Ochoco Forest Restoration Collaborative
Aspen Restoration Zones of Agreement
September 15, 2015

Introduction:

Aspen woodlands are one of the more biologically rich plant communities in Central and Eastern Oregon, including the Ochoco National Forest. Although they occupy a small proportion of the physical landscape, they play a disproportionately large role in providing important wildlife habitat, including cavities, unique insect and plant communities and abundant forage. In addition, aspen have a long standing legacy as being culturally important for human use, from providing medicine to Native Americans, homestead sites, grazing ground, and favored recreation spots.

Current Condition:

Despite their importance, aspen have declined significantly in the Blue Mountains, possibly by as much as 80% (Seager, Ediger, and Davis. 2015). Aspen clones, stands and ecosystems are located in small, isolated patches across the otherwise conifer-dominated Ochoco National Forest (ONF). They are often associated with streams, springs, rock outcrops, and meadows, but in some instances are found within upland forests. Research and local expert opinion (Seager, Ediger, and Davis 2015), suggests that historically aspen ecosystems would have been larger, covered more total area and included more complex living and dead structures, including intact aspen understory, midstory, and overstory. Aspen ecosystems are in decline throughout the ONF due to several suppression factors, including:

- Increased competition for sunlight, soil moisture and nutrients;
- Increased herbivory pressure from native ungulates and domestic livestock;
- Changes in forest hydrology, and;
- Changes in of natural disturbance processes, especially fire.

It is important to recognize that the decline of any individual aspen clone or stand is often the result of a unique combination of these suppression factors. Consequently, the assessment of current condition, as well as the prescription for restoration, should be site specific and tailored to address the drivers and suppression factors for each clone, stand or ecosystem.

Desired Condition:

Our vision is of large, multi-aged stands of aspen with few conifers (exception being existing old-growth trees of any species) and vigorous understory, midstory, and overstory growth. Aspen stands include both living and dead (i.e. snags) structures that form the foundation of ecosystem and habitat diversity across the ONF. Aspen ecosystems are well-represented across a healthy, resilient fire-adapted forest landscape characterized by abundant forage opportunities both within aspen stands and in the surrounding conifer forest, thereby reducing browse pressure within aspen ecosystems.

These important hardwood ecosystems provide exceptionally important habitats and habitat connectivity across the landscape. Natural hydrological and disturbance regimes (esp. low to mixed-severity fire) are intact in and around aspen ecosystems, sustaining the health and vigor of aspen stands and thereby contributing to healthy soil and aquatic ecosystems.

Zones of Agreement:

1. Aspen ecosystems are an important component in the ONF, providing critical wildlife habitat, unique places of high biodiversity, and highly valued area for social and cultural reasons.

2. Aspen currently are, and should continue to be, prioritized for active restoration on the ONF. Aspen restoration should be considered on a landscape scale, with treatments that aim to maintain and restore the vigor of current aspen clones, stands and ecosystems, as well as facilitate their expansion where feasible and appropriate. Timing and placement of aspen restoration treatments should also be considered that promote a diversity of stand ages and structures across the landscape to promote habitat diversity and connectivity on the ONF.

3. The increase in prescribed burning and wildfires on the Ochoco NF are creating potential areas for aspen seedlings to take hold, as aspen seeds require bare mineral soil. Aspen seedlings are not sprouts from parental root, but new genets (new clones) from fertile seeds from male and female clones. These new clones increase genetic diversity on the landscape. Large exclosures and other areas of protection should be searched for potential aspen seedlings. Any additional aspen seedlings that are found should be fenced and fully protected from browsing, antler rubbing, or barking until they have recruited into the overstory. New aspen clones that form during current climate conditions may have more resilience to future drought and climate change effects.

4. Aspen are in decline in the ONF, which should be addressed on a site-specific basis according to the relevant suppression factors (see the following) affecting the vigor and resilience of each aspen clone, stand and ecosystem:

   <u>Suppression Factor:</u> *Increased Competition*
   Competition within and around aspen clones, stands, and ecosystems for sunlight, soil moisture and nutrients due to changes in forest structure (i.e. increase in density) and species composition (i.e. increase in shade tolerant/fire intolerant species) resulting from fire exclusion.

   Recommendation: On many sites within frequent-fire forest types, the condition of conifer forests surrounding aspen clones and stands is significantly departed (in terms of structure and species composition) from the historical range of variability as a result of fire exclusion. Conifer forests adjacent to aspen clones and stands should be treated to provide

the sunlight, soil moisture and nutrients necessary to increase aspen ecosystem vigor and resilience, and facilitate the expansion of aspen where ecologically appropriate and operationally feasible. Removal of non-old growth (trees <21") competing conifers should happen at approximately 1 tree height (100-150 feet) away from the edge of the existing trees or sprouts.

Recommendation: The current density of young conifers (including large but young trees) of all species is not representative of historically resilient aspen ecosystem conditions (Franklin et al., 2013, Seager, 2010). Current forest density is a significant factor leading to the decline of aspen ecosystems because of the increased competition for sunlight, soil moisture, and nutrients this condition creates. Removing encroaching young conifers within and around aspen clones and stands should be a focus of aspen restoration treatments. *See below for dealing with trees >21".*

Recommendation: Some isolated large and old trees (defined as trees >150 years) of all species were historically present in aspen ecosystems, adding structural and species complexity. These isolated old trees do not have a significant impact in terms of competition for sunlight, soil moisture and nutrients, and therefore should not be removed during restoration treatment.

Recommendation: Working with trees greater than 21 inches.
This is not an open license to cut trees larger than 21". Where it appears that trees >21" need to be removed for the health of the stand, a site-specific analysis should be done (looking for old trees, snags, down logs and stumps) showing what a healthy density of old growth trees would be in that particular location. If trees >21" need to be removed to meet that level, young, shade tolerant trees should be thinned from below, taking the youngest, smallest trees first. Young trees should be determined using the Van Pelt guidelines to tree age.

<u>Suppression Factor:</u> *Increased Herbivory*

Herbivory from ungulates and domestic livestock affects the quantity and vigor of aspen sprouting over time. It also affects the ability of existing sprouts to escape browse height. That in turn prevents the next generation of young trees from becoming established and alters the development and succession of aspen understory, midstory, and overstory.

Recommendation: Where herbivory is a driver of decline, livestock should be managed for removal before grasses dry out and aspen suckers become the most palatable forage in the allotment.

Recommendation: Where herbivory is a driver of decline, place temporary barriers around aspen stands. Jack-strawing of downed trees, buck and pole fencing, or wire fencing are all feasible options for excluding native ungulates and domestic livestock. The benefit of jack-strawing trees or using buck and pole fencing is that there is less peril to young wildlife, and less maintenance costs associated with the fence. Typically these fencing options fall apart within 5-10 years, sufficient time to allow aspen suckers to grow above browse height. However, if grazing pressure will remain after that time, future fencing may be required to facilitate the next wave of aspen regeneration. Barriers should be placed well outside the existing stand so that the stand is able to expand.

Suppression Factor: ***Changes in Forest Hydrology***

Changes in forest hydrology, like a lowering of the water table due to stream incision and/or departure from historic conifer densities within, around, and upslope of aspen stands, affects available soil moisture, a critical driver of aspen vigor and resilience in eastern Oregon.

Recommendation: Restoring stream function is essential for moisture dependent ecosystems, including aspen. Streams and riparian systems that show signs of lowering water tables, including head cuts and/or stream incision, should be prioritized for restoration to reduce further changes in the hydrology of adjacent riparian and upland forest. Dry conifer forests and juniper stands upslope of aspen stands should be thinned to provide increased flow into streams, to increase fire resilience, and to increase understory forage availability.

Suppression Factor: ***Changes in Natural Disturbance Processes***

Lack of natural disturbance processes, in particular low and mixed-severity fire, that are essential for facilitating aspen establishment, regeneration and expansion.

Recommendation: Allowing prescribed and natural fires to burn through aspen clones and stands can stimulate and increase sprouting, where the vigor of the existing overstory is sufficient to respond to this natural disturbance process. Low and mixed-severity fire that creates or restores openings in dense conifer forests can also facilitate as of the establishment of new aspen stands, as aspen requires bare mineral soil and high sunlight to regenerate by seed. *Natural fires should be allowed to burn in areas that have structure and composition that will prevent high severity and intensity fires. Wildfires should not be allowed to burn un-managed in areas that threaten lives, private property, or old growth stands.

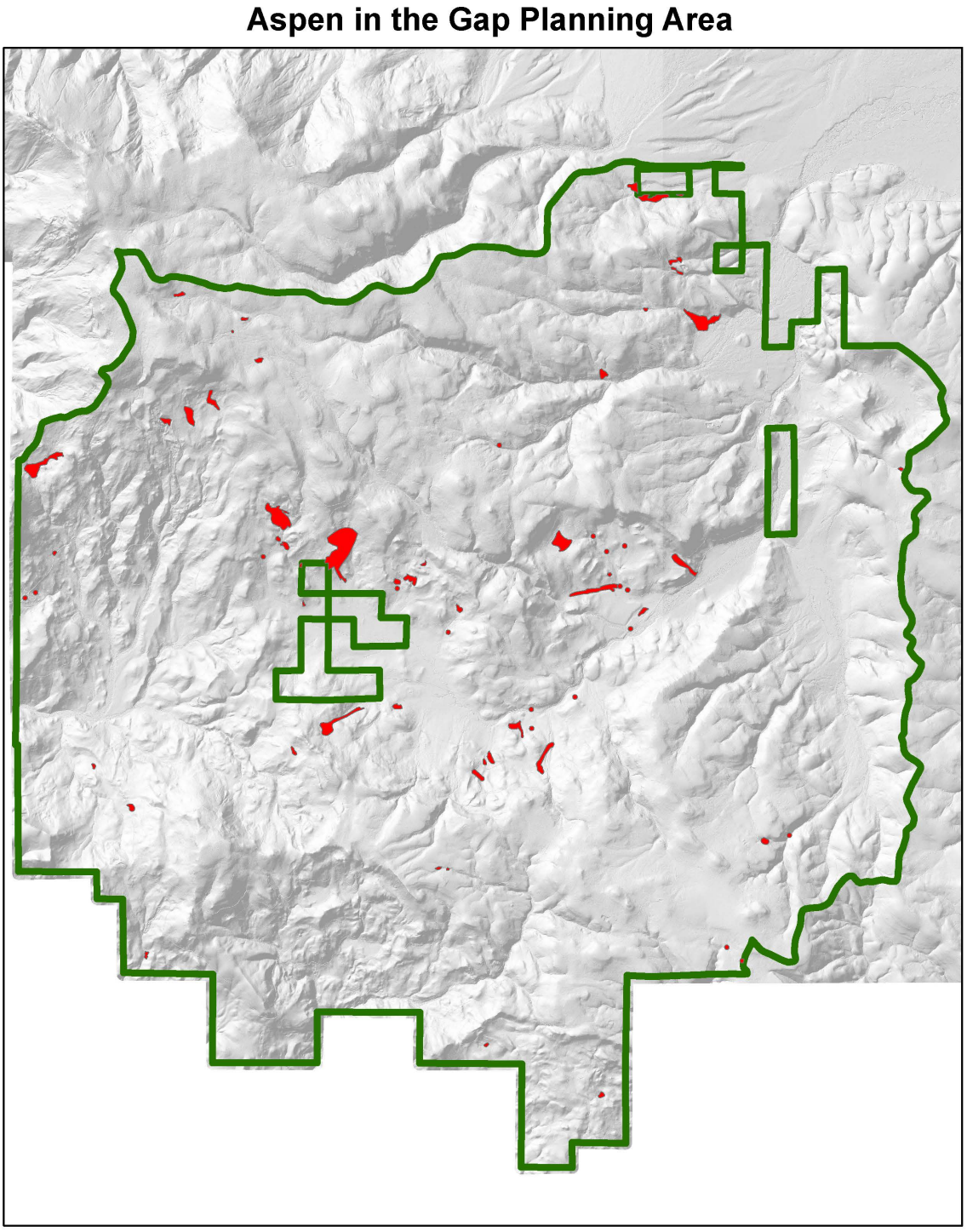

Figure 1. Map showing aspen extent in GAP planning area. Credit: Robbie Piehl.

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