

## **Finney AMA Status Update June 23, 2008**

On June 11, 2008, members of the Forest Service planning team met to decide on the 3 to 5 research topics to carry forward into the final plan for the Adaptive Management Area. Dr. John Bailey of Oregon State University participated in the meeting by phone for a portion of the meeting. The group considered the research topics that were suggested at the 4/23/08 public meeting and the suggestions from Forest Service employees. Robin Leshner, Ecologist, informed the team of the results of analyses on stand development in the Pacific Silver Fir (PSF) forest zone.

### ***Ecology Presentation of Analysis of Silver Fir Stand Development Data***

Mesic to moist silver fir plant associations occupy most of the Adaptive Management Area (AMA). Data from ecology plots in Plant Association Group (PAG) 2207 (Silver Fir - wet *Vaccinium alaskense*) were used because it is the most common PAG in the AMA. Plots from stands aged from 20 – 800 years old were used in data analysis. These stands initiated and developed during many different climate conditions. Recent increases in CO<sub>2</sub> abundance have greatly increased tree growth. Currently data have only been analyzed for tree metrics. Other metrics (understory vegetation, litter depth, etc.) have not yet been analyzed.

The Finney AMA is atypical of the remainder of the Northwest Forest Plan (NWFP) area due to very infrequent fire and high precipitation. This results in stands reaching ages much older than in NWFP areas further south.

Total tree volume is less in PSF PAGs than in Western Hemlock PAGs. This is partially due to the absence of Douglas-fir in the Pacific Silver fir forest zone. Stand development for the first 200 years includes a rapid increase in tree volume and basal area (BA). After 200 years there is a slight increasing trend in volume and BA up to 800 years.

Plot data indicate that the stem exclusion phase in this PAG occurs when stands are about 100 through 300 years of age. After that, openings are likely more common. Mean Annual Increment peaks about year 100, which is younger than in WH PAGs. Quadratic Mean Diameter (QMD) peaks at 18" Diameter at Breast Height (DBH) in about year 200 and then declines to about 14" in older stands. The QMD peak in silver fir is lower than the 30" DBH peak in WH PAGs.

Snags 5" DBH and greater increase in silver fir stands up to year 100, decrease to year 200, and then increase again up as stands age to 800 years. At ages when snag density is high, they make up 18-19% of the total standing tree biomass in the stand.

Silver fir advanced regeneration at ages of 60 years will respond to increased sunlight with good growth.

### **Questions we are trying to Answer with Research**

Don reminded the group that an important first step to completing the plan is the clear articulation of the questions that we believe need to be answered. This step still needs to be completed. Don made a first attempt for some of the 5 potential research themes and asked the team members who proposed the theme to improve upon them by 7/11/2008.

*Question 1. Can some structural attributes of late seral and old growth stands be created in young stands without compromising long-term development of old-growth forest characteristics?* Shirley, Jan, Robin and Phyllis will finalize this research question.

*Question 2. Would a Balanced Age Structure management strategy provide for greater biodiversity and better approximate historic vegetative conditions and patterns on the landscape than the management approach prescribed by the Northwest Forest Plan?* Jan and Phyllis will finalize this research question.

*Question 3. Can dense young-stands in the rain-on-snow zone be treated to develop branch structures that hold snow and reduce wind movement to reduce high flows generated by rain-on-snow events?* Gary and Roger will finalize this research question.

*Question 4. Can vegetation manipulation treatments in riparian forests improve aquatic habitat conditions through reduced stream temperatures and coarse woody debris recruitment and retention?* Gary and Shirley will finalize this research question.

*Question 5. Do barred and spotted owls have different habitat preferences and if so can forest stands be manipulated to favor occupancy by spotted owls?* Phyllis will finalize this research question.

### **Discussion of FS Proposed Research Themes**

The team decided that the five research themes previously proposed should continue to be carried forward in the plan development, at least at this time. Some of the themes need to be better articulated and all themes will need to be assessed for their feasibility by 7/11/2008 by the same individuals identified to comment on the research question.

*Creation of late and old seral characteristics in young second growth stands.* This theme continues to have the strongest support and hypotheses that now include the pacific silver fir zone. The team needs to determine if there is a desire to evaluate if there are valid reasons for evaluating treatments in stands greater than 80 years old and if so, does the AMA logistically allow for experimentation. The team agreed that experimentation will need to occur outside the levels prescribed by the existing data to determine if those boundaries are indeed accurate. The specific levels of treatment and response variables would be most useful if they were identified in the final reports which are due on 8/24. Jan, Robin, Shirley, and Phyllis are the primary team members in continuing the development of this research theme.

*Balanced Age Class Distribution.* This theme would explore an alternative approach to landscape management than that which was decided on by the NWFP. It would propose an alternate management strategy of vegetation composition and patterns at multiple spatial scales and prescribe various amounts of forest seral stages (based on historic conditions). This strategy is expected to provide more constant amounts of desired landscape conditions than is expected under the existing forest plan.

Considerable work was dedicated to this theme in the previous draft AMA plan. Jan and Phyllis should summarize what work has already been completed and what the findings are that support the need for change (or the shortcomings of the NWFSP strategy), identify specifically what work needs to be done to complete the evaluation, and how the results would change land management in Finney and elsewhere on the Forest. Since the vegetation pattern and composition has changed greatly during the past 1,000 years, the selection of the desired age class distribution can result in greatly different levels of management action and landscape compositions. It will be important to indicate why a particular year is chosen as the desired condition.

*Restoration of stand conditions that reduce the impact of rain-on-snow events.* In general this theme suggests that there may be dense young stands in the zone susceptible to rain-on-snow events (including the accompanying strong, warm winds) that could be managed to produce larger tree limbs capable of holding snow aboveground better than current stand structures, and in doing so, the peak flows generated by rain on snow events could be reduced. The basis for the idea that this could occur has not yet been articulated, nor has there been any information presented about the number of stands that are likely in this condition and how many acres these stands encompass, the desired structural stand characteristics that would be better able to retain snow (what is the minimum, or preferred branch diameter or length), and the ability of known silvicultural practices that are capable of producing the desired stand conditions.

In order to determine if this is a viable research theme, Roger and/or Gary need to explore and or provide this information. Dr. John Bailey of OSU suggested that if needed, Arne Skaugset and/or Paul Adams of OSU would be good people to contact to help determine if this theme could be feasibly accomplished in the AMA, if the premise of the proposal is likely to have a reasonable chance of reducing peak flows, and research that has occurred or is on-going in this area.

*Riparian Stand Treatments to reduce stream temperatures and/or increase the desired amount and size of large woody debris recruitment into streams.* There is some concern that completing NEPA very difficult because there would be short-term adverse impacts to ESA listed fish and no assurance that there would be a long-term improvement. It would be difficult to tease out the effects of the stand treatments from improvements that are occurring due to road treatments and instream structures. Jon believes that management in some riparian stands would be beneficial to water quality and stream habitat.

There was some concern that the AMA may have limited opportunities to test the effectiveness of riparian area treatments. If that were the case, there are on-going studies by DNR and the FS (see initial FS report) that Finney could augment. Because Finney is the northernmost area in the continental US, it may be a valuable addition to these on going studies if there was insufficient opportunities in Finney.

### ***Barred Owl/Spotted owl habitat use/resource partitioning***

Phyllis will need to explore the feasibility of this theme. There is considerable interest in the topic and a study that is being conducted this year in the Baker River watershed. Reviews of that research proposal indicated skepticism that a sufficient number of spotted owls remain to have an adequate sample size. There are also methodological issues

regarding the ability to detect spotted owls where barred owls also exist due to a know/suspected reduction in calling and or response of spotted owls. Phyllis should contact Tom Hamer and Eric Forsman for assistance in evaluating the feasibility of this theme in the AMA.

### ***Discussion of Public Recommended Research Themes***

Don summarized the results of the breakout groups at the April public meeting into the following 17 themes. Most of the proposed themes are subsets of those initially proposed by the FS or are the basis for developing hypotheses. Comments in italics following each public proposed theme are how the team suggested using the public involvement.

1. What stand densities respond to old growth development? This should be the basis for designing any manipulations and fits well in FS 1.
2. Are there thinning opportunities in mixed aged stands to promote owl habitat. Mixed aged stands are limited to stands that have old-growth structure. Because the AMA is currently below the desired level of this stand type, and because northern spotted owl populations have decreased so dramatically in Washington, the team did not feel that the risk of adverse ecological consequences out-weighed the potential learning benefits. As a result, the FS will not include this theme in the AMA plan.
3. Management opportunities for hardwoods that promote old growth or riparian habitat. There may not be sufficient area of hardwood- dominated stands in Finney that would allow testing. Three areas that are known to have some pure hardwood stands are near Segelson Pond, along Cascade Creek, and along Higgins Creek. These areas need to be evaluated to determine if there is sufficient area in Finney for a feasible research project. If not, there may be stands in Finney that could be incorporated into a more informal learning process that would incorporate management of hardwood stands in the Sauk River drainage that are planned for the next few years.
4. Are road improvements having a positive impact on riparian areas? How have they impacted the rate of landslides, sediment delivery, and peak flow amount and timing. The Finney AMA is too small to assess on a research basis. Some local monitoring is happening and should continue. Peak flow aspect fits into the rain-on-snow theme described by the FS.
5. Identification of wildlife habitats in need of restoration. This information is available but should be summarized and cited for the development of response variables in the second-growth stand management theme. Phyllis is responsible for identifying these habitats and the response variables that are important.
6. How can active management of entire Finney (including DNR) improve LSR conditions in the long and short-term? Desired stand conditions have been identified for both ownerships. The remainder fits into FS second-growth stand management theme, can stand manipulation improve the situation in the short-term and not compromise long-term development.
7. Determination of rates of carbon sequestration of various aged stands. Carbon sequestration will be one of the response variable proposed for the FS second-growth stand management theme
8. Comparison of restoration treatments on DNR and FS in creating habitat and economic benefit. Economic benefit, measured by board foot produced, will be

available for the range of treatments implemented with FS second-growth stand management theme and for DNR owl habitat management treatments.

9. Improve knowledge of silver fir forest response to silvicultural manipulations. The current analysis and recommendations on silver fir PAG 2207 will be a significant part of FS second-growth stand management theme. In addition, the plan will include continued analysis of the silver fir spacing trials to further knowledge of silver fir forest response.
10. Comparison of passive vs. active approaches to riparian forest management (reduction in hardwoods) on stream characteristics. This is currently included in the research themes for the final plan, but the feasibility of implementing the treatments in the Finney AMA needs to be evaluated.
11. Evaluation of economics of restoration thinning and how this is affected by scale (amount of acres treated). Possible consideration of FS second-growth stand management theme.
12. Identify structural characteristics of spotted owl and marbled murrelet nesting habitat suitability with and without stand manipulation. This will be a response variable in FS second-growth stand management theme. Phyllis will be identifying what the response variables should be and how they will be measured.
13. Can thinning restore large woody debris amounts and sizes in streams? This is currently included in the research themes for the final plan, but the feasibility of implementing the treatments in the Finney AMA needs to be evaluated. There is some concern that it may not be beneficial to reduce the amount of small wood recruitment in the short-term for a possible long-term benefit to listed species.
14. Comparison of ACS and TFW stream management zones on riparian function. DNR is currently studying the effectiveness of TFW buffers. TFW buffers have steadily widened over recent years to the point where there isn't that big of a difference between the two. Since there is already research aimed at addressing the questions, the FS will not be including it in the AMA plan.
15. Effects of stand manipulations on carbon sequestration. Does this result in a net increase or decrease in sequestration rates. Carbon sequestration will be one of the response variable proposed for the FS second-growth stand management theme.
16. How is climate change affecting forest systems and how can USFS best manage to adapt to climate change? FS ecology plots have been evaluating species occurrence and reproduction for two decades. So far there are no changes in species establishment. The AMA is too small of an area to evaluate the effects of climate change on forest systems. The ecology program will continue to monitor the impacts Forest-wide.
17. Develop models to manage forest roads and forest to be resilient to rain-on-snow events. This should be the basis for developing potential treatments for the FS theme assessing the effectiveness of young stand thinning to reduce rain on snow impacts to hydrology and will be a part of the feasibility analysis for this theme.

## **Next Steps**

Individuals identified in the section for each research question are also responsible for assessing the feasibility of implementing research on the topic in the Finney AMA by 7/11/2008. If possible, the following more in-depth feasibility analysis will be due by in

the final reports on 8/24/2008, but would be welcomed by 7/11. The more in-depth version should address the following:

What is the research hypothesis and why is it important to the management of National Forest System lands. (For example: Peak flows from rain on snow events increase due to high tree stocking levels in many stands in the zone that experiences these weather events. The amount of peak flow due to these forest stand conditions amounts to ZZ% of peak flows. The high tree stocking prevents the development of lateral limbs of XXX diameter and larger that have sufficient strength to hold snow. Thinning stands to a stand density of YYY TPA or less in stands of AA to BB years will promote the development of these desirable stand characteristics and reduce peak flows during rain on snow events.)

What methods would be used to test the hypothesis? (XX stands will be treated in YY ways and ZZ stands will be used as controls. Lateral branch size will be measured every XX years and ground snow depth will be measured every YY years). Please feel free to contact individuals from universities, including those who indicated that they would be willing and interested in providing input, or the PNW labs, for assistance in the identification of study methods.

Is there sufficient area within the AMA to provide adequate sample size.

Provide as much detail on methods as possible to determine if it is feasible to answer the research question in the AMA.

We will schedule a public meeting for Saturday 8/2/2008 to be held at DRD and looking at stands in the AMA.

***Final Reports that include as much of the team roles as possible will be due to Don by 8/24/2008.***