "to harass, harm, etc.". Interfering with a nesting owl's ability to effectively raise hatchlings, the ability of adults to forage and feed offspring, and the ability of juveniles to disperse into new and viable habitat, constitutes harm. Virtually any logging project in stands adjacent to old growth will impact prey species, and impair the recovery of the Owl. A key element in degrading the habitat of prey species is the removal of canopy.

Consider the following quotations concerning red tree voles, taken from the petition to list the Dusky Vole (red tree vole subspecies) as Endangered or Threatened:

James Swingle (Daily Activity Patterns, Survival and Movements of Red Tree Voles, Master's Thesis, 2005) states :

"In many areas young forests may be the only chance for persistence of the species, especially in landscapes where old forests have been largely eliminated or are restricted to remnant patches interspersed within extensive areas of young forests."

Swingle (2006) suggested that dispersal through young stands by tree voles is dependent upon crown closure, spacing of trees, and tree structure.

Swingle states "Young stands with open canopies and tall, straight trunks are probably much more inhospitable to dispersing tree voles than are young stands with dense canopies and high concentrations of trees with structures that provide substrates for temporary or permanent nests."

The above statement predates Swingle's extensive surveys of second-growth stands in close proximity to old growth in Oregon's Coast Range. Swingle found that the dispersal of red tree voles into adjacent second-growth stands was intermittent at best, except in the case where artificial nest platforms had been installed in younger trees.(personal communication).

Dr. Eric Forsman stated that even in second-growth stands where tree voles were found, they were in stands containing high canopy cover and structural density, with lots of tree limbs and deformed tree tops for nests.

James Swingle - " Our data on dispersal behavior of 2 juveniles and 7 subadult tree voles suggest that most tree voles disperse only a short distance before settling. This result would seem to support previous speculation that tree voles are relatively weak dispersers, and, therefore, may be slow to colonize new area and susceptible to local extirpation if they become isolated in patch environments (Cary 1996, 1999, Maser 1998, Huff et al. 2001)".

This is supported by Carey: "The vole is probably a weak disperser incapable of dispersing through clearcuts or other clearings (or blowdowns). If a stand is destroyed, the voles may perish: recolonization of new stand may have to come from adjacent old stands, after the new stand has developed a closed canopy"

Obviously Forsman, Swingle, and Carey believe closed canopies are more suitable for red tree vole habitat than aggressively thinned stands.

Thinning affects another prey species for the northern spotted owls: flying squirrels.

Red tree vole surveyors on many occasions have come face to face with flying squirrels in the canopy. From Eric Forsman's and Todd Wilson's synopsis of the effects of commercial thinning:

"Recent studies suggest that reductions in Northern Flying Squirrel abundance

following thinning may be driven by increased susceptibility to predation created by removal of critical above-ground cover. Predation, lack of canopy connectivity, and reduction in suitable nest substrates may all contribute to reduced Red Tree Vole abundance following thinning.

From the Flat country EIS, McKenzie Ranger District:

Thinning of dispersal habitat would benefit overall forest structural development and improve long-term spotted owl habitat conditions beginning after 25 years. However, thinning of young Douglas-fir forests may also decrease the density of northern flying squirrels, the main prey of spotted owls in the central Oregon Cascades, for at least 12 years after treatment (Manning et al. 2012)

From the Quartz Integrated Project Environmental Assessment, Cottage Grove Ranger District:

Additionally, if treated stands are allowed to develop over time, the proposed silvicultural prescriptions are expected to result in stand structural conditions that would be considered optimal habitat for supporting high densities of northern flying squirrels. This indicates there are also potential beneficial indirect effects to spotted owls associated with this project through long-term, improved habitat conditions and increased abundance of this prey species.

In the previous citation, the words "may decrease", "expected", "potential" and "indirect" reveal the speculative nature of these statements. In fact, Forsman and Wilson predict it may be decades before commercially thinned stands develop into high quality habitat for flying squirrels. At the current rate of decline of spotted owl populations, the detrimental effects of commercial thinning on prey species populations could be the final nail in the coffin for the northern spotted owl, which may be extinct before stands approach optimal habitat conditions. With the constant presence of barred owls, prey species populations are more important than ever to maintain. If the northern spotted owl is to escape extinction, it will be because public lands managers conserve enough habitat for the barred owl and the spotted owl to coexist, and carefully conserve prey species populations sufficient to provide sustenance for both barred and spotted owls.

Two aged stands with interspersed legacies can perform the same ecological function as pure old growth.

If harvest units in the North Fork Smith River Restoration project contain multiple cohorts, or interspersed old growth trees, they should be surveyed for the presence of red tree voles. Drawing from the results compiled by the Northwest Ecosystem Survey Team over twenty years in twenty-five federal timber sales, it's a reasonable conclusion to make that two aged or multi-aged stands can offer viable habitat for owls, voles, woodpeckers, and other cavity nesters. This is especially relevant for red tree voles if a high percentage of canopy cover is maintained, as voles are less susceptible to predation when they can utilize intersecting limbs to travel from tree to tree through the canopy while foraging, dispersing, or frequenting multiple nests.

Thank You

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