Comments on the Biscuit fire.

9/11/02

Hi Tom,

Would it help to set up an e-council or E-advisor group. For example, I am most interested in determining how wildlife responses to wildland fire, including different severity of fires. Of course, this includes habitat.

I envision something like:

- Habitat Mapping/GIS" Landscape analyses, fire severity, etc.
- Aquatic/Riparian:
  - Larger Water/Salmonids
  - Headwaters/Amphibians (Headwaters and seeps influence downstream waters)
- Terrestrial Biota:
  - Plants
  - Molluscs
  - Herps
  - Small Mammals, etc.
- Restoration: BEAR. (Note: Knowledge from experts above might be invaluable for rehab work).

Responses of animals to fire are critical issues as Spotted owls, marbled murrelets, threatened salmonid stocks, Survey & Manage, sensitive species, etc. are all high visibility species or groups. As I say, most environmental regulations and many lawsuits seek to protect these species within the confines of forests. It is all interwoven, but we need to look at wildlife and fisheries as key measures or endpoints.

I started compiling our prior information on herps in the region, but lack time to pursue it right now. Still, we might consider pulling together our collective knowledge to share among ourselves and others. Hence, we might form up into squads. If I can help on stream amphs, terrestrial herps, etc., please let me know. I prefer to work with colleagues from varied backgrounds and interests, as a multiagency team effort surely is needed.

Great idea to start this infomation outlet!

take care, rbb

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I have seen most of the burn area from the ground (sometimes across a canyon). The burn severity categories used are soilcentric. That is, they are intended to be used to predict effects to soils. The high severity category is characterized by having all, or nearly all, of the overstory veg burned with no needles or leaves remaining. Moderate burn severity areas have all, or nearly all, overstory veg dead but with needles and leaves retained. So, from a vegcentric standpoint, all high and moderate (approx 39%) is dead. Another consideration though is that the severity mapping is done on polygons > 50 acres. So, it possible (and common) to have a mix of severity categories within polygons mapped as a single severity category. This mapping protocol, while completely adequate for the BAER assessment, underestimates (lumps) the diversity of burn categories.

As far as back burning, the severity is tied to fire behavior at that particular time and space. For safety and political reasons, fire fighters like to back burn when they can control the results. If back burns were ignited at 3 AM (50-55 degrees F) with 45% relative humidity and gentle winds, they crept slowly along the forest floor and in areas, did not consume enough ladder fuels to achieve the objective (fuels hazard reduction). These areas, and areas that did not burn during by the initial back burn attempt, were ignited later if necessary to safely contain the fire. When backburns were conducted during times of high fire behavior and in heavy fuel types, they resulted in a high severity category burn. The only back burning that I observed that resulted in a high severity burn was done in two high fuel pockets (< 50 acres each) that the initial back burn missed. It was ignited by a helicopter dropping ping pong balls during mid day at the "last stand" near the town of Cave Junction. Fire behavior was extreme at the time but waiting for nightfall was not an option. For the most part, the back burns were not in this category. In fact, I was very surprised and impressed to see how desirable affects could be achieved by night burning when daytime temps were 100 degrees F.

Dan Delaney (Siskiyou National Forest

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9/11/02

FYI, the latest (and maybe the last) figures on burn intensity on Biscuit are, High=15.8% (Don't give me a bad time about the decimal points, our burnseverity analyst is a splitter)

Mod= 22.8%

Low= 41.3

Unburned/Very Low= 20.1%

FYI, here's my first impression and perspective (N=I have flown most of fire, and been on ground once) on biscuit. It's a fire that has a perimeter of 500k acres. That is impressive-it goes for a long ways. Atfirst blush, there is nothing outstandingly remarkable or unique about it (other than size). I am not implying that folks shouldn't be interested init, or that there aren't some very worthwhile research/learning opportunities to be had, for I am sure there are (owls, LSRs, connectivity, watershed response, etc etc). I would say the same thing for virtually any fire. I think the biggest area of intererst for me is the entire area of wildfires in our society and how we react to them.

Gregory A. Clevenger

9/11/02

This list will be great for communicating information, and coordinating research and monitoring opportunities in the Biscuit fire area.
I would like to mention that the severity numbers generated for the BAER
work relate to the definition of severity used for BAER work (the objective is to predict hydrologic changes such as, potential erosion, runoff, and mass instability). The numbers for burn intensity or above ground effects on vegetation will be quite different and probably significantly higher. High severity areas mapped for BAER work is only about 16%, but the fire intensity effects on late successional habitat or some other measure of vegetative change will be higher (maybe 30-40%). We still need to verify these numbers.

Thomas K. Link

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Hi Tom;

Please place me on mail lists relevant to the discussion below. I'd be mainly a passive participant, but
I do have a thought on Jerry's statement,

"So, it possible (and common) to have a mix of severity categories within polygons mapped as a single severity category. This mapping protocol, while completely adequate for the BAER assessment, underestimates (lumps) the diversity of burn categories".

Not only might one underestimate the diversity of burn categories, but aggregation error from lumping of data to ANY level in a hierarchy can induce bias in the estimates of severity. This is to be expected when there is significant spatial autocorrelation at the finer scale.

I suspect this is old news for you, but if not then backstop that Biscuit EIS/EA with good science from Rastetter, E. B., A. W. King, B. J. Cosby, G. M. Hornberger, R. V. O'Neill and J. E. Hobbie. 1992a. Aggregating fine-scale ecological knowledge to model coarser-scale attributes of ecosystems. Ecological Applications 2:55-70.

There's also lot's of recent stuff from the modeling community, fire included.

Hope your doing well. If you have any other interesting lists going, let
me in! (It's a widerness out here).
Jeff

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This problem of BAER severity classifications is why we (Weatherspoon and
Skinner 1995. For. Sci. 41:430-451) developed our own classifications for
studying the 1987 fires. We found that the BAER classifications dramatically underestimated the severity of the fires in terms of the fire
effects on trees. They are for a specific purpose. Users need to carefully consider the appropriateness of the BAER classifications for estimating fire severity for other purposes.

Carl N. Skinner

burnsev def.c

OK, time to weigh in here and throw a few more monkey wrenches into the fray. Fire regime for aboveground resources is a conceptual framework for categorizing fire effects, and is very difficult to apply to a single fire to suggest it is in/out of HRV.

There is no "standard" for low, moderate, high severity at the stand level. A number of papers have waffled back and forth (including some of mine) that <20-30% mortality is low severity, >20-30 but <70-80 is high severity, and >70-80% is high severity. So there's a first level of controversy/uncertainty.

At the fire event level (many stands, maybe we can call this a landscape) there are stands of low, moderate and high severity mortality, however they are defined in previous paragraph, and often two to three fire regimes when the fires get >100,000 ha. Generally the same levels are applied to the event: <20-30%, a low-severity event; 20-30 to 70-80%, a mixed -severity event (note the "new" lingo on mixed vs moderate). And >70-80% a high severity event. The term "mixed" is more appropriate than "moderate" as the latter term implies the moderate severity occurs over the whole event, when it is usually a mosaic (mix) of low, moderate, and high severity. Several of us fire-types have adapted this as a compromise between the old Agee "low, moderate, and high" scheme (Agee 1993 book) and the ICBEMP definitions

of nonlethal, mixed, and lethal (the nonlethal was not very descriptive, as some shrubs/small trees were killed, and the lethal didn't really kill a lot of stuff as it m!
ight sprout). Perhaps we could at least agree on this.

Now a regime is the accumulation of a number of fire events in a particular type or set of forest types that generally describes the severity levels. some fire events will be more or less severe than others (historically as well as now) yet were clearly within HRV. So its hard to pick out one event and say it is in/out of HRV, particularly in the mixed severity fire regimes. In red fire, for example, I have seen some burns that were almost all low-severity, but the type in general has a mix of all three severity levels in different stands. Some have been a little more severe than others, but event variaiblity is part of the fire regime.

Examples: I have visited the Hayman fire in Colorado this summer, and it appears to me to be well above HRV in terms of mortality (the parts I, as a civilian, could get access to). Merrill Kauffman (Rocky Mtn. lab) would be a better sources for this, as his research locally showed, I believe, some longer fire return intervlas than we usually think of for pine/fir forest. The Wenatchee fires of 1994, well out of HRV for low elevation types, well within for high elevation. I have not been down to Biscuit, although I was within smoke range, but the figures I have seen tossed around for overstory mortality imply that this was probably close to an average HRV overall. The one aerial I saw looked like near Hwy 199, the drier portion, and it looked pretty torched (probably out of HRV there).

So when we talk about severity and HRV, there are different regimes within fire events, and a lot of possible variability within those regimes. We will probably never all agree on definitons, as they predispose different political arguments and as we all know, fire these days is all about politics.

OK, I'll shut up for awhile, excpet to agree that the soils definitions do underestimate vegetation effects considerably. Maps of Yellowstone after 1988 based on soil heating made it look like a classic mixed severity event (which was politically desirable) yet almost everything that burned was stand replacement. This served park management's needs but was not, in my view, very honest - I never saw a map of vegetation severity. Each of these types of maps has scientific utility, but let's be clear on what a map is showing: visuals ARE important, but can be quite misleading.

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There are at least two 'standards' that are kicking around, one of them for some time. The Beschta white paper that was sent around includes one published by DeBano, a soil scientist

who's been doing fire related soils research for some time. An older, but closely related method was proposed by Kevin Ryan and Noste (can't recall his first name) and originally published in a wilderness fire proceedings published in the late 1980s. Both methods focus on changes in soil cover and color. There is a bunch of new research going on now with remote sensing and changes in reflectance in certain bands, with the assumption that changes in plant cover=severity as it relates to soils and hydrologic function. These newer methods lump changes in reflectance into low, moderate, and high categories, having the benefit of being repeatable, unlike ocular estimates. A paper on one such method was presented at this past spirng's fire ecology conference in Fort Collins. If anyone is really interested I can dig up the references, but it may take a bit as I am buried in an intensive CEQ-mandated data call.

Louisa Evers

Sorry to flood everyone with this response but I am sensing that we have several factors in play here for judging severity and the metrics in use seem to address only one at a time. There's the soil thing and the above ground veg thing so far, both site-scale metrics. How about one that assesses effects on streams re shading and sediments likely to be delivered over natural background (not that all of those will be bad for stream or fish as Gordy Reeves and others point out)? Tht would be a watershed-scale metric. Has anyone tried to do a landscape scale metric? If a fire burns some places completely, others partly and yet others not at all and its in a short interval forest, wouldn't that be a natural intensity for the landscape?

Hal

Proposal for a collaborative effort between the Bureau of Land Management and Oregon State University to address pressing needs relative to wildfire recovery, restoration and long-term landscape management.

Vast acreage in southwestern Oregon has burned during the 2002 fire season. As a result, efforts are underway to recover, restore and plan for future management. However, many important outstanding issues need to be addressed and resolved.

Over the past several years, federal land management agencies have been experiencing increased scrutiny and opposition to pre-and post fire management strategies. In addition, litigation over restoration treatments and salvage has curtailed post fire recovery efforts. Much of the opposition as been, and continues to be derived and based on the “Beschta” opinion paper. Often respondents use these generalized concepts to oppose site specific projects that involved detailed, localized analyses developed within the framework of specific management objectives. We feel that this is counter productive and does an injustice to the many scientists that are actively involved in addressing fire ecology issues by unfairly

predisposing public perception to the notion that all post fire activities, regardless of the situation, is detrimental and not warranted.

Rather than rehash "Beschta," we would like to move on, by taking a proactive approach to resolving the many fire related issues. Our goal is to develop a process whereby University scientists can become directly engaged in addressing and resolving issues relative to wildfire recovery, restoration and future resource management. In an earlier discussion with Steve Tesch he mentioned that discussions/plans are possibly underway for University scientists to address the shortcomings of the "Beschta" report and prepare an updated statement on these topics. Our concern however, is that broad sweeping recommendations are often of little value and can even be counterproductive when developing site-specific management options. For example, the hands-off approach prescribed in the "Beschta" opinions have been cited and upheld in numerous litigation proceedings without any mentioned of the specific land-use designation of the burned area. This fails to recognize that management options change with the long-term management objectives for the area under consideration. For example, is the area being managed for a particular stand structure to provide habitat? Do the objectives include wood production? etc.

We believe a more useful approach would be for University scientists to become familiar, on the ground, with the many factors involved in the wildfire situations, conditions and recovery and develop recommendations based on their observations, data and understanding of the objectives for which the land is being managed. Our proposal is for the University to assemble a team of scientists to assist in accomplishing the following. Because this proposal is still in the early stages of development, we are also soliciting your ideas and suggestions. Here are some of our needs:

-Assessments of current conditions, and analyses of how pre-fire vegetation conditions influenced fire behavior, intensity and subsequent impacts. For example, many of the old-growth areas set aside for the protection of spotted owls appear to have facilitated the highest fire intensity resulting in the most extreme mortality, which is just the opposite of the management objectives for those areas.

-Recommendations on what management options are available to achieve wood recovery while providing for ecological needs. For example, in the areas allocated for forest production what is the most ecologically sound approach to wood recovery while addressing such factors as soil erosion, appropriate levels of course wood retention, reforestation and possibly engineering and economic considerations.

-Recommendations on research and monitoring needs and assistance in the development of short and long-term study plans and monitoring procedures.

-A scientific panel to defend their work as expert witnesses in court and respond to the technical questions of our publics.

In addition to these needs we would like to contract with this team of scientists to provide several critical scientific components of an EIS on the burned areas. This would include a technical description of the existing environment, recommendations on management options to meet the specific resource objectives and analyses of the potential impacts of implementing these options.

If the University has an interest in working with us in resolving these issues we would like to schedule a time in the near future where these and other ideas could be discussed.

Below is a note I sent to Annette:
Annette,
I'm really impressed with yours and Andrew's BAER Burn Severity Mapping Methods and Definitions. I have only one comment? concern? which I've copied and placed in quotation marks below. The burn severity rating is clear and understandable (which differs from some of the work on burn severity that's circulating thru internet mail lately). There is no doubt about the classes of severity.

The last two sentences of your paper that deal with effects caught my attention: They read, "Runoff and erosion are expected to be significantly increased over pre-fire levels for at least 3 to 5 years. Recovery of vegetative cover is expected to be slower in these areas of high burn severity."
I suggest you use that interpretation very judiciously. Following the 1987 Silver and Longwood Fires the erosion we observed in any of burn classes was low at best. Without the soil structure and aggregates disturbed I would expect the same for the Biscuit Fire. In fact none of our forecasts of erosion and runoff came true. I believe that was due to two factors; rate of

precip 0.2-0.5 inches/hour and undisturbed soil aggregates and structure. If we were to get some 1-5 inches/hour precip then perhaps more overland runoff and erosion would occur. It appeared to me that infiltration once the soils wetted was about the same as pre-burn. I can't truly say there was not increased "overland" runoff and some erosion but we didn't see it. And believe me we were out doing recon for the Silver EIS during plenty of wet weather. For the Silver EIS we came up with some excessively high erosion classes which never came true. There was an increased flow of Silver and Indigo creeks (as per Chris and Ivers) but I believe that was mostly due to infiltration of rain and subsequent piping to creeks (i.e., less live plants to use the water).
Regarding sprouting of plants that will depend on the plant cover before the fire, i.e., tanoak, madrone, and numerous other sprouters take off like crazy following fire.

I've rambled but thanks for the opportunity to see your work, Ed Gross

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Seems as though the ONLY time we seriously contemplate watershed scale (or landscape) activities is when a recent 'event' -blowdown, flood, fire is at that scale (or larger). Otherwise we tend to think at substantially smaller scales. I think this is human because most of us view life (literally) at ground level. Usually this means that at any one time we can only see a number of 'stands' or maybe a landscape but infrequently more than this.

Particularly since the NWFP, our planning efforts are at the stand level because of the survey requirements for various species. This narrowing focus is getting worse not better.

This can be demonstrated by what we consider a big deal in our most intensive timber projects. In the Pacific NW, in the 1960's, 100-150 acre clearcuts were no big deal. In the 1970's, we were still prescribing 50-100 acre clearcuts. In the 1980s, maximum clearcuts were generally 40-60 acres. In the 1990's, maximum clearcuts were probably 10-30 acres.
In 2000+, 3-10 acre clearcuts seem to be the maximum- if they are prescribed at all.

Despite the increasing size of recent fire events across the West, we are expanding efforts to look at the forest through a microscope. More and more detailed, site specific, information is needed for even minor actions.
On top of this, we have no funds to gather information on anything outside of a proposed project area. Soooooooooo, guess what, we ONLY seem to find

critters and plants of interest IN these project areas. Go figure!!!???

It is no wonder many cannot see the size of the problem BECAUSE they walk through the woods with a magnifying glass in front of their eyes. With such a device one cannot see his/her own feet let alone the landscape in front of them. Maybe this explains why we (the organization) seem to fall down more frequently.

Don Bellville
Fuels Planner/R-6 Certified Silviculturist

Thanks Melissa. You Forest folks sure move around...I thought you were still in Montana. Duh.

So this whole fire severity question is pretty interesting. I think the scale issue really messes up our ability to determine fire severity. When you try to determine whether a certain fire's severity is in or out of the HRV, you end up chasing a spatially variable and scale dependent characteristic (severity) through another spatially variable and scale dependent characteristic (regime). No wonder everyone gets mixed up. I don't have a real answer but I would direct you to:

http://edc2.usgs.gov/fsp/severity/fire_main.asp

This is the USGS and NPS way to determine fire severity across the landscape. It takes into account overstory, understory, CWD and soils, so I feel it is pretty inclusive. Its resolution is down to about 30 X 30 meters, I believe, so if you think of the pixel as a "site" you can at least scale up from there and look at the number of pixels that fall into Low, Moderate and High across a landscape scale fire. Unfortunately, that doesn't help determine whether or not the severity at any point on the landscape is outside the HRV for the site. Now, we just need to develop a database that includes the fire severity and date for every fire event for every pixel of NF land in the US, throughout history and then update it on an annual basis...and we'll almost have it figured out.

Can you do that by next week, then?

This is the official reference for the decay class stuff:

Maser, C.; Anderson, R. G.; Cromack, K.; Williams, J. T.; Martin, R. E. Chpt. 6. Dead and down woody material. In: Wildlife habitats in managed forests: the Blue Mountains of Oregon and Washington. Agric. Handb. 553.
Washington, D. C.: U.S. Department of Agriculture; 1979: 78-95.

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Duncan Lutes
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Hello all,

Attached is the latest draft. Steve Hobbs in our college is woking up some details on the research and outreach program that would address the huge gaps in knowledge on both pre-fire and post-fire treatment effects. Lack of structured decision analysis to address multiple objectives, conflicting risks, uncertainties and value preferences in tradeoffs is, as suspected, a major missing tool. But even more fundamental is the lack of empirical studies on restoration treatment effects. This suggested approach tries to address those.

As always, comments are welcome and appreciated.

Hal

Revised Draft Sept. 18, 2002

Proposed Scientific Work on Forest and Rangeland Health Restoration

On July 10, 2002, Senator Gordon Smith and Representative Greg Walden of Oregon asked the College of Forestry and the Institute for Natural Resources at Oregon State University to "develop a balanced comprehensive report concerning the restoration of post-fire ecosystems." The request, asked to look not only at "immediate environmental effects of restoration activities, but also at both short- and long-term effects of *not* proceeding with cost-effective, post-fire restoration activity on local communities, future forest fire danger and forest health." The letter also asked to propose new studies if needed.

It is clear to most scientists and forest managers that the most important steps in restoring forest and rangeland ecosystem health start well before a fire or other disturbance event occurs. Pre-fire treatments not only contribute to reduced fire risk, when the fires do occur they are less intense, less dangerous to life and property, and less expensive to manage. They also make post-fire restoration work less likely to cause unacceptable environmental damage. Therefore, pre-fire activities must be considered in developing an appropriate context for post-fire restoration.

On August 30, 2002, Dean and Institute Acting Director Salwasser visited with Dr. Don McGregor of Decision Research in Eugene, Oregon to discuss this and several related projects. On Sept. 4, 2002, he visited with leaders of the Forest Service, Bureau of Land Management and USGS in Portland. Subsequent input was solicited and received by forest ecologists and conservation scientists. The following notes reflect findings related to the preliminary work requested in its larger context of decision making for comprehensive ecosystem restoration.

1. Link to National Fire Plan. The National Fire Plan developed and endorsed by federal agencies and the Western Governor's Association provides a blueprint for action and the general processes to follow. If it has been tailored to specific landscapes to form what amounts to an annual plan of work with specific objectives and measurable outcomes that is a step that would not have to be done again. Someone, agencies or external reviewers, should document the degree to which regional or local application of the Fire Plan has been done.

2. Landscape-scale Ecological Assessments. Whether management actions under the Fire Plan are considered prior to or after fire, the fundamental challenges start with understanding the ecological characteristics of the forests and rangelands in question, at a landscape scale not just stand by stand. This means their structure, species composition, patterns and history of events, and management actions and processes that caused those characteristics and their dynamics, including fires, droughts, insect and pest infestations, human activities, and climate change. Ownership is also an important variable.

Ecological characteristics vary widely across forest and rangeland types and conditions. A sustainable restoration strategy must build from this understanding appropriate to ownerships, types, and conditions. Just considering the potential impacts of action or no action at the site or stand scale is not ecologically meaningful in dynamic landscapes. There is potential to add value to existing programs by describing how a landscape-scale ecological assessment could be done in an expeditious manner.

3. **Collaboration on Desired Future Conditions.** Given the above understanding, managers engage affected people, e.g., citizens, neighbors and other state and federal agencies, to determine the desired conditions and rates of processes for forests and rangelands in the landscapes in question. These conditions must account for the water quality, fish and wildlife habitat, aesthetics, soil fertility, forest and rangeland productivity, and economic and community contributions desired from the area as well as the vulnerability of the lands to future fires, drought, and pest epidemics, vulnerabilities that put the other wildland values and uses at risk. It is also important to link the development of desired future conditions to Oregon Plan implementation, especially the watershed health portions of the Plan.

Desired future conditions will differ widely and by ownership and forest type: from what is appropriate in wilderness areas to the wildland-urban interface, with private lands whose goals might include the production of wood or other natural resources included. What this means is that there cannot be a "one-size-fits-all" set of guidelines for either fire risk reduction or desired post-fire conditions or management actions to achieve them. It also means that the fundamental step in determining appropriate management actions is to clearly describe the problem(s) to be solved. If there is no problem -- that is desired conditions will be met by nature's processes without management actions -- the restoration task is over.

4. **Develop Regional and Local Restoration Objectives (and Priorities).** Based on desired future conditions, what the specific problem is, and processes and priorities for where to take action, especially the reduction of risks to communities, watersheds and other resource values, and conditions and processes that will restore ecosystem resilience and productivity, the management job is to remove impediments to those conditions and return ecological processes and management actions that will sustain the desired conditions and their social contributions in the most cost effective and economically beneficial way. These amount to the objectives for which management actions or lack thereof would be designed. Existing federal forest plans set objectives for desired conditions based partly on goals for water, fish, wildlife, wood, and old forest structure and partly on the ecological understandings, management technologies, and citizen expectations of the 1980s and 1990s. In many cases, these plans did not account for risks posed by wildfire, drought, pests, or climate change as we now understand them. Nor did they account for the knowledge and technologies now available. Consequently, forest plans might be out of date with today's risks, knowledge, and new technologies.

The revision of land and resource management plans is a policy task that could run in parallel to the R&D work needed. The two tasks should be kept separate to minimize confusion between the political process of planning and the learning process of restoring forests and rangelands through adaptive management (to be described below).

5. **Design Creative Management Alternatives and Assess Consequences.** There is always more than one way to meet objectives and reach desired forest and rangeland conditions. Thus, managers and affected people must consider the comparative risks to those conditions, uncertainties, and financial resources available to address those risks and uncertainties and how those might vary over time under a reasonable array of management alternatives. These management alternatives will include variable costs and actions based on knowledge and technologies not available or not well understood when reports were done in the mid 1990s. Meetings in Eugene and Portland affirmed that assessment of risks and uncertainties under various alternatives is definitely a place where new scientific and technology work is needed.

There is a fundamental lack of structured science to understand the efficacy of pre-fire thinning on fire behavior and the effects of post-fire restoration on ecosystem recovery, including effects on future fires. This includes effects of fire suppression activities on post-fire ecosystem recovery. Anecdotal evidence abounds and we have more from this year's fires. One Portland participant suggested that a grand synthesis of what is known could help. This prospectus lists several major sources for that synthesis later. Several participants thought a Science Panel at a public forum such as OSU, after the fires are out would be a good idea to share what is known and what is not know about restoration.

Several Portland participants cited the need for outreach and technology transfer of what is known. Retrospective studies could also help improve understanding but there is a large need for applied research to test out the unknowns. The Fire and Fire Surrogates research proposed under the National Fire Plan and Joint Fire Sciences Program would be logical places to look or expand from. Several participants in Portland said that new field

studies are sorely needed. The RFP for the Fire Plan sought such studies but good proposals were lacking so funding went to stronger projects in other areas. There is very little science on post-fire salvage logging effects (hence the conservative approaches recommended by several recent studies and reports).

6. Structured Decision Analysis. The next step, the one where gridlock seems to have set in, is to make decisions that strike appropriate balances when the risks to different resources conflict and uncertainty abounds, as is often the case when forests, fish, wildlife, water, air quality, and wildfire intersect. This requires a decision making process or protocol that explicitly arrays and evaluates risks, uncertainties, costs, and benefits for the different resources in question, that is it evaluates the likely consequences of the alternatives. Tradeoffs are inevitable in wildland resource decisions. Aversion to risk for one resource in the short run can mean acceptance of high risk to other resources or even high risk to the first resource at a later time. Science can only inform parts of the complexity that characterizes these decisions; value judgments and subjectivity must be openly described.

Thus, honest characterization of tradeoffs and how subjectivity, uncertainty and risk were handled in decision making are vital to public understanding. This step in particular is where federal agencies could benefit from new approaches. In the absence of structured decision analysis, the precautionary principle appears to be the deciding factor on risk – in the absence of certainty that proposed actions will not cause harm to a particular resource value in the short run or that they will improve future conditions, do not take the action.

7. **Project Design.** Once decisions are made, the key task is to design restoration, rehabilitation, or fuels reduction projects to gain an acceptable balance between their costs and the benefits returned, both broadly defined. Ideally, but certainly not in all cases, the management activities can generate revenues to cover parts or all of the costs of restoration. This would allow general treasury funds to be more broadly leveraged in getting more work done.

A Portland participant suggested that the old systems for planning, analyzing and costing out projects where commercial timber sales were the goal was not workable in the current context of ecological restoration with low to no commercial values to be gained. Designs for cost reduction rather than profit maximization are needed. Options for commercial use of restoration by-products is also a possible area for new work. Further, new technologies for getting work done with less environmental impact exist that were not available in mid 1990s. Suggestion was made to look at what Joint Fire Sciences Program has underway here. Need to explore impacts of non-native plants used in past restoration.

8. Integrate Application (i.e., projects performed under the National Fire Plan) with Research, Development, Outreach and Monitoring. The final task is to integrate outreach, research, and monitoring into regional restoration strategies so that existing knowledge and technologies are effectively used and uncertainties can be reduced over

time allowing for adjustments to improve effectiveness and efficiencies of treatment activities. The integration of outreach, monitoring, research, and adaptive management in a comprehensive restoration strategies might require stronger central leadership and commitment to action than agencies have envisioned to date. This is the substance of the suggested actions below.

The framework for forest restoration decision making described above provides a context for determining appropriate management actions both prior to and after fires; it replaces a one-size-fits-all approach with ecologically-based site and landscape specific strategies that address the environmental, economic and social dimensions of our western forest and rangelands. But, to improve performance, it must also (1) lead to expedited decisions and resulting actions, (2) improve the effectiveness of public participation in planning and project implementation, and (3) create a learning process that ties project design (i.e., application) to monitoring, research, and active outreach (i.e., technology transfer). For long-term success, this process must be carried out at a regional or landscape scale so that individual projects have a suitable context and can be carried out without the costly and time consuming comprehensive analyses currently called for in each project. Further, these projects should be designed and carried out with the continuous improvement process in mind, i.e., they are linked to monitoring and research strategies. This could all logically become an integral part of implementing the parts of the National Fire Plan that deal with rehabilitation, restoration, hazardous fuels reduction, monitoring and research. It could also link to Oregon Plan research and monitoring.

Any new work on parts or all of the above framework will require teams of experts from both science and management relevant to the breadth of the work, most likely drawing from the fields of decision analysis, risk assessment, soils, water, fish and wildlife, forest ecology and restoration, fire ecology, silviculture, economics, logging and forest operations, roads, and sociology. The teams should be comprised of agency, private sector and academic scientists and managers to ensure both scientific validity and practicality of results. This would apply first, to the synthesis of existing knowledge, the retrospective studies (which will take several years), and the new R&D on efficacy of pre and post fire activities (this is probably a 10 year major Research, Development and Application program similar to what FIR and COPE were in western Oregon.

Suggested Course of Action

a. Form an Interagency Wildland Restoration Research, Development, and Application Board by Winter 2003 to oversee all work. The Board would be composed of federal and state natural resource agency executives and chaired by the Deans of Forestry and Agricultural Sciences at OSU.
b. Convene a science and management workshop at OSU during winter or spring 2003 to synthesize existing knowledge and technologies pertinent to parts or all of the above framework (focus to be determined). Coordinate with the Risk Conference planned for Portland in October 2003.
c. Form a research, development, and application organization to carry out the program: OSU/PNW/FRESC would be the hub or core team for a network of

teams at Southern Oregon University for SW Oregon, OSU-Cascades Campus for central Oregon, and Eastern Oregon University for eastern Oregon. The OSU partners would include faculties from Forestry, Rangeland Resources, Fisheries and Wildlife, and Cooperative Extension. The four teams should have close linkages to state and federal agencies relevant to forest and rangeland restoration: US FWS, EPA, NMFS, ODF, ODFW, ODA, OWEB, etc. This could start in 2003 with recruitment of personnel and program design for initiation of field studies in 2004 continuing through 2015. It would require substantial funding by federal and possibly state agencies on the order of $1-2 million in 2003 followed by $6-10 million per year in subsequent years of full implementation. This is, for means of comparison, less than 5% of what was spent fighting wildfires in Oregon in 2002 and even less than that when the full costs of post-fire work are included.

d. Based on products from the initial workshop syntheses and subsequent program results, carry out active and extensive outreach and technology transfer to give publics and managers access to and understanding of the state of knowledge and technology using OSU Extension Faculty, ODF Service Foresters, and federal agency technology transfer specialists affiliated with the four program teams. Begins in 2003 and continues through 2015.
e. Initiate development and adaptation of decision analysis tools for use in the restoration strategies at OSU and affiliated universities and agencies in Spring 2003 continuing through 2005.
f. The OSU/PNW/FRESC core team scope of work is still being fleshed out. It could include wood science and engineering studies to address utilization of shrubs and small diameters trees removed through restoration projects. It could also include business developmental work on reducing costs of remedial projects.
g. Field teams initiate retrospective studies of pre and post fire effects of restoration activities on ecosystem conditions, processes, and functions beginning in summer 2003 and continuing for 3-5 years. These projects should be integrated with planned agency actions under the National Fire Plan and Joint Fire Sciences Program, especially the linkage to ongoing agency monitoring systems. Especially important would be studies that use fires of 2000 and 2002 to examine the effects of fuels treatments in changing fire behavior.
h. Field teams initiate new experimental research on pre and post fire restoration in major ecoregions of the state. These projects should be integrated with planned agency actions under the National Fire Plan and Joint Fire Sciences Program. Studies would begin in 2004 and continue through 2015.
i. Hold annual conferences to review and present progress. Publish periodic newsletters and hold regular field tours to convey new knowledge and technologies. Publish handbooks and field guides as new knowledge and technologies come on line.

The July 10 letter asked about other sources of information on the topic of post-fire ecosystem restoration. In addition to the report prepared by Dr. Beschta and his colleagues in 1995, there are excellent sources of information pertinent to the general subject of restoring ecosystem health, including the multi-volume Eastside Forest

Ecosystem Health Assessment compiled in 1994 by Dr. Richard Everett of the Forest Service Pacific Northwest Research Station, a report done by Dr. Norm Johnson and colleagues for Governor John Kitzhaber in 1995, the Interior Columbia Basin Ecosystem Assessment in 1996, the 1996 Blue Mountains ecosystem health synthesis report edited by Drs. Ray Jaindl and Tom Quigley, the 1997 Sierra Nevada Ecosystem Project, a General Technical Report on the environmental effects of post-fire logging done by Forest Service Research in 2000, the book Mapping Wildfire Hazards and Risks edited by Neil Sampson, Dwight Atkinson and Joe Lewis in 2000, and a 25 chapter special issue of Northwest Science edited by Dr. Jane Hayes in 2001 that synthesized forest health and productivity issues in eastern Oregon and Washington. The proposed science and management workshop would build from the foundation of these reports.

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Well said by Mr. Armitage; it seems to be a no-brainer to this scientifically-trained mind. But he fails to address the more interesting underlying causes that may hold "solutions" to the stand-off. I believe the disconnect between people and science on this issue is partly a function of the disconnect between people and the agencies. (After all, management is science driven, however slowly it takes to change course).

The really interesting question is this: why DON'T people who drive past BLM lands know of these effective thinning projects? Was meaningful collaboration and learning missing as these projects were planned and implemented? To what extent can collaborative learning close this divide between science, agency, and the public? To what extent are agencies willing and able to engage in meaningful collaborations? And lastly, does the public really want to collaborate all that badly?

Jeff

Actually, I think there is also a fundamental disconnect between the so-called average US citizen and science. Consider that the United States is the only major industrial nation in the world where more people believe in creationism than in evolution. Actions speak louder than words -people, by their actions, profess a much stronger belief in technology(conveniently ignoring it's scientific basis) than in actual science. Look at the high number of popular TV shows that are anti-science, emphasizing the occult and pseudo-science instead; scientists are still often presented as power-mad, stupid, or irrelevant. Not to mention the strong presence of occult and pseudo-science based beliefs as expressed in things like the supermarket tabloids (don't kid yourself about the sales levels of these papers), psychic hot lines and such. It doesn't help that there is also a strong anti-government sentiment out there, especially as fed by certain political parties, and we as government agencies have learned to not draw too much attention to ourselves (BLM is especially good at that). It's often amazing to me how little people, on average, pay attention to their surroundings (I'm guilty of that myself more often than I would like).Subtle changes (one of the ways we avoid attracting attention)

are simply not noticed as quickly or by as many people. Well-done thinnings will attract a lot less attention than a clearcut any day. Lastly, I think that most people don't have the energy or the interest to collaborate; they just ant to be left alone with their more immediate personal problems.

Louisa Evers

Thank you Louisa for your commentary. I observe this type of thinking and concern everyday in the wildfire arena. In my eight years as the pao at the national interagency fire center, one thing I have observed from the "average citizen" is that their are only two ways that the "average person" learns about wildland fire: 1) Watching from the comfort of home on the television news, and, 2) watching it moving towards their comfort zone - their home. Think about how 30,000 people in Denver learned about fire this summer.....same goes for communities across the US under similar conditions! These is not the optimal method for learning, but it's becoming more and more frequent and widespread.

Our goal as scientists is to interpret science findings in a manner that
general public can understand it and its impacts. But before we proceed, we have to get their attention. We've got to have a "hook." Just think how much more we can teach about good fire /bad fire if Smokey Bear (hook) had a "family." The "Dad" bear would go to work each day in the wildlands, the "significant other Bear" would take care of the homestead (Firewise....?) and the teenage bears and youger siblings would learn about fire effects from their encounters and explorations; "Daddy Bear, I don't feel so good, I drank a glass of water from the faucet, it was brown, and now my tummy aches....." - is this a teachable moment, or the product of a madman thinking outside the box? And just how many of us when we were kids learned what a dinosaur or a brontosaurus was from watching the "Flintstones.....!" Is it the way we teach fire, or how we deliver the interpretations? Another point is something I heard on television last night: "You have to have extremists, because the extremists are the ones who put the issues in front of the general population. ....and eventually cause the pendulum to moderate to the middle."

Anyway. Good commentary. Thanks for sharing — Mike

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Louisa is right about the fundamental disconnect between science and people in the US. But as always, there are at least two sides to the story. The average US citizen (if there is one) is probably not a superstitious tabloid junky. However, he or she may have a fundamental distrust of a culture of experts (scientific, political, and corporate) whose values and goals are often far removed from those of the average citizen. And rightly or wrongly, resource management agencies are often seen as serving these interests to the detriment of their mission.

I, for one, believe that this perception of science, politics, and resource management agencies is not totally unfounded. However, as a legacy of past performances, it may not be a fair judgement of current programs and practices in the BLM and FS.

Still, whose responsibility is it to correct these misimpressions? And how can that be done effectively? I believe that agency scientists and managers have to meet people halfway. In my book that means collaboration. And the first rule of collaboration is to have faith that in the long run people will find the energy and interest to rise to the occasion.

Jeffrey G. Borchers, Ph.D.

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Thanks for sharing your thoughts about the meeting. I also heard from Jack, who shared with me the meeting agenda and list of attendees. No apparent overlap in attendance between the AuCoin/Headwaters sponsored meeting and the FSEEE sponsored workshop, though I had invited several of the attendees such as yourself. It will be interesting for the two projects to compare notes after our gathering next week.

By the way, had I mentioned to you that our project started an email discussion group last week? You are welcome to join. It won't mean a flood of emails, as I prepare unedited "daily digests" for the participants. The introductory message with questions that got the discussion going is pasted below. It has been a good discussion thus far. Let me know if you'd like to be included. I can also send you the previous digests.

Bob

Date: Thu, 3 Oct 2002 13:56:24 -0700

Subject: Creating a Blueprint: FSEEE's fire dialog

<fontfamily><param>Geneva</param>Dear Colleague,

Thank you very much for your interest in the FSEEE-sponsored project, Creating a Blueprint for Fire Management in the 21st Century. And welcome to our email discussion that launches the project. As you know, the aim of the project is to produce a peer-reviewed and scientifically credible "National Fire Plan." In many ways the success of this project is dependent on your willingness to give of your time and your expertise. We appreciate whatever you can give of each in the coming weeks and months.

Many of you have registered for our Oct 16-18 workshop. Others are unable to attend but have expressed interest in being part of our email discussions. At this time, the discussions are intended to serve as a sort of "warm-up" exercise for our further discussions at the workshop and beyond. Hopefully, in exercising our creative thought processes in this way, we will also get to know one another a little better.

I hope you will choose to be an active participant in the discussions and not simply a silent observer, though that is certainly OK too.

As a reminder, this project is intended to be proactive, solution-oriented and constructive in its focus. In addition, the discussions and the recommendations we make should be informed by the best available scientific information. While we can be critical of the current state of affairs when it helps us identify problems and devise solutions, let us remember that our aim is to make improvements and not focus on criticism.

The discussion begins by proposing six questions in no particular order for you to consider. Please respond to any or all six questions as you feel led. The questions are not necessarily indicative of where we hope the discussion will go over time. Rather, they are intended to be provocative, elicit a response and get a lively discussion going. In that way, we hope over a fairly short period of time to gain our bearings, and a sense of where exactly we want this project to go.

How the Email Discussion Works

To respond to the questions, you need only type in your answer(s) and click the reply or send button on your screen. This will send your response to me. I will prepare a daily "digest" of responses from everyone up to five times per week, Monday to Friday. The daily digest will be distributed to several dozen respected scientists and resource professionals nationwide (affiliated with federal agencies, universities and consulting firms) who have agreed to be part of this discussion at FSEEE's invitation.

As you receive the digests, I encourage you to prepare additional responses to others' comments and ideas. Again, after typing your responses, you need only click the reply or send button so that your ideas can be included in the digest that goes to all participants. My hope is that this will jumpstart a stimulating discussion that will help us identify critically important topics for further discussion at the workshop and also later on.

Here are the initial questions for your consideration:

Question 1.

In the Sept. 16, 2002 issue of "High Country News," Jeff Golden, a former county commissioner from Ashland, Oregon, proposed "six clear principles" that he believes "informed, fair-minded people across the

political spectrum can agree are realities." His thesis is that these principles provide a common-sense framework for tackling the major fire and fuels management issues we face today. You can read Jeff's principles is his article, "A modest forest proposal for President Bush," at:
<color><param>0000,0000,00FF</param>http://www.hcn.org/servlets/hcn.Article?article_id=13384</color>.

I am not endorsing his principles, but merely offering them for your consideration. They can also serve as a useful vehicle for discussing whether we would want to propose basic principles of our own. So what do you think? (If you have trouble accessing this article from the web, let me know and I will send you the text.)

Question 2.

This year's fire debate has made clear that for better or for worse we truly do have a debate. Congress has shown increasing evidence that it is divided and stalemated in how it ought to respond to the president's "healthy forests initiative." The general public seems divided too, poorly informed and even misinformed. One objective of this project is to be an informed, thoughtful voice that helps transform the debate by calling attention to important scientific information (both what we know and what we don't yet know). What do you believe are the one or two most important pieces in our current scientific understanding that may be able to steer the public discussion in a constructive and balanced manner? How might we utilize this information to build bridges and even foster some semblance of public consensus about how to approach today's fire and fuels management problems?

Question 3.

It has been suggested by a number of people that the push toward more fuels reduction projects such as thinning and prescribed fire will create some tension with public obligations to protect animals, plants and other environmental values. These obligations are specified in the Endangered Species Act, the Clean Air Act and other federal laws and regulations. To what extent is this tension real or imagined? Where real, how might we address the tension in a way that helps us return to more natural fire regimes and fulfill our mandate to protect species and other public values?

Question 4.

In 1995, the federal government adopted a "Federal Wildland Fire Management Policy." This policy, largely reaffirmed last year, stated among other things, "Wildland fire, as a critical natural process, must be reintroduced into the ecosystem. This will be accomplished across

agency boundaries and will be based upon the best available science." Despite progress in some areas, actual implementation in the last seven years has fallen short of the good intentions of the people who developed and approved the policy. What do you believe needs to change? Have the agencies been hamstrung by outside constraints and/or barriers? Or have constraints and barriers been imposed from inside the agencies themselves? What are these constraints and barriers and how might this project address them proactively and constructively? Please be specific.

Question 5.

This year the environmental community has increasingly pushed for the vast majority of fire and fuels related appropriations from Congress to go for restorative work, such as fuels reduction, and community and home protection in the wildland urban interface (WUI). I've heard figures as high as 90 percent as the "right" proportion to spend in the WUI. The thinking, in part, by environmental organizations seems to be that the Forest Service and other agencies can't be trusted to do the right thing in more remote locations. Environmentalists fear these agencies will be inclined to design "backcountry" projects based on commercial value rather than ecological benefit. Do you agree with environmentalists' perspective on where to focus our restorative efforts? Why or why not?

Question 6.

Finally, if you think these questions will miss something important for the purpose of stimulating initial discussions for this project, please feel free to pose and answer your own question(s).

Thanks for your time, interest and enthusiasm. I look forward to hearing from you and meeting many of you later this month. Please contact me directly if you have any questions related to this project.

Sincerely,

Bob Dale, field director

(541) 484-2692</fontfamily>

Jack - thanks for pulling together the discussion summary - I like the fact the the discussion reflects support for mature/old growth trees and the unique role they play in forest ecosystems, the emphasis on roadless area protection given they have the greatest likelihood of representing intact ecosystems and processes (and lower hazard and fire risks), the recommendation on no new roads (because of risk of

ignition), the recommendation by the hydrologists to stay out of riparian areas during suppression and post fire, and the need for applying the precautionary principle to more effectively ensure that we don't wind up doing more harm than good with post-fire logging and in recognition of how little we know about restoring complex forest ecosystems (there are many more unknowns that require thoughtful experimentation and the adaptive approach). I'm especially grateful for Jerry Franklin's challenge to the group that there is no ecological reason for cutting mature/old growth trees in the name of fuels reduction and that salvage logging is anything but an economic decision and to others that commented on how big trees have lower bulk crown density and therefore managing for old growth is good crown density management. The summary adequately reflects these concerns.

One thing that I think we could have gone further on is the soils issue - this is a big concern in post-fire logging - we need to see the forests from the below ground to the canopy - I'm not sure we were strong enough on soils.

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Thanks for sending this along, Tom. I've routed to our visiting team so they know what is already underway. These notes have some excellent points, with some value preferences intermixed. Generally, lots of good ideas and a great foundation for general principles.

I attach a speech I gave recently to provide another view on the so-called precautionary principle and what will be needed to address these complex and wicked problems we face. Might be some good food for discussion this weekend.

Several points in the notes you sent about who has burden of proof are overly simplistic; burden of proof depends on place and goals. Near private property and homes, burden may more appropriately lie on those who don't want trees thinned to show that leaving them is ok. Points about new roads needs to be evaluated with consideration of role of road network in access for initial attack; what's the prudent balance point. Do we really have scientific evidence that fire is always a better management tool than mechanical? Effects on soils, air, habitat will vary and a universal statement might not hold. Isn't that what Fire and Fire Surrogates studies are all about? Avoid riparian areas? Do fires avoid them? Did fires avoid take on endangered species? Might it not be more ecological to try to get a semi natural disturbance process and pattern back into riparian areas? Avoid intact ecosystems? What is a non-intact ecosystem? Avoid large trees?

Everywhere? What is non large? Might it depend on stand structure, location, desired conditions for resiliency? The points on fighting fires sound like they came from people who've never been on the line. Were any fire managers in the group? Didn't Florence/Biscuit start in what some would say are intact ecosystems? I wonder what Mike Lohrey would say about these recommendations.

Will be important to separate the good, science based-suggestions from the value laden philosophical positions, e.g., burden of proof, precaution, no roads, stay out of riparian, roadless, etc. There can be some great value from doing such a separation in your final document because it will improve the credibility of the solid science and leave the personal preferences for what they are, valuable statements of preference, but not science. There's some political danger to general statements that the fires were just fine ecologically. If so, then someone is eventually going to argue it must be ok to actively take endangered species through other means as well. Also, is anyone thinking of convening property owners, fire managers, policy makers who spent all the $$ this summer for a similar lessons learned exercise? Might make a good comparison.

See you Saturday for a fun-filled weeekend.

Hal