Blue Mountains Forest Partners Science Forum
September 24th, 2007

Scientist Presentations

Jim Agee, Professor of Forest Ecology

Creating Resilient/ Fire-Safe Landscapes

1. Climate change is a major cause of fire. Fires are more severe and there is more tree mortality.
2. Dry forest history: logging fire resistant trees and the removal of fine fuels from grazing, then fire exclusion.
3. Ponderosa pine forests history: past 50 years created "the jungle" with ladder fuels.
4. Historical fire severity: fire regimes were mixed, not only high and low.
5. Stand level principles
    1) Reduce surface fuels
    2) Reduce ladder fuels
    3) Keep big trees
    4) Reduce canopy fuels
6. Techniques
    1) Prescribed burning
    2) Thinning
7. Treatment examples
    1) Thinning & prescribed burn
    2) Fuel breaks – surface & ladder fuels removed, thinning
8. Landscape level principles
    1) Treatment optimalization model: treatments on a downwind landscape perspective
    2) Treatments occur in "fast spread" areas
    3) 20% per decade treated most efficient (probably over 20 years its about 1/3 of the landscape as some areas are re-treated each decade)
    4) 35% reserve "no treatment" still functions at the "most efficient" level
9. Budgets: the Forest Service suppression budget should be part of their overall budget; the overall budget should increase, suppression money is still needed in addition to new funds for proactive work.

Steve Fitzgerald, Eastern Oregon Silviculture and Wildland Fire Education Specialist

Old Growth Ponderosa Pine Response to Stand Density

1. Background
    a. Growing space: moisture important, site dependant; only so many trees can be supported at a certain time.
    b. The root system is three times the crown size and with competition trees struggle to get the resources they need.

2. Old growth today
    a. High stand density, ladder fuels, declining big tree health/hydraulic limitations, stand density effect (i.e. as tree density increases water is less available.)
    b. We could retain the larger trees that are now dying at 250 years, and they could live 600 to 800 years.
    c. The health of old growth trees should be considered in restoration planning.
3. Treatments after thinning
    a. 4 years until tree growth
    b. Higher water availability
4. Thinning – reduce competition, ladder fuels
5. Soil profile – thinning will increase moisture for large trees, only drying out duff and very top of soil

Paul Adams, Forest Watershed Extension Specialist

Thinning, Fuel Treatments: Harvest and Soil Effects and Compaction

1. Thinning can produce a reduction in productivity from compaction
    a. Can reduce seedling and tree growth
    b. Basal area growth can be negatively impacted
2. Potential effects – can be good or bad
    a. Erosion
    b. Scalping
    c. Invasives
3. One example – sandy loam: increase in growth due to additional capturing of water
4. Soil strength
    a. Degree of susceptibility to compaction; all soil is local
    b. Compaction occurs with each trip made across the soil until the soil becomes strong enough to support the equipment.
5. Management options –
    a. Transportation (equipment)
    b. Stand density
    c. More trips increases compaction
    d. Putting slash on trails reduces compaction
    e. Designated skid trails
    f. Tillage can help – concentrates on the areas closest to landings
    g. Frozen soil or working over snow can reduce compaction

Steve Zack, Conservation Scientist

1. There is more mixed conifer than was historically present, and there has been a corresponding change in the fauna.
2. We are in a drought now that will continue into the future.
3. There is a need to be clear about the effects of logging and thinning, and we also need to be realistic about the economics of treatments.
4. When considering prescribed fire, we should think about: safety, cost, window of opportunity (narrow), and shortage of personnel.

5. Combining fuel treatments and commercial harvest can coincide to support local economies and restore forests to more historic, resilient conditions.
6. Treatments can reduce avian density because they essentially reducing foliage for foliage birds. However those forests conditions are unnatural; fire can't manage for all species.
7. Snags: Need to manage for snags and to produce snags in the future; snags must be dynamic on the landscape. To attract woodpeckers Ponderosa pine sapwood needs to decay. It may not, and it may harden instead. Snags that are foraged also show an increase in cavities: woodpeckers have fungus on their beaks which increases decay.

Mark Henjum, Umatilla National Forest Wildlife Biologist

Coordinated work for the Eastside Forests Scientific Societies Panel report. Report found that old growth was lacking and needed restoration.

Need to come together to protect old growth habitat because it is burning up across dry forests in the eastern Oregon, including on the Umatilla. We need to be able to rely on folks in place to manage it.

If we are going to have old growth it needs to be treated within old growth areas. There will be trade offs. We are losing forests at unprecedented rates. After fire and treatment roads should be closed. We need to prioritize key areas; again we should look at the trade offs.

At this time money for long-term monitoring is scarce. Monitoring is important to see if the results are good or bad.

Answers to Questions

1. Spring burn detrimental to birds?
    a. Zack: Spring burning has short-term detriments, but trade offs should be considered. Short-term impacts may be worth long-term benefits.

2. How much analysis should be done, especially in riparian areas when looking at the landscape level?
    a. Buffered areas are not in natural conditions and should not be seen as no treatment zones
    b. Landscape level, focus on issues, not on stand level
    c. Map based priorities based on fire science (downwind treatments)

3. What to do with treatment slash in consideration of nutrients in fine debris?
    a. Nutrients are really key in soil and less so in needles and small twigs.
    b. Tree removal leaving all but boles vs. removing all tree parts resulted in no nutrient difference
    c.
4. How can organizations help agency work with internal rules?
    a. Use collaboration to change laws and policy, depends on trust; we need examples of good management.

Field Trip

Stop #1 Description
Aspen, riparian site but not a great one, intermittent creek, old RR logging and RR grade. Trees dense, conifer encroachment on aspens.

Discussion Highlights
Woody material could be placed across the channel. Conifers could be removed to release the aspen. This area is inland water and has no fish issues.

Would need to prepare for introduction of fire by removing ladder fuels and thinning. Some snags should be left. Area would needs to be fenced after treatment to stop impacts of grazing on regrowth.

Area to be thinned should be five times the aspen crown. In some places, they are cutting down all the aspen to regenerate it. If a low vigor stand is burnt it may kill all the aspen. Should have 30 – 50% removal of non-aspen. Should leave some patchiness for critters.

The stream has not run water since the '30s, according to Jack Southworth whose family has kept records. Aspen may not have been naturally here, but we should retain them whenever possible because of the shortage.

Giving things a rest may not bring you to where you want to go. A rest is not how the system works. Disturbance is the norm. Protect may not mean hands off.

So should this site be treated?
With so few resources, we need to prioritize. The site's marginal riparian condition makes it a low priority.

Stop # 2 Description
Thick fir patch with lots of small down material. A few larger white fir and Douglas fir trees were present. More trees than historically present and more doug fir instead of p-pine

Discussion Highlights
Choices may be to leave it as it is now or return it to a Ponderosa pine stand.

Should start by looking from a landscape scale and then see where the site fits. Could use GIS tools for a perspective.

FS would like to treat 25,000 acres a year and need to look at 100,000 acres to be able to treat the 25,000 acres. Landscapes should be revisited every 7 years.

What is the desired condition for allowing wild fires? At this point in time the fuel loads are too great to allow wildfires loose on the landscape.

In terms of priorities, we should focus on restoring riparian areas and taking care of old growth first and then look at an area like this; it's not a priority unless there is old growth nearby and we could protect the old growth by treating this area on its edge.

If we thinned and underburned this site, birds (wood peckers & nut hatches) would move in. This is a small area, and one should look at or include larger areas so that thinning could be economic. Projects ideally pay for restoration. Perhaps stewardship projects should be considered; maybe one large project spanning a long time period to make it economically feasible. The Forest Service needs to consider the human factor.

Climate change has been a factor in ancient forests and will continue to be a factor, should be a consideration in planning.

Be aggressive with treatment: "if it is out of whack, whack it." Bring the forest into a condition for wildfire resistance and be able to reintroduce fire.

Recommendation
There are better areas for restoration work both for wildlife habitat improvement and economic viability.

Stop #3 Description
Treated area with approximate 80' spacing. Large trees remain. Great site that everyone likes.

Discussion Highlights
A proposed idea was to create clumps of large trees and less "clean" work than evenly spaced ones.

Duff build up could kill larger trees in a wild fire. Raking has had varied effects. It seems in some cases that waiting a year to burn after raking may have been better. When fire misses its usual cycle, duff builds up and fire then has a more intense heat.

To lessen the impact of compaction on the soil, reuse previous skid trails. One entry is preferable instead of multiple entries.

Tillage? Unclear if it is a good thing.

To get big trees, smaller trees should be removed. Maybe try for removal every 20 – 30 years. Need big trees for big snags.

Trees have commercial value, are a renewable resource and provide value products. Use the resource and also have sustainability.

Stop # 4 Description
Old growth; multi level strata; some of the bigger trees have fire scars – as many as 7.

Discussion Higlights
This is the first area that we stopped at all day where the scientists completely agreed that we should prioritize areas like this. It is important to protect the legacy trees. Discussion had over medium size trees. Several time periods for reentry were discussed. Maintenance would likely need to be done between entry intervals.

Consider leaving some cover for wildlife, in a hollow where it is slightly wetter.

If some of the 16"/18" trees were taken, thinning would be economical; take midsized trees from around legacy trees.

How often would the FS come to the site? Ideal would be to thin and burn and take enough to stay out for at least 20 years – possibly 30 or more. It is important to know timeline so that you take the appropriate amount to match the timing of next entry.

Is there a middle ground that lets you both take some trees and consider wildlife? One approach is to think about trying to achieve some old growth characteristics in come places and others in others (instead of trying to get all characteristics in all places).

Site is right by the highway so could be a good opportunity to do some work and demonstrate to the community what is going on.

Challenge: leaving wildlife patches on slopes – have to be careful about where you leave them because it is hard to maintain them when doing prescribed maintenance burns.