SUMMARY

MANAGING EASTSIDE MOIST MIXED-CONIFER FORESTS

A Science-Policy Workshop
Presented by the National Policy Consensus Center
Hatfield School of Government, Portland State University

December 4 and 5, 2013
Wildhorse Resort - Pendleton, Oregon

Workshop Sponsors:
U.S. Forest Service, Oregon Department of Forestry, The Nature Conservancy, Oregon Forest Resources Institute, Oregon State University College of Forestry, Wallowa County, Union County, Boise-Cascade Co.

Convened by: Brett Brownscombe, Natural Resources Policy Advisor for Governor John Kitzhaber, and Dr. Thomas Maness, Dean of the College of Forestry, Oregon State University.

This 2-day Workshop brought together scientists, technical specialists, forest collaborative and policy-makers to discuss management strategies for eastside moist-mixed conifer forests.

Goals:

- Review the latest research findings on moist mixed-conifer forests, utilizing the Pacific Northwest Research Station's just-completed "Science Synthesis"

- Determine where the scientific community largely agrees, as well as where there is still significant disagreement or uncertainty, to guide policy and near-term activities related to management of moist mixed-conifer forests.

- Identify further technical studies or projects that would help fill gaps in the science and help resolve some of the uncertainty or disagreement regarding these forests.

Geographic Scope: The specific area of focus for the workshop was the Blue Mountain area of eastern Oregon, although the science and policy may be applicable to other moist mixed-conifer forests in Oregon and other western states.

Framing Question:

"Can active management of moist mixed-conifer eastside forests maintain or restore resilience and other ecological values while also helping sustain economic viability of our forest products infrastructure? If 'yes', what management strategies would best meet these goals?"

Day 1 – Review "Status of Science"

To view full presentations from Day 1, visit the website at:
http://orsolutions.org/osproject/moist-mixed-conifer-science-policy-workshop

"A Virtual Tour of Moist Mixed-Conifer Forests"

To set the stage for the discussion, Tom Spies of the Pacific Northwest Research Center and OSU College of Foresty presented a brief definition of moist mixed-conifer forests.

- Moist mixed-conifer forests are diverse forests within a variable and dynamic landscape, and are often inter-mixed with dry mixed-conifer forest types.
- Grand fir, white fir, and Douglas fir are the late successional species. Grand fir and other shade tolerant species are encroaching.
- They generally have a low- to mixed-severity fire regime
- They are more productive than Ponderosa pine and dry mixed-conifer forests
- They generally average 40-60 inches of rainfall per year, although precipitation is only one factor. Others include local climate, soil, and topography
- The historic fire interval is generally between 20-40 years.

FOCUS QUESTION I: What is the landscape and climate context within which moist mixed-conifer forests function?

The role of climate on moist mixed-conifer forests – Marc Kramer, University of Florida

Key points made include:

- Moist mixed-conifer forests are much more impacted by the El Nino/La Nina weather cycle than climate change. El Nino/La Nina cycles bring large differences in temperature and precipitation between years.

- Moisture gradients in the east-side forests are very localized, driven by local topography, sunlight, and wind. .

- There has been an average 1.5 degree F increase in temperatures since 1900, with estimated possible increases of up to 3.0 degrees by 2080.

- Precipitation changes from climate change are less clear, and precipitation in these forests may actually increase, but higher temperatures will mean a 50%decline in snowpack.

- Climate change, combined with the El Nino/La Nina cycle, will bring greater extremes, leading in certain years to increased drought, to more intense forest fires and to increased susceptibility to insects.

The landscape perspective and its implications- Paul Hessburg, Pacific Northwest Research Station, USFS

Key points included:

- Historic disturbance regimes (primarily fire, but also wind and insects) created a patchwork of burned and recovering vegetation in a variety of successional stages, patch sizes, and patterns across the larger landscape.

- These resulting natural landscape patterns influenced the size and severity of *future* disturbance patterns, and created resilience.

- This historic pattern created a low- and medium-severity fire regime in moist mixed conifer forests that created: low surface fuels, increased height to live crowns, and increased large tree survival from fires.

- Changes to the historic disturbance regime have brought about:

    - Fewer large patches
    - Simpler structure (fewer old large trees)
    - Altered composition
    - Increased vulnerability to fires, insects, and pathogens
    - Fewer grasslands and shrub lands

- Current successional patterns are "out of whack" and not in synch with current disturbance regimes, with the result being new disturbance regimes with uncertain outcomes.

- Higher-functioning provincial (eco-regional) landscapes are the foundation for higher-functioning local landscapes.

- Process follows pattern: restoring landscape patterns may restore processes (though there is some uncertainty about our ability to do this)

- Provincial (eco-regional) and local landscape perspectives can inform management of moist mixed-conifer forests, identifying habitat connectivity needs, disturbance regime departures, and priority patch-level treatments.

- Our goal should be to restore the inherent (natural) disturbance regime, with a central role for large, old trees. Restore "patchiness within patches" to create heterogeneous patterns, and recruit old forest patches in "refugial" settings and create fire-tolerant neighborhoods around them.

Summary of key discussion points among invited scientists:

- How does one do large-landscape scale planning? Identify key disturbance connectivity areas. Use simulations and empirical data. Look at large fire dynamics for key insights across multiple scales.

- We are still learning how to downsize climate data so that it is useful at the local level. Need to use multiple lines of evidence and inference.

- Climate change punctuates things in fits and starts, it's not just a slow progression.

- There is a need to experiment with respect to silvicultural practices to maintain or improve soil moisture.

- "Dappling" landscapes with patches is where the game is at. Need to also provide connectivity, i.e. flows through the landscape.

- We still have a lot of knowledge gaps. Will need a science/manager/and stakeholder partnership collaboration.

- Need to be innovative, accept some risk. We can innovate but we need to pay attention to what we know from the past to inform innovation.

- We need a landscape scale forest management demonstration. For this we need a new "toolbox"; including simulation, demonstration projects, monitoring for evaluation at regional scale.

FOCUS QUESTION 2: Looking forward, what does a "properly functioning" moist mixed conifer forest look like?

Background on the historic range of variability – Jerry Franklin, University of Washington

Key points:

- Moist mixed-conifer forests are at the nexus of "frequent fire forests" and "Boom and Bust" forests. Hagmann's research suggests that, structurally, there was not huge difference between dry and moist mixed-conifer forests historically.

- Fire used to be the predominant influence in shaping mixed conifer forest structure. Once fire was taken out, *moist* mixed conifer forests had a greater divergence from historic patterns than dry mixed-conifer forests.

- In last 4-5 decades, the biggest disturbance agent has been spruce budworm, not fire.

- Research of 1915-1922 records suggests that 83% of the moist mixed-conifer forest was a diameter of greater than 20 inches, with a stand density of 78 trees per acre.

Fire Ecology and resilience in moist mixed-conifer forests - Penelope Morgan, University of Idaho

Key points:

- Fire resilience of tree species, from highest to lowest:
    - Western Larch
    - Ponderosa Pine
    - Douglas Fir
    - Grand Fir

- Historically, there were typically many smaller fires, with small number of large fires. Mixed-severity fires involve 20-70% mortality of trees.

- Fires were more likely to burn severely on north-facing slopes, at higher elevations

- Mixed-severity fires created complex burn patterns, interspersed "patches" of varying forest age and structure. This created many small patches and a few large patches, interspersed.

- We need to foster resilience through maintaining large old seral trees, especially on ridges. We also need to re-create structural complexity, including a mosaic of patches.

- We need to re-establish fire as a process, reducing the costs of wildfire management, and re-establishing natural fire regimes.

Wildlife and moist mixed-conifer forests – Peter Singleton, Pacific Northwest Research Station, USFS

Key points from Peter's presentation, for which he also cited the work of John Lehmkuhl:

- Species associated with moist mixed-conifer forests include 4 threatened and endangered listed species. Many species are shared with dry mixed-conifer and Ponderosa Pine forests (70-80% overlap).

- Although landscapes with mixed-severity fire regimes had highly fragmented patch patterns historically, they were still quite "permeable" for most native wildlife species.

- Big old trees are particularly important, providing platforms and cavaties for wildlife.

- Moist mixed-conifer forests provide Northern Spotted Owl habitat in the form of nesting structures, food resources, and multi-story canopy. While severe wildfire is the leading cause of Northern Spotted Owl habitat loss, mixed or low-severity fires are not problematic.

- Small-scale disturbances cancontribute to stand structure diversity, but large-scale high-intensity disturbances can simplify the landscape to the detriment of wildlife.

Discussion and Comments from Panel 2

Large old trees are under-represented now, and that shortage is significant in terms of both resiliency and wildlife values.

What about the deciduous component of the moist mixed-conifer forest? (e.g. Aspen trees). Not much deciduous component anymore.

Roads also have an impact on habitat and this needs to be taken into consideration.

A fundamental policy challenge will be reconciling harvest targets and restoration goals.

The moist mixed-conifer forest is simply a gradation between dry mixed-conifer and wet conifer. That said, there will be more areas of moist mixed-conifer forest that should be left untreated. The big question is, how large is the patch? What is the landscape context?

Where moist mixed-conifer forest is surrounded by dry mixed-conifer, it controls the neighborhood, but when surrounded by wet or subalpine, that is not the case. Looking at the PVT in isolation doesn't allow you these neighborhood insights.

Mixed-conifer forest with a significant residual of old pine, larch, etc, is a prime candidate for restoration because it is telling you clearly what was there historically and the stand is saying "restore me."

FOCUS QUESTION 3: How much do today's moist mixed-conifer forests require treatment to restore them to "proper function"? What scale and types of treatments will emphasize ecological benefits, including resilience?

Current versus historical conditions – Andrew Merschel, Oregon State University

Key points:

- There have been dramatic increases in stand density in the moist mixed conifer forests over the past 100 years. Historic densities were 51-100 trees per hectare. Today, stand densities are 220-340 trees per hectare.

- Simultaneously there have been equally dramatic decreases in density of large (>21 inches in diameter) trees. Large trees historically made up as much as 50% of the moist mixed-conifer forests. Today, large trees make up 7-10% of the moist mixed-conifer forest.

- Major reasons for these structural changes include: grazing, climate, logging, and fire suppression.

- 100 years ago, Grand Fir was not a prevalent species in the mosit mixed-conifer forests. Today,

Treatments to maximize resilience and other ecological benefits – Teresa Jain, Rocky Mountain Research Station

Teresa Jain described lessons from her work in the Rocky Mountain area, including Bob Marshall Wilderness and Priest River areas. Key points:

- Create irregular spacing and clumps of trees

- Create treatment mosaics, including gaps, strips, and circles

- Leave vigorous, disturbance resistant trees

- The treatments did not result in reducing the size (footprint) of fires, but it did result in significantly reducing the impact of the fire within that footprint.

Silvicultural innovations in moist mixed conifer forests – Derek Churchill, University of Washington

Derek Churchill gave a case study of how to utilize silvicultural innovations to manage moist mixed-conifer forests. Key points;

- There is no cookie-cutter prescription. Manage a forest area for a pattern of structure and composition:
    - Patch size distributions
    - Local landscapes
    - Stands within stand neighborhoods

- Do a landscape evaluation and prioritization – look at departure from historic and future range of variability to prioritize management areas.

- Stand-level tools: target for skips, openings, heaving thinning, and regular thinning. Look for fine-scale variability.

- Utilize fire to do as much of the work as it can

- Using technology to accomplish the locally-driven and variable treatments: They used an integrated GPS-GIS system, and monitored with QuickMaps.

Summary of discussion among invited scientists on Panel 3 presentations and all of Day 1:

- How does one do large-landscape scale planning? Identify key disturbance connectivity areas. Use simulations and empirical data. Look at large fire dynamics for key insights across multiple scales.

- We are still learning how to downsize climate data so that it is useful at the local level. Need to use multiple lines of evidence and inference.

- Moist mixed Conifer forests may experience *more* stress as the climate changes

Question: What is new and different in terms of the science, research findings?

- Research is evolving…integrating stand scale with the ecological processes that happen at a landscape scale.
- Some fundamental changes are happening in the science – a new emphasis on multi-ages and heterogeneity of the forests.
- New research suggests species like spotted owl use different, inter-stitched habitats.

Question: Are the moist mixed-conifer forests "out of whack"?

- Yes, we've seen a lot of evidence that the moist mixed-conifer forests have clearly departed from historic patterns, even more so than dry mixed-conifer forests.
- It is the higher productivity of moist mixed-conifer forests that make them "out of whack".
- These forests used to be dominated by long-life, mid- and early-seral species that were more tolerant of indemic insects and fire. That is no longer the case, and the forests are much more at-risk as a result.
- We now are thinking within a multi-scale context, and we now have the technological tools and ability to identify priority areas for treatment in an integrated fashion.

Question: What does the science say about the probable outcome of continuing current management policies and practices in the moist mixed-conifer forests?

- Given the human-influenced changes to the forest (including fire suppression) we risk having severe fires that will destroy old growth trees, and other irreplaceable values.
- US Forest Service budget now largely being spent putting out fires, and we could use some of that more effectively.
- This is a time of change. There is still some uncertainty about all this, including the effectiveness of specific prescriptions. But we *can* identify areas with highest risk.
- We need to monitor our actions, and learn from them. Let's do a better job of integrating science, research, and adaptive management into management approaches.

Day 2: Implications for moist mixed conifer forest policy

Policy-makers reviewed the results of the previous day's scientific discussion for each focusing question, and explored the implications for policy and the forest collaboratives related to the Framing Question. To view full presentations from Day 1, visit the website at: http://orsolutions.org/osproject/moist-mixed-conifer-science-policy-workshop

Report out and discussion of conclusions from Session 1: What is the landscape and climate context in which moist mixed-conifer forests function?

Key Science Points from Day 1 - **Presenter: Tom Spies**

The Moist Mixed-Conifer Forests (MMC) are part of a gradient of mixed conifer ecosystems that vary across ecoregions. Dry, Moist and Wet MCF are typically intermixed and require a landscape (all lands) perspective to understand and manage. Historically controlled by low to mixed severity fire regimes, dry and moist MC can have similar historical fire regimes depending on the neighborhood you are in. Finding DMC, MMC and WMC requires triangulation between maps of PVT and current vegetation, and conditions on the ground.

There has been a shift to high severity fire, more insect and disease and an overall altered dry, moist and wet mixed conifer landscape. There has been a loss of large fire-resistant Ponderosa pine, Douglas-fir, and Larch and an increase in shade tolerants that impact succession, disturbance regimes and are difficult to get rid of. Current conditions of dry and moist mixed conifer makes it less resilient to fire and climate change than drier, less productive pine types. Old clearcuts and partial cutting, especially in moist and wet MC--remove old early seral and reduce heterogeneity leaving the forests homogenized and fragmented at the same time.

Changes in climate will occur at both localized and regional scales. Regional variation controls patterns of dry, moist and wet mixed conifer. Interactions with soil (can be overriding driver) and topography will control local expressions of climate. Interannual variability controls disturbance regimes and productivity. There will be a change in air temperatures, precipitation and the timing of spring snowmelt. The reduced snowpack amounts are projected to decline up to 50%. It is challenging but critical to downsize climate science and El Nino Southern Oscillation (ENSO) patterns to contextualize variability in conditions.

Policy-maker responses – aha moments, new or relevant information:

- Historic information on large trees per acre gives some guidance as to what is achievable.
- The idea that soils and topography are important considerations in planning landscape-scale management.
- These forests are not, historically, high-severity fire areas.
- Looking at local stand “neighborhoods” in the context of landscape-scale suggests that blanket prescriptions shouldn’t be applied across the landscape.

- Need to look at differences between lower elevation MMC and higher, cooler, and wetter portions of the landscape.
- Hearing that fire intervals in moist mixed-conifer forests were more frequent than we had previously thought.

Policy-maker Discussion:

Policy-makers, including forest collaborative participants discussed the policy implications of the science presented from session 1. The discussion centered on the following themes:

- <u>The benefits and challenges of Landscape-Scale Planning</u>
    - Practicality considerations of landscape-scale planning – this scale crosses political and forest boundaries, which presents challenges.
    - It presents a challenge for USFS, although we are doing some of this already, particularly with the forest collaboratives. Okanogan and Wenatchee NF and Colville already doing this.
    - Doing planning on a landscape scale does not mean landscape-level prescriptions, but in fact the opposite: some areas treated, some not, and treatments and desired outcomes will vary.
    - Next time you do a field trip, before looking at a particular stand, have the first stop be looking at a map of the whole landscape, and keep this perspective when going into the field.
- <u>Restoring the role of fire</u>
    - Very difficult from USFS perspective to restore the role of low- and mixed-severity fires in maintaining forest resilience. Will take a lot of public education, and will need to withstand very real political pressure. Other partners, such as ODF, private landowners also need to be considered.
    - Smoke management may become an issue with the public. Air quality standards come into play with respect to prescribed burning only.
    - There are ways to educate, communicate, and build trust with the public on increasing the role of fire.
- <u>Greater sophistication of forest planning needed</u>
    - The landscape approach and creating greater heterogeneity is a more complex approach to forest management. To be successful, this more

complex multi-scale approach will take a new way of working between research and management. We'll have to break through some institutional barriers.

- Need a more active partnership between universities/research institutions and the forest collaboratives.

- Climate Change and Snow Pack

  - Loss of snowpack will not only change fire conditions but also have major implications to communities, fish and other wildlife species as well as commercial agriculture downstream. We need to coordinate management for the forest upstream with downstream considerations.

Summary Presentation of Session 2: Looking forward, what does a "properly functioning" moist mixed conifer forest looks like?

Key Science Points from Day 1 - **Presenter: Penny Morgan**

Historical range of variability is a guide not a target. Dry and moist mixed conifer forests are largely shaped by disturbance. There has been a change in the forest structure; more trees but fewer old trees compounded with less frequent fires which increases the potential for high severity fires.

Science is needed to understand the consequences of fire at multiple scales. We live in a fire environment where more biomass grows decomposes (even in moist forests); accumulated biomass fuels fires when there is ignition and conditions are hot, dry and windy. Topography greatly influences fire frequency. Fires burned less often on high, cooler, north-facing sites and more often on dry, south-facing sites. Mixed severity fire creates interspersed patches of varying forest age and structure. Distance from seed source is important to tree seedling establishment post-fire and vegetation recovery. We can harness wildfire to further vegetation and restoration management goals across the landscape. We cannot treat all nor treat all the same.

Policy-maker responses – aha moments, new or relevant information:

- MNF, started with dry pine where we had a fair amount of agreement and wanted to save existing large, old pines. Heard yesterday of shifting focus to MMC with their higher productivity. Agrees that moist/dry conifer blend into each other but does it matter to shift focus since both MMF and dry forest (DF) are so close to each other.

- Sense that an all lands, all ownerships approach is appropriate. Struggles with separating MMF and DF. In E WA, taking an all lands approach now focusing on moist and dry at the same time and explicitly improving the connections of neighborhoods across the board.

- What's new; some of the science around density, fire regimes and the agreement on need for action. What's old; still dealing with a whole lot of suspicion and distrust of management proposals. A lot of concern that when a management proposal comes out it is a Trojan horse for getting the cut out.

Policy-maker Discussion:

Policy-makers, including forest collaborative participants discussed the policy implications of the science presented from session 1. The discussion centered on the following themes:

- <u>Fire Regime</u>

    - If MMC has a mixed severity fire regime, need to understand the analysis tools to show where we want to go that's different than frequent low intensity fire.

    - Science Response: In a study using fire behavior models, we found that it took at least 400 feet for heat to diminish enough for live trees and soils.

    - No one is suggesting rigorously going back to historic conditions. Prescriptions in the field guide are for results that would come from mixed severity fire, even in the dry forests.

- <u>Habitat Permeability</u>

    - A different perspective on species connectivity was very helpful; species in these forests have evolved in a more fragmented forest than the Amazon or Appalachian mountains.

- <u>Community Context and Building Trust</u>

    - Policy is affected not just by the science but by levels of trust between the parties as well. There are some trust issues stemming from past behaviors.

    - Differences in perspective or opinion shouldn't preclude reaching agreement. Agreements are based on outcomes, not as much on values. Unpacking the use of trust, sometimes we confuse trust with disagreeing. Not the same.

- Reality is that there is an economic need to harvest, logs going to mills help to fund part of the restoration work.

- Mistrust comes from not having straight conversations with communities, there's a need to include social scientists in these discussion circles.

- All of us have the responsibility to gain trust. Need to start looking at what is the greater good coming out of projects – sometimes will need to make sacrifices in some areas to achieve others.

- Put research partners on the ID team to build researchable issues into the project NEPA documents. Then commit to doing the monitoring. R6 has committed to the Blues Strategy, we can fund things like this since we have the support of R6 and forests.

- All these considerations for collaboration turn up in the new planning rule, but don't turn up in the individual forest plans. USFS working on incorporating across agency. 1982 planning rule provides sufficient flexibility to do what we are talking about now. The spirit of the team and leadership is to embody as much of the 2012 rule as we can. Science based, collaboration is where we are going. On schedule to release the draft EIS on the forest plan in late winter.

- We have the capacity in R6 and need to set priorities to accelerate pace and scale and support the staff at all levels working towards these goals.

Report out and discussion of conclusions from Session 3: How much do today's moist mixed-conifer forests require treatment to restore them to "proper function"? What scale and types of treatments will maximize ecological benefits, including resilience?

Key Science Points from Day 1 - **Presenters Theresa Jain and Andrew Merschel**

The greatest change has been in productive environments that had a frequent fire regime. The response to land use changes varies by biophysical setting as well as how much can be accomplished considering economic and social values. There is a need for landscape prioritization that takes a multi-scale approach and identifies assets (e.g. plantations, early and midseral trees). Use a silvicultural prescription – series of treatments through the life of a forest.

PVT's are not designed to reflect current conditions – they are designed to describe potential vegetation. There are tools available to integrate scientific data and inform management decisions.

Policy-maker responses – aha moments, new or relevant information:

- Does treatment actually change fire behavior? Answer: research and modeling shows that footprint of fires does not change after treatment, but what happens within that footprint does change – fires burn less intensely and damage is less severe.

- Need enough openings for trees to get big, but can do it in stages to save riparian area.

- Logging has different impacts than fire, should not assume that you can exactly mimic fire through logging.

- We need to prioritize areas within the landscape scale.

Policy-maker Discussion:

Policy-makers, including forest collaborative participants discussed the policy implications of the science presented from session 1. The discussion centered on the following themes:

- <u>Moist mixed-conifer forest divergence from natural conditions</u>

    - Stand densities overall have increased, though this is not universal. Densities have particularly increased in productive environments that had frequent low-severity fire regimes.

    - What about livestock? Grazing has had a significant impact and should be addressed. There are other prescriptions in addition to logging that should be considered as part of the restoration strategy.

    - What are the natural disturbances in addition to fire that have been suppressed by homogenizing the landscape?

- <u>Protecting old trees.</u>

    - Large old trees are in deficit, need to protect what is there.

    - Some disagreement over the role of the east-side screens, and whether they help or hinder protection of old, large trees. They provide a little less flexibility, where logging might help protect some old trees, but some

felt the screens were also helpful in protecting the few old trees that still exist.

- Non-roadless areas are where the restoration opportunities present themselves.

- Old grand fir may be an historically less prevalent species, but it still provides some important habitat functions.

- Age, not just size, is important. There were concerns expressed about pines less than 21 inches, but more than 150 years old slated for cutting.

- We are also in deficit for stand initiation, not just old, large trees.

Managing Moist-Mixed-Conifer Forests: Reflections and Personal 'Take-Away" messages from the Science-Policy Workshop:

- We need big patches but also really importantly the small patches that would occur from frequent low intensity fires to set up the landscape so it would shape effects of larger fire disturbances. Recognize that we have lost that element and it is important to bring it back as we go forward.

- Heard the researchers express desire to work with managers and collaboratives on the ground. Exciting work with lots of energy on the Malheur and want to work more with others to get this done.

- The scientists have shown me that there is a huge landscape that will benefit from treatment but also there is a huge piece of the landscape that will not be treated. Agreement around importance of large trees, tools we can use to target treatments. Opportunities to try things and lots of places to do them. I also think it's wonderful that the conservation community is here talking about treatments unlike 20 years ago. That the silviculturalists are here being innovative. And on trust—it is a two way street and is something that you can't just base on past action.

- Science is necessary but not sufficient to get us to restoration. What we position around the edges of science has been values, relationships, trust, capacity, etc. and we put science in the center here. I hope we can have additional discussions about the mixture of all the things we need to make progress.

- Several scientists mentioned we need to leave options for the future and we have opportunities to do that. We will not touch every piece of the landscape, we can provide renewable resources and sawmills can help restore these forests. Need to also pursue other funding, but the scope before us is enormous. It's also restoring our rural communities. Science does evolve and will evolve and we will continue to learn.

- We need another science synthesis on grazing, it is integral to everything. To me, not everything is all like the dry stuff so the landscape evaluation of a bigger picture plus the local stand evaluations and reconstruction are necessary to build the trust.

- There is a nexus between science management and public dialogue, around an implementation where we can muck about together and take a few risks at the appropriate scale. It seems that we are at this point of transition to focusing on restoration and more integrated resource approach.

- A lot of the nuances in the science confirm what I have seen in the field. I see my work as drawing attention to maintaining variability and ecological niches, keeping focus on logging and fire affected areas not pristine, retaining medium large OG trees, emphasizing field verification, bringing in other factors like livestock, protecting large blocks of cold moist habitat, breaking up old clearcuts and plantations from even aged status especially mixed conifer converted to ponderosa pine. Emphasize monitoring, adaptive management, and accountability for the results.

- We need to look at this idea of landscape inertia. We need to look at it in depth to understand exactly what it means and how to reverse that trend. There is a lot of want of certainty but that's not going to happen but we need to take the risk, be wrong and that's ok. We also need to look beyond single species, management indicator species and other sets get put by the wayside so we need to balance all of that.

- Given all this information, the USFS needs to change the way we do business. Wildfire use will be important in changing how to do business on the landscape.

- We have to be careful of the pitfall of the tension between being general and explaining things specific to an area on the landscape. For example, the ICO approach to heterogeneity. Five years ago, most people said you can't do that. If there is a will, there is a way. The most pivotal topic we covered today is about the social license and underlying array of values represented in this room. We can take some steps with limited risk; we won't treat large areas and will take incremental risk.

- We are getting some great new tools, we are breaking up fuel continuity, a lot of great work is being done and I am hopeful. In contrast, a question was asked about staying on the path we are on. But the question became what happens if we do nothing, as if the choice is between cutting everything or doing nothing at all. In fact we are already doing a bunch of great things and how can we do those better?

Forest Collaborative; what have you heard that will most help you in moving forward in your work?

- The Thomas Creek project is huge opportunity for the Umatilla Collaborative and gives us a chance to work on experimentation. There are concerns that it may slow us down, force us outside of our comfort zones, but ultimately I think it will be huge for us and all the other groups as well. Another thing is the reminder of the urgency because people get things done when there is urgency. Intra-group communication has been really outstanding but I don't know, when I facilitate a collaborative meeting, I always sense emotion and I think that this congregation here has helped make it easier for people to share these emotions. We have new tools, new concepts that allow us to express our feelings more clearly. It's also important that we take advantage of the landscape scale within our own minds and expand our minds and the options there—remember the mega benefits we can hopefully get from mini costs.

- The landscape level tools seem incredibly important. And integrating them into our collaborative processes appropriately and then communicating effectively the value of what we do to the broader community—that is foundational. And monitoring—keeping track of what we do, especially in these productive ecosystems where we will make change and then apparently need to go back to them regularly. So be thoughtful in terms of how we integrate into the planning processes. Also, it's still popular to finger point at the FS and not helpful. MMC may be a great place to start for shared responsibility.

- Looking forward to an opportunity to utilize landscape evaluation prioritization.

- Thanks to all that helped out. It is encouraging that we have got 120 plus people here. I was encouraged personally by what appears to be clear consensus from the science community, particularly the need to replicate low to mixed fire severity. The Umatilla National Forest and Wallowa-Whitman collaboratives have made a lot of progress and we are learning from each other.

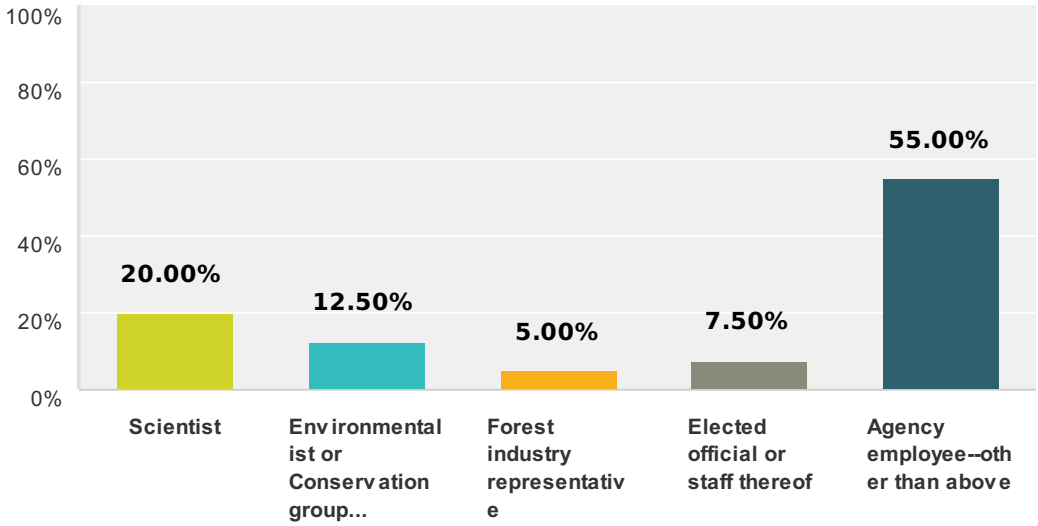
Addendum:

Responses from the Workshop Evaluation Survey

January 2014

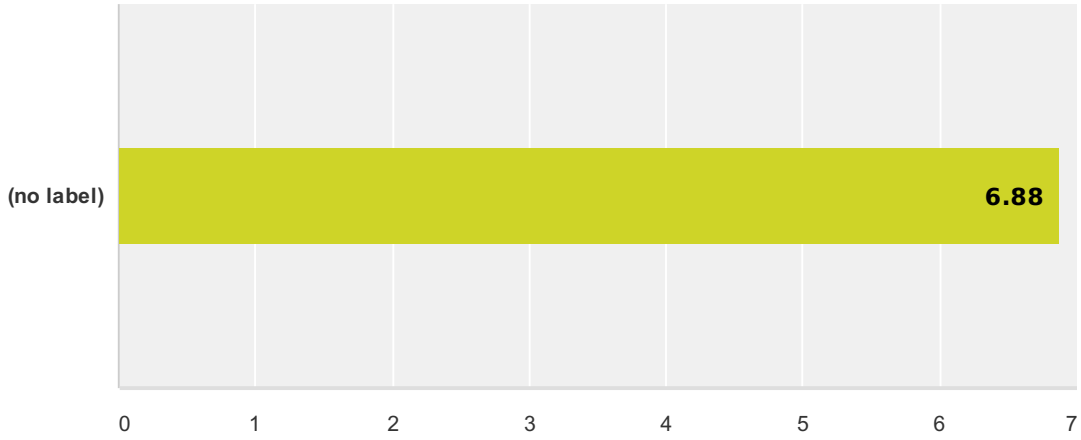
Q1 Please indicate below which BEST describes the role you represented during the workshop:

Answered: 40 Skipped: 1



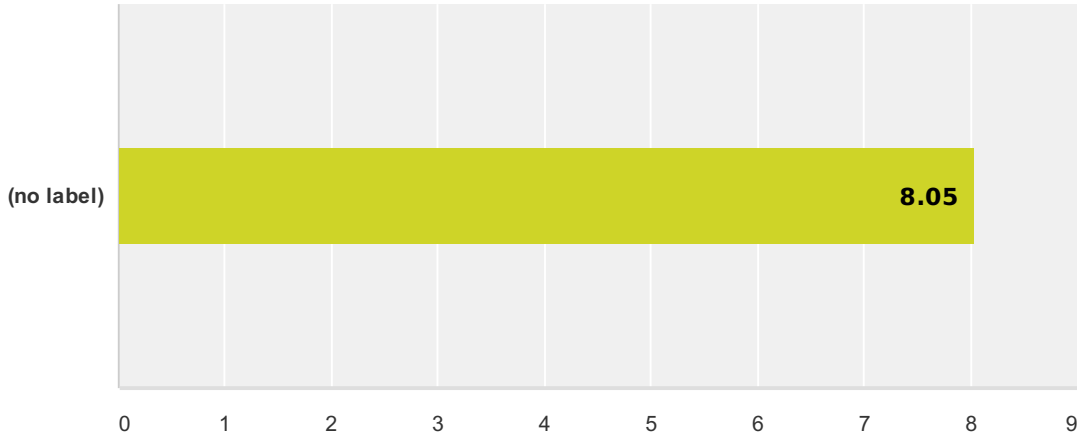
Q3 Indicate below on a scale of 1-10, how informed you were about the science relevant to Moist Mixed Conifer forest management PRIOR to the workshop. ("1" means you felt very uninformed, "10" means you felt highly informed)

Answered: 40 Skipped: 1



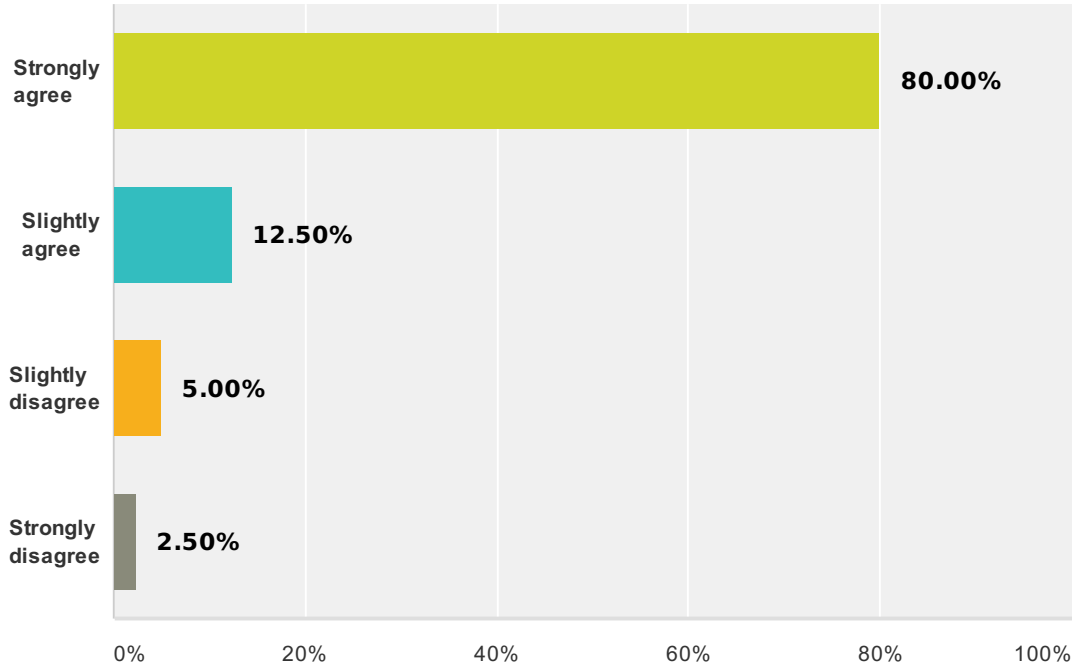
Q4 Indicate below on a scale of 1-10, how informed you felt about the science relevant to Moist Mixed Conifer forest management FOLLOWING the workshop. ("1" means you felt very uninformed, "10" means you felt highly informed)

Answered: 40 Skipped: 1



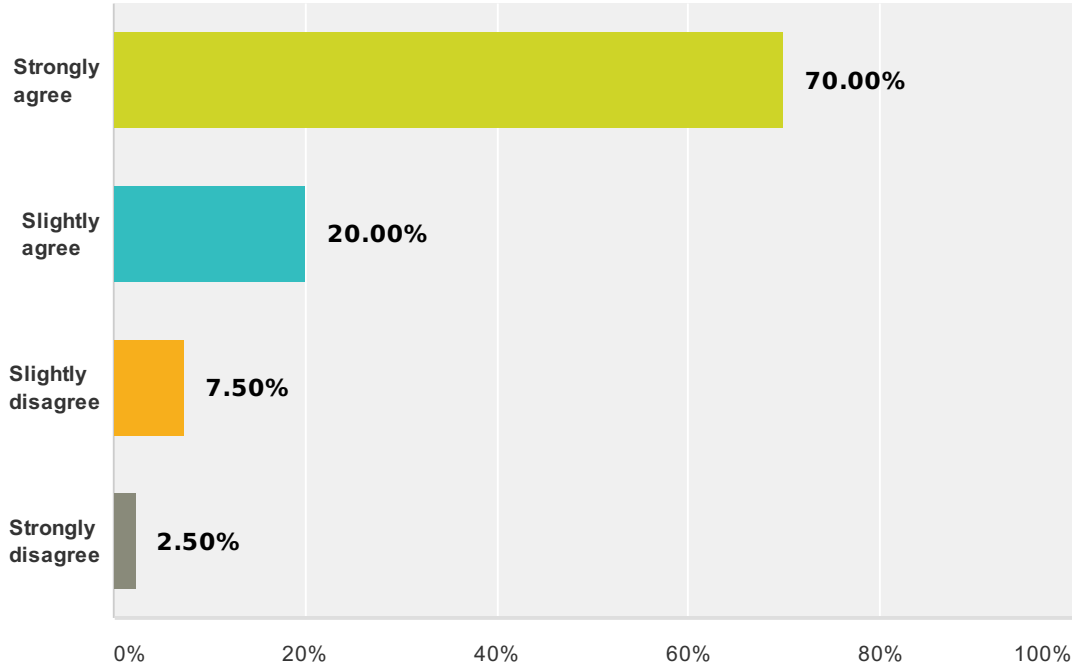
Q13 Since the 1890's there have been significant human-influenced disturbances in the moist mixed-conifer forests, including logging (particularly of large old trees), grazing, road construction, and - most significantly - fire suppression.

Answered: 40 Skipped: 1



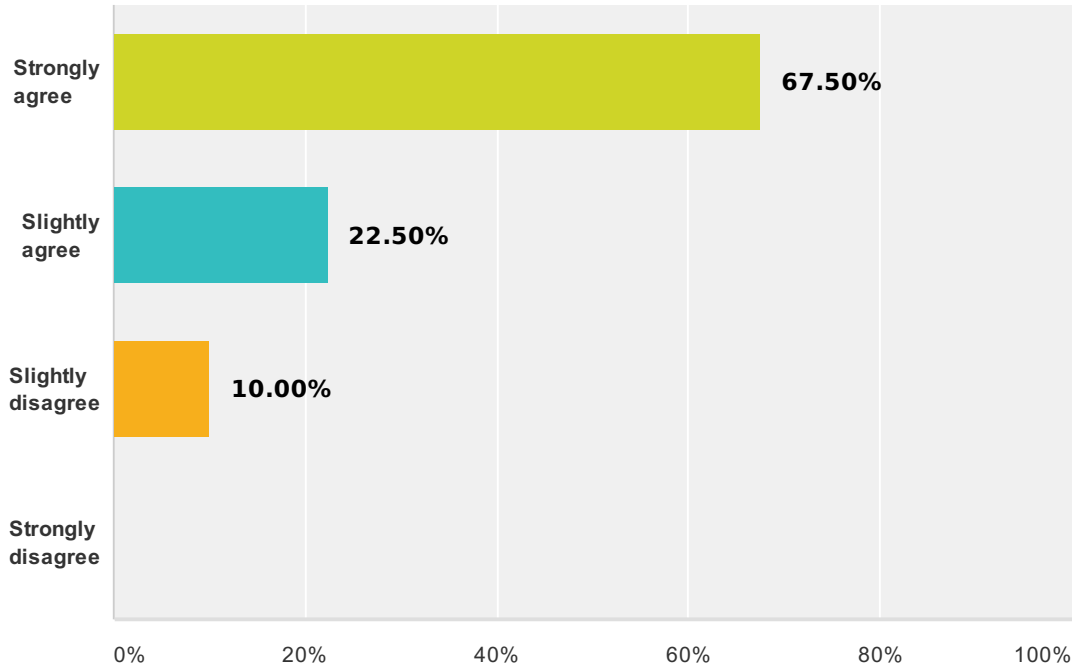
Q14 These human-influenced changes have brought about significant divergence from historical patterns in moist mixed-conifer forests. In particular, moist mixed-conifer forests now have much greater density, have experienced an increase in more shade tolerant species, have far fewer large old trees, and are less diverse structurally.

Answered: 40 Skipped: 1



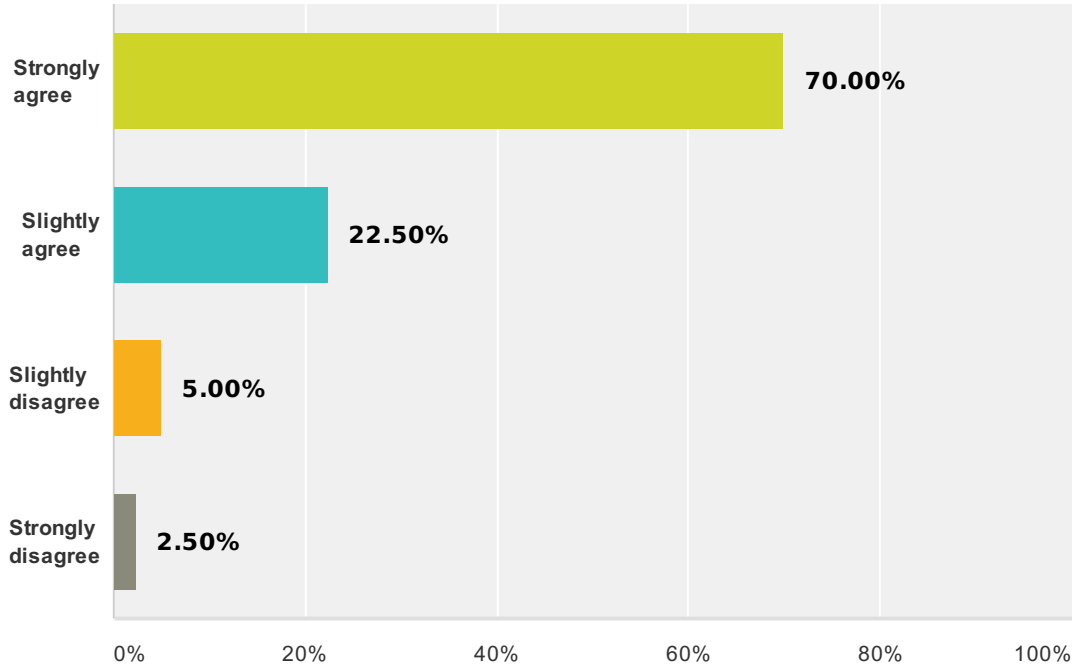
Q15 The structural changes in the moist mixed-conifer forests, when combined with climate factors, make moist mixed-conifer forests more susceptible to disease, infestation, and fire at uncharacteristic levels of severity compared to historic conditions. .

Answered: 40 Skipped: 1



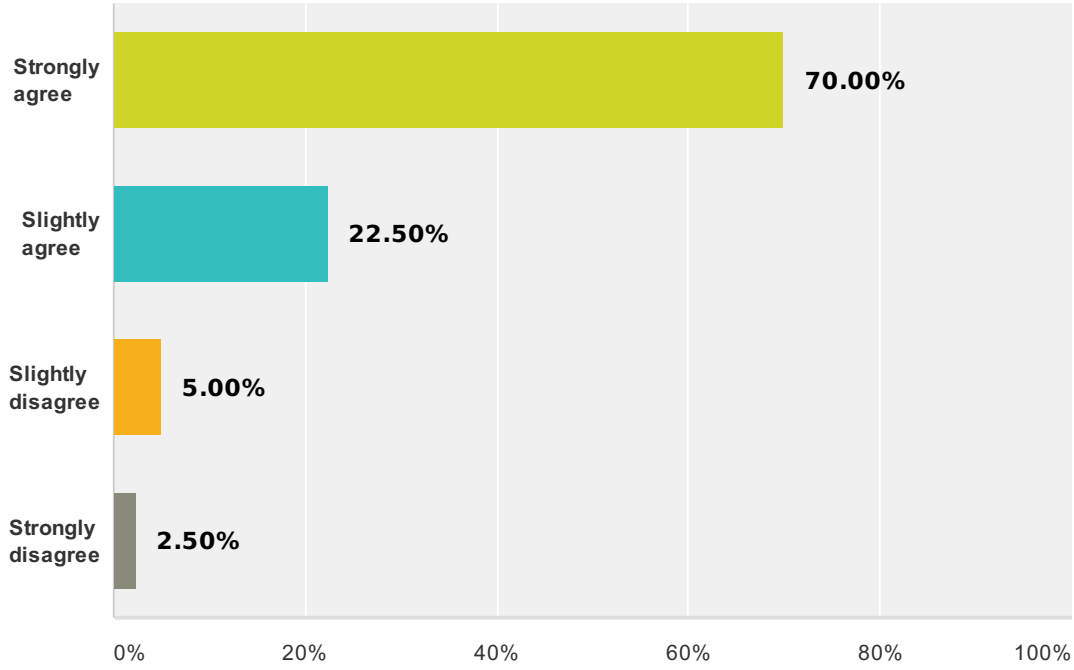
Q16 Active management can and should be used in some (though not all) parts of the moist mixed-conifer forest to restore resiliency, protect the remaining large old trees, and more closely mimic historic disturbance patterns.

Answered: 40 Skipped: 1



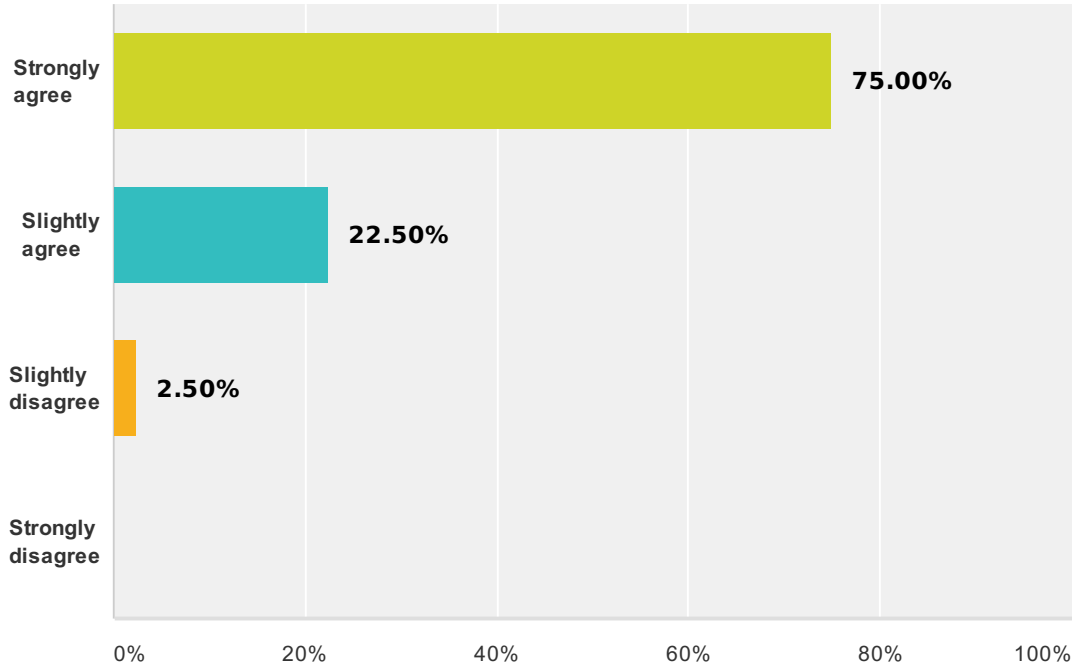
Q17 Management of these moist mixed-conifer forests should take a broader landscape perspective, with the aim of restoring diversity and connectivity of forest patches and stand "neighborhoods" across the landscape. This landscape approach will mean that some forest patches need more intensive treatment than others, and some need no treatment at all.

Answered: 40 Skipped: 1



Q18 Managing for healthier mixed conifer forest conditions is not just a matter of vegetation management but disturbance management as well and we need to move toward involving natural fire to a greater extent than is tolerated today.

Answered: 40 Skipped: 1



Q19 While there is still much to be learned about moist mixed-conifer forests, inaction carries its own risks. We should therefore integrate scientific research and monitoring with multiple forest management approaches to help us learn and adapt as we move forward.

Answered: 40 Skipped: 1